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Library privacy in practice: system change and challenges

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Library Privacy In Practice: System Change And Challenges

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I. Iɴᴛʀᴏᴅᴜᴄᴛɪᴏɴ

Libraries have an historical commitment to defending patrons' right to privacy as a means of safeguarding access to knowledge, free expression, and intellectual freedom. Much has been written, in popular and scholarly form, about the professional ethic of privacy in the library field.[1] A considerable amount of this history traces the

[1] *See generally* Mɪᴄʜᴀᴇʟ Gᴏʀᴍᴀɴ, Oᴜʀ Eɴᴅᴜʀɪɴɢ Vᴀʟᴜᴇs: Lɪʙʀᴀʀɪᴀɴsʜɪᴘ ɪɴ ᴛʜᴇ 21sᴛ Cᴇɴᴛᴜʀʏ (American Library Association ed., 2000); April Glaser, *Long Before Snowden, Librarians were Anti-Surveillance Heroes*, Sʟᴀᴛᴇ: Fᴜᴛᴜʀᴇ Tᴇɴsᴇ (June 3, 2015), [https://perma.cc/ NT6A-BJHS].

ethic's origins to the American Library Association and the group's establishment of a professional code that explicitly defends patron privacy.[2] This code provides guiding norms and values for the librarian and library institution to protect the flow of patron data; for example, protecting book-borrowing history that might reveal personal and political preferences, guard against government surveillance, and support intellectual freedom.

In recent decades, the computerization of libraries has introduced new complexities regarding the types and nature of patron data flows, which in turn have generated new threats to privacy. Whereas threats during the early Twentieth Century entailed attempts by government actors to access patrons' book or circulation records, today's threats involve various actors and various types of patron data flows to and through library networks. This article posits that a complex data-rich environment creates the conditions for library professionals to fall short of ethical commitments to patron privacy.

To demonstrate this argument, the article proceeds in three parts. It first provides an historical overview of the computerization of library institutions, in which libraries have become third parties that provide digital access to the patron community, as well as digital consumers of third-party services in order to functionally operate, and how these changes have complicated the ethics surrounding patron privacy. It then presents results from a study of library professionals at a large public library system, which demonstrate the distance between library professionals' privacy-protecting values, and their practices. The third and final section reflects on the privacy knowledge gaps of library professionals and discusses their implications regarding the ability of libraries to uphold the profession's privacy ethic.

II. COMPUTERIZATION OF LIBRARY INSTITUTIONS

A. *Libraries as Digital Providers*

In recent decades, libraries have become much more than sites of book lending or borrowing. Libraries are now synonymous with public computer and Internet access. Enabled by a variety of federal policies, libraries now buy hardware, software, and connectivity, and offer access to computers as well as wired and wireless Internet. They

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[2] *Midwinter Meeting Minutes*, 33 ALA BULLETIN 127, 129 (1939).

function effectively as third-party digital providers to patron populations.

Though federal support for public telecommunications has existed since the early 1960s, public libraries began conspicuously transforming into computer and Internet access centers in the 1990s. The Technology Opportunities Program (TOP) was established by the Department of Commerce's National Telecommunications and Information Administration (NTIA) to fund "the planning and construction of telecommunications networks or the purchase of telecommunications services and facilities for the provision of educational, cultural, health care, public information, public safety or other social services."[3] The NTIA estimates that TOP supported more than 100 projects in public libraries across forty states.[4] The Telecommunications Act of 1996 authorized a tax on telecommunications subscribers to establish a universal service fund, to which public libraries and schools can apply to develop Internet infrastructure within their institutions.[5]

By the mid-2000s, public libraries had become established computer and Internet providers. In 2010, a survey by University of Washington researchers estimated that one-third of Americans used library computers.[6] By 2013, computer and Internet access rivaled book borrowing as reasons patrons visited the library.[7] By 2015, debates were taking place as to the merits of bookless libraries and, among other plans, their prioritization of technology access.[8]

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[3] Pub. Telecomm. Facilities Program: Availability of Funds, 59 Fed. Reg. 2 (Jan. 4, 1994).

[4] *See TOP Supports Libraries*, NAT'L TELECOMMS. & INFO. ADMIN., https://www.ntia.doc.gov/legacy/otiahome/top/publicationmedia/onepagers/TOPlibraries.pdf [https://perma.cc/XX2U-FFX6].

[5] Telecomm. Act of 1996, Pub. L. No. 104-104, § 254, 110 Stat. 56, 71-75 (1996).

[6] Samantha Becker et al., *Opportunity For All*: *How The American Public Benefits from Internet Access at Libraries*, INST. OF LIBR. AND MUSEUM SERV'S 11 (Mar. 2010), http://impact.ischool.washington.edu/documents/OPP4ALL_FinalReport.pdf [https://perma.cc/T7PS-7D3K].

[7] Kathryn Zickuhr et al., *Library Services in the Digital Age*, PEW RES. CTR. 4-5 (Jan. 22, 2013), http://libraries.pewinternet.org/2013/01/22/library-services/ [https://perma.cc/VJ9R-V5NP].

[8] Laurel Holliday, *Public Response to SPL Survey Sharply Against City Librarian Marcellus Turner's Rebranding Plan*, THE SEATTLE REV; OF BOOKS (Oct. 21, 2015), http://www.seattlereviewofbooks.com/notes/2015/10/21/public-response-to-spl-survey-

The rise of computer and Internet access at libraries clearly complicates patron data flows at libraries, as well as what is considered patron data. While much of public debate on privacy and libraries has continued to focus on patron circulation history,[9] libraries also collect patron data tied to computer and Internet access. For example, they hold patron computer reservation data, because computer reservation management systems typically require users to authenticate their identity by entering their patron ID numbers. Libraries also hold traffic data, collected by network management tools that are used to help administrators manage network performance and bandwidth usage, block particular types of IP addresses from using the network, or block access to certain domain names.[10]

In this context, like any institution that sets up and manages its own network, libraries today are faced with IT issues that shape conditions for patron privacy. For example, how easily traceable are patron ID numbers used in computer reservation systems? For how long do libraries keep different kinds of reservation and traffic data, and for what purposes? Is the library Wi-Fi password protected, or open for all to join? What kinds of security protocols do libraries implement on their digital properties (e.g., mobile apps, website)? Who has permissions to access certain kinds of data logs on the network, and under what conditions? Libraries will be forced to contend with network designs that affect their ability to trace patrons' digital footprints.

As well as being directly involved in the digital foot printing of patrons, libraries as third-party digital providers may also function as or be perceived as conduits of commercial surveillance. On one hand,

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sharply-against-city-librarian-marcellus-turners-rebranding-plan/ [https://perma.cc/UG5G-KJSD].

[9] *See* Bob Egelko, *FBI Checking Out Americans' Reading Habits*, S.F. CHRON., (June 23, 2002), http://www.sfgate.com/politics/article/FBI-checking-out-Americans-reading-habits-2826830.php [https://perma.cc/MJ72-GJHF]; *see also* Justin Elliott, Remember When the Patriot Act Debate Was All About Library Records?, PROPUBLICA (June 17, 2013), https://www.propublica.org/article/remember-when-the-patriot-act-debate-was-about-library-records [https://perma.cc/5K86-99YK].

[10] Seeta Peña Gangadharan & Bonnie Tijerina, *The Nine Circles of Surveillance Hell: An Inst. View of Information Flows and Info. Threats in Libraries*, CUNY ACAD. WORKS 1, 5 (2015), http://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1006&context=lacuny_conf_2015 [https://perma.cc/BFG4-THTV].

when libraries develop their own digital presence, through the creation of mobile apps or library websites, they make determinations about security protocols. They choose to implement https-by-default to encrypt communications to and from websites, or to use third parties such as analytics companies that help determine which parts of websites patrons most frequently use. On the other hand, libraries function as gateways through which patrons access the commercial web, where any number of consumer privacy issues awaits them.

While government actors seem like the obvious and historical threat to patron privacy, the threat is more broadly configured for patrons who come to the library and use the World Wide Web. For example, patrons' web habits may inform data profiling and cause differential treatment or targeting.[11] Patrons may be confused or under-informed about the benefits and harms of commercial data collection, use, or storage.[12] Patrons may misunderstand companies' privacy policies and the protections they afford, and feel resigned to the terms presented to them.[13] Patrons also face accidental data leakages, which can result again in discriminatory targeting. Visiting websites that embed ad networks and other third-party services or those that have embedded sharing tools (e.g., Facebook's "Like" button) can result in the transmission of sensitive user data which, in turn, can be used to profile, target, and discriminate against particular types of users.[14]

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[11] *See* FRANK PASQUALE, THE BLACK BOX SOCIETY, 38-42 (Harv. Univ. Press ed., 2015); *see also* Seeta Peña Gangadharan, *Digital Inclusion and Data Profiling*, 17 FIRST MONDAY 5 (May 2012), http://journals.uic.edu/ojs/index.php/fm/article/view/3821/3199 [https://perma.cc/RE2N-S8NM] (discussing commercial web profiling, discrimination against underserved communities, and predatory subprime lending).

[12] Alessandro Acquisti et al., *The Economics of Privacy*, 524 J. OF ECON. LITERATURE 442 (2016) (any move by the library to institute measures that would technically enhance consumer privacy would essentially be voluntary or self-regulatory in nature).

[13] Aleecia M. McDonald et al., *A Comparative Study of Online Privacy Policies and Formats*, *in* PRIVACY ENHANCING TECHNOLOGIES 37, 37-38 (Ian Goldberg & Mikhail J. Atallah eds., 2009), http://link.springer.com/chapter/10.1007%2F978-3-642-03168-7_3 [https://perma.cc/2WNM-LW69]; Joseph Turow et al., *The Tradeoff Fallacy*, *in* ANNENBERG PUB. POL'Y CTR. 1, 3 (2015), https://www.asc.upenn.edu/sites/default/files/TradeoffFallacy_1.pdf [https://perma.cc/9BVY-QMLM] [hereinafter *The Tradeoff Fallacy*].

[14] *See* Timothy Libert, *Privacy Implications of Health Information Seeking on the Web*, 53 COMM. OF THE ACM 68 (2015).

In general, Internet access at libraries is unlikely to offer anonymity to patrons. Though a recent Pew Research Center study suggested using a public computer allows individuals to be anonymous online,[15] the study erroneously targets use of a public computer as a means of "invisibilizing" one's digital footprint. In reality, a user could browse anonymously, but if the user were to log into Facebook or another user account, the user's anonymity would cease.[16] As user name registration has become the norm across the web, the validity of a survey response option focused on public Internet browsing is tenuous. Many patrons log in—and stay logged in—to applications and other online services as they surf the web on both library computers and their own devices.[17] This means patrons may encounter the commercial threats or privacy risks all consumers face.

Rogue actors also pose a threat to patrons. These actors attempt to access data flowing to and from library networks, perpetrating man-in-the-middle attacks, phishing, or engaging in malicious or illicit collection, use, or sharing of patron data. However, little is known about the frequency, scope, or consequences of such snooping on library networks or of data breaches of libraries' information infrastructures. Nevertheless, libraries typically warn users about the insecurity of their wireless networks, and institutions like the Federal Trade Commission advise consumers against conducting sensitive transactions on open Wi-Fi networks.[18]

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[15] Lee Rainie et al., *Anonymity, Privacy, and Security Online*, PEW RES. CTR. (Sept. 5, 2013), http://www.pewinternet.org/2013/09/05/anonymity-privacy-and-security-online/ [https://perma.cc/78YY-HCQA].

[16] *See* Libert, *supra* note 14, at 76.

[17] Seeta Peña Gangadharan, *The Downside of Digital Inclusion: Expectations and Experiences of Privacy and Surveillance Among Marginal Internet Users*, NEW MEDIA AND SOC'Y, 1, 10 (2015).

[18] *See Tips for Using Public Wi-Fi Networks*, FED. TRADE COMM'N (Mar. 2014), https://www.consumer.ftc.gov/articles/0014-tips-using-public-wi-fi-networks [https://perma.cc/8V88-FF2P] ("Most Wi-Fi hotspots don't encrypt the information you send over the Internet and aren't secure. In fact, if a network doesn't require a WPA or WPA2 password, it's probably not secure."); *see also Technology Use Policy*, BROOKLYN PUB. LIBR. (June 27, 2013), http://www.bklynlibrary.org/policy/technology-use-policy [https://perma.cc/FXR6-LNPN] ("Customers should be aware that the Internet is not a secure medium and that third parties may be able to obtain information regarding users' activities.").

In sum, libraries have accrued additional risks by becoming digital providers. Access to computers and the Internet has multiplied the number and type of patron data flows, and unlike past patron privacy threats, current threats stem from much more than government actors.

B. *Libraries as Third-Party Dependents*

A second transformation in libraries, which has shaped how libraries protect patron privacy, concerns the computerization of library services and operations, and the transformation of libraries into digital consumers. Libraries today consume various network-based products that manage information systems and services for patrons. Like the library-as-third-party-provider role, the library-as-third-party-dependent role also means complicated flows of patron data to and through the library, and thus threatens the ability of libraries to protect patron privacy.

It is worth noting what drives this transformative process. In the early days of computer experimentation in libraries, during an era of innovation by companies like IBM, the library field explored how to mechanize libraries and automate functions like acquisitions, serials control, circulation, card catalog production, and more.[19] Research libraries, both public and private, as well as the Library of Congress, worked to develop technologies that would transform how libraries managed their collections and operations. Beginning in the 1960s and 1970s, libraries witnessed the dawn of computer-based networking and automation of cataloging and circulation systems.[20] These innovations led to further advancements in library information management systems for the purchasing, cataloging, and circulation

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[19] Sally McCallum, *40 Years of Technology in Libraries*, INT'L FED'N OF LIBR. ASS'N AND INST. 1, 2 (2003), http://www.ifla.org/files/assets/information-technology/publications/40-years-of-its.pdf [https://perma.cc/A7VF-JDYT]; *see also American Library Association Exhibit, Century 21 Exposition, 1962*, U. OF WASH., http://digitalcollections.lib.washington.edu/cdm/ref/collection/seattle/id/2391 [https://perma.cc/CFR7-QWAQ] (illustrating early use of computers for library functions).

[20] Matt Schudel, *Henriette D. Avram; Transformed Libraries*, WASH. POST (Apr. 28, 2006), http://www.washingtonpost.com/wp-dyn/content/article/2006/04/27/AR2006042702105.html [https://perma.cc/PJ7N-TVXC]; *see generally* CHARLES R. HILDRETH, LIBRARY AUTOMATION IN NORTH AMERICA 3 (K.G. Saur ed., 1987).

of library holdings. Eventually, other database services would develop and become essential to institutional operations.[21]

Today, a great majority of library information management systems are now commercially run, and libraries function as digital consumers reliant on third parties. Consider the integrated library system (ILS). Today, an ILS is an indispensable customer relations platform for libraries. It offers them both patron facing and back-end support, providing a seamless user experience for the patron. ILS's link patron databases, purchasing and acquisitions, collections management, fines management, circulation records, computer reservations, subscription services, access to e-reader services, patron-staff interactive platforms, and online public access catalogs. Typically, libraries will manage their patron databases and computer reservation and print management systems internally.[22] For most other services, libraries will rely on third parties who host content and provide services outside library walls. These services will require some manner of authentication (and hence interfacing through the ILS) so patrons can use these third party services. Altogether, the ILS epitomizes the indispensability of software tools for library operation as well as increasing library reliance on third-party services.

More importantly, the ILS epitomizes the complexity of patron data flows in libraries and the ways in which libraries and third parties share responsibility for protecting patron privacy. How and whether a company providing a service that is integrated into an ILS collects, uses, stores, or shares patron data will also have an impact on patron privacy. For example, in 2014, a librarian, with the help a security researcher, discovered that an Adobe e-reader service—a service common among public libraries—was gathering data about "e-books that have been opened, which pages were read, and in what order."[23] These data, as well as book title, publisher, and other metadata, were being sent to Adobe servers "in the clear," meaning the data were

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[21] Lawrence A. Woods, *Applications of Microcomputers in Libraries*, *in* 28 NEW INFO. TECHS. - NEW OPPORTUNITIES 30 (Linda C. Smith ed., 1982).

[22] Richard Wayne, *An Overview of Public Access Computer Software Management Tools for Libraries*, COMPUTERS IN LIBR. (June 2004), http://www.infotoday.com/cilmag/jun04/wayne.shtml [https://perma.cc/MV7R-44NB].

[23] *See* Nate Hoffelder, *Adobe is Spying on Users, Collecting Data on Their eBook Libraries*, THE DIGITAL READER (Oct. 6, 2014), http://the-digital-reader.com/2014/10/06/adobe-spying-users-collecting-data-ebook-libraries/ [https://perma.cc/3CNS-69LN].

unsecured and susceptible to man-in-the-middle attacks. The data were tagged with a unique identifier that could be associated with an IP address,[24] implying that anyone with the tools to discover and link such information (e.g., rogue actors mentioned above) could expose a reader's identity. The terms of service agreement did not indicate these granular-level data would be shared with Adobe.[25]

In addition to electronic services, like the e-reader example above, integrated library systems also link patrons to new interactive kinds of "Library 2.0" services, which are powered by user-generated inputs and encourage collaboration and interactivity among users.[26] Like e-reader services, Library 2.0 tools similarly place patron data out of the realm of library control and into the domain of the third parties who manage and operate such services. From reference desk chat services to social cataloging services (i.e., user-generated recommended reading lists) to reading recommendation services (e.g., based on library circulation history), these tools are dependent upon capturing patron information. This raises the possibility for security and other consumer privacy risks, like use of patron data by third parties in ways patrons might not expect or desire. Third party management of patron data also raises questions as to the protection of patron data from government surveillance, or the threat of government actors requesting patron data from third parties that may have more lenient rules than libraries. As Zimmer warns, "patrons could potentially be required to create user accounts, engage in activities that divulge personal interests and intellectual activities, be subject to tracking and logging of library activities, and risk having various activities and personal details linked to their library patron account." [27]

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[24] Sean Gallagher, *Adobe's e-book Reader Sends Your Reading Logs Back to Adobe-In Plain Text*, ARSTECHNICA (Oct. 7, 2014), http://arstechnica.com/security/2014/10/adobes-e-book-reader-sends-your-reading-logs-back-to-adobe-in-plain-text/ [https://perma.cc/ZJN7-K4SJ].

[25] *Id.*

[26] *See* Michael Casey, *Working Towards a Definition of Library 2.0*, LIBRARYCRUNCH (Oct. 21, 2005), http://www.librarycrunch.com/2005/10/working_towards_a_definition_0.html [https://perma.cc/B5GA-HB8A]; *see* Michael Zimmer, *Assessing the Treatment of Patron Privacy in Library 2.0 Literature*, 32 INFO. TECH. & LIBR. 29, 30 (2013), http://ejournals.bc.edu/ojs/index.php/ital/article/view/3420/pdf[https://perma.cc/FR2 A-83VE].

[27] *Id.* at 31.

As libraries continue to experiment with software that can augment patrons' library experience, each new service will add to the vulnerability of patron data to a variety of threats from government, commercial, or "rogue" actors. Moreover, what might appear—thanks to an ILS—to be a seamless experience on the part of the patron is, in reality, a patchwork of third-party services, each with its own terms of service that dictate the collection, use, and sharing of patron data. Libraries are increasingly under pressure to manage expectations of patrons who think they're coming to an institution with an historical professional commitment to patron privacy, but are really utilizing third party services that may or may not hold the same values, or be motivated by the same incentives for keeping patron data confidential. Thus, the library's role as not just provider but also consumer passes consumer privacy vulnerabilities on to library patrons.

III. PRIVACY PRACTICES AND KNOWLEDGE FAILURES

The two-sided evolution described above presents a picture of libraries as complex environments. Within these environments, libraries generate new kinds of patron data in their roles as digital providers, and contract services with third-party vendors who, in turn, generate new kinds of data about patrons. In this context, the institutional practice of defending privacy arguably also grows more complex: the number and types of threats to patron data multiply with each digital offering or piece of digital infrastructure made available in the library setting. At risk of being spied on, targeted, or victimized through the unfair or illegal use of data, patrons face a range of government, commercial, and "rogue" threats at various points in their digital library experience. How might librarians themselves be aware of the nature or consequences of complex data environments? And what does this imply for the ability of library professionals to uphold their profession's longstanding commitment to patron privacy?

Empirical data from two separate surveys of library professionals in the New York metropolitan area provide some answers to these questions. The surveys, which were designed to ascertain what library professionals know, think, and feel about a variety of digital privacy topics, drew insights from prior consumer privacy surveys that tested consumer opinion and knowledge of digital privacy, including

technical and legal details shaping privacy protections.[28] In light of the history of libraries' professional ethics, the two-sided digital evolution of libraries, and literature demonstrating gaps in consumer privacy knowledge, it was expected that these surveys would show library professionals' high commitment to privacy alongside knowledge gaps. Before these results are presented, a brief portrait of the Brooklyn Public Library, and the training program that provided occasion for empirical study, is in order.

A. *Brooklyn Public Library: Background and Context*

Brooklyn Public Library (BPL) is the fifth largest major public library system in the nation. It features sixty neighborhood branches, provides access to more than 1,100 Internet-accessible computers, is one of the nation's most popular public library systems, and serves 2.5 million residents, one of the most linguistically heterogeneous populations in the nation (Brooklyn Public Library, 2016).[29] Like many public libraries across the country, BPL faces considerable budgetary constraints: before the financial crisis, it operated on an annual budget of seventy-two million dollars; in 2015, the budget had shrunk to sixty million dollars.[30] Despite this contraction, BPL remains an anchor in the community, operating a total of forty-five hours a week,[31] and adding more staff to its ranks.[32]

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[28] *See* Chris Jay Hoofnagle et al., *How Different are Young Adults from Older Adults When it Comes to Information Privacy Attitudes & Policies?*, ANNENBERG PUB. POL'Y CTR. 1, 17 (2010), http://repository.upenn.edu/cgi/viewcontent.cgi?article=1413&context=asc_papers [https://perma.cc/23YM-D4K6]; *see also* Joseph Turow et al., *Open to Exploitation*, ANNENBERG PUB. POL'Y CTR. 1, 20 (2005), http://repository.upenn.edu/cgi/viewcontent.cgi?article=1035&context=asc_papers [https://perma.cc/HT69-WAT6]; *see also* Turow et al., *supra* note 13.

[29] *About BPL*, BROOKLYN PUB. LIBR., http://www.brooklynpubliclibrary.org/about [https://perma.cc/DS5H-SR2L].

[30] Tatiana Schlossberg, *Libraries in Brooklyn Add Hours and Staff*, N.Y. TIMES (Sept. 7, 2014), http://www.nytimes.com/2014/09/08/nyregion/libraries-in-brooklyn-add-hours-and-staff.html?_r=2 [https://perma.cc/4YSB-Y5QP].

[31] *Id.*

[32] Winnie Hu, *Adding Classes and Content, Resurgent Libraries Turn a Whisper Into a Roar*, N.Y. TIMES (July 4, 2016), http://www.nytimes.com/2016/07/05/nyregion/resurgent-new-york-city-libraries.html?_r=0 [https://perma.cc/AH3C-99TN].

The library's role as a digital access provider is impressive. It serves as a vibrant third space where community members can meet and access computers and the Internet.[33] In 2014, the library reported more than 2.1 million sessions on public terminals and more than 400,000 connections to public Wi-Fi.[34] Though patrons come from a variety of sociodemographic backgrounds, BPL takes pride in serving the digital needs of the borough's most vulnerable groups, including low literate, unemployed, incarcerated, English-as-a-second-language, poor and working poor, and homeless populations.[35] Overall, it offers more than 4,000 technology classes serving an estimated 22,000 patrons, covering topics such as computer basics and introductions to email and the Internet.[36] It serves thousands more who come to use public computer terminals or access public Wi-Fi to meet basic needs,

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[33] Becker, et al., *supra* note 6, at iv; Hu, *supra* note 32.

[34] *Library Systems: FY 2014 Public Libraries Survey*, INST. OF MUSEUM AND LIBR. SERV. (2014), https://data.imls.gov/Public-Libraries-Survey/Library-Systems-FY-2014-Public-Libraries-Survey-Ad/ckgu-babp [https://perma.cc/TG6D-M728].

[35] *See* Melissa Morrone & Shanelle Witt, *Digital Inclusion, Learning, and Access at the Public Library*, 19 URBAN LIBRARY J. 1, 5 (2013) http://academicworks.cuny.edu/ulj/vol19/iss1/8/ [https://perma.cc/8TRZ-4GJ7]; Eva Raison & Sandra Sajonas, *Selecting Success: Disconnected Youth's Reading Choices*, 16 URBAN LIBR. J. 1, 1-4 (2010), http://academicworks.cuny.edu/ulj/vol16/iss1/2/ [https://perma.cc/6MGF-6LZV]; *see also Brooklyn Public Library announces programs to provide immigrants greater access to free citizenship, legal services*, BROOKLYN DAILY EAGLE (Oct. 29, 2014), http://www.brooklyneagle.com/articles/2014/10/29/brooklyn-public-library-announces-programs-provide-immigrants-greater-access [https://perma.cc/9JJ4-W4F9]; Mary Frost, *Free wi-fi hotspots coming for disadvantaged NYC school students,* BROOKLYN DAILY EAGLE (Sept. 29, 2016), http://www.brooklyneagle.com/articles/2016/9/29/free-wi-fi-hotspots-coming-disadvantaged-nyc-school-students [https://perma.cc/HQ3S-9D8W]; *Brooklyn Public Library Expands Multilingual, Citizenship and Interpretation Services*, BROOKLYN READER (Oct. 28, 2015), http://www.bkreader.com/2015/10/brooklyn-public-library-expands-multilingual-citizenship-and-interpretation-services/ [https://perma.cc/UP63-S3LR]; ; Linda E. Johnson, *Modern Public Libraries Can Help Bridge the Digital Divide*, NEXT CITY (May 27, 2016), https://nextcity.org/daily/entry/brooklyn-public-libraries-bridge-digital-divide [https://perma.cc/LG6E-ZFCZ]; Jen Kinney, *Brooklyn Public Library Extends Welcome Bridge to Prison*, NEXT CITY (Aug. 17, 2016), https://nextcity.org/daily/entry/brooklyn-public-library-video-visitation-prison [https://perma.cc/8GS3-W4T2]; *Start Here Strategic Plan*, BROOKLYN PUB. LIBR. 10-11, 34, 36 (Jan. 11, 2013), http://www.bklynlibrary.org/sites/default/files/files/pdf/about/strategic-plan-brand/strategic_plan.pdf [https://perma.cc/DT65-AJ9B]; Jeffrey Tanenhaus, *It's a New Era for Libraries…And Brooklyn Is Leading the Way*, ZIPTOPIA (2015), http://www.zipcar.com/ziptopia/our-stories/a-new-era-for-libraries-brooklyn-public-library [https://perma.cc/638F-6XYX].

[36] Digital Privacy & Data Literacy [Project Proposal to the Institute of Museum and Library Services], Brooklyn Public Library, page 1 (2014).

such as completing a job application online or renewing unemployment benefits.[37]

In its role as a digital dependent, BPL offers a diversity of digital resources. It relies on an integrated library system, which as described above, links patrons to additional services provided in-house as well as externally. The ILS connects patrons, for example, from the library's home page to an external online public access catalog, which is tailored for Brooklyn Public Library and serviced by Bibliocommons, a company that develops interactive catalogs and web services for libraries. BPL also links to 184 database resources, approximately half of which require patron ID and password authentication, and more than a tenth of which must be accessed at the main branch of the library system.[38] These resources include electronic and magazine databases, access to which is run by an outside vendor, Serials Solutions. BPL additionally offers access to electronic books through two primary providers, Overdrive and 3M, both of which require patron authentication. Its Library 2.0 services include 24/7 chat access to librarians, which is run by Question Point (an OCLC service), as well as BookMatch, which creates a customized list of five titles for patrons based on reader histories.[39] A quick scan of the ten largest public library systems suggests that these libraries' digital resources are similar in scope and nature.

In recent years, BPL has become increasingly interested in digital privacy. It has offered a number of public programs, such as lectures and workshops where patrons can learn about a variety of topics, such as digital security software or government surveillance. For example, between May 2014 and January 2016, it hosted eight hands-on public workshops on privacy and security topics, such as "Emerging Issues in Cybersecurity, Professional Ethics and Technology: Tools for Today" and "CryptoParty: Secure Messaging Apps Edition."[40] In 2015, it

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[37] *Start Here Strategic Plan*, *supra* note 35.

[38] *See Articles & Databases*, BROOKLYN PUB. LIBR., http://www.bklynlibrary.org/articles-databases [https://perma.cc/F573-MYFX].

[39] From its website, the library points to company-specific urls, such as Bibliocommons, Serial Solutions, Overdrive, 3M, Question Point, and scores of other databases. For example, patrons who click on "Library Catalog" from the home page will link to Bibliocommons directly. *See Library Catalog*, BROOKLYN PUB. LIBR., https://brooklyn.bibliocommons.com [https://perma.cc/9JS6-APGW].

[40] *See generally* BROOKLYN PUB. LIBR., http://www.bklynlibrary.org [https://perma.cc/H5PT-2P87]; *BPLvideos,* YOUTUBE, https://www.youtube.com/user/BPLvideos [https://perma.cc/N37N-GTE5].

launched the abovementioned digital privacy and data literacy training program, which grew in part from a qualitative study of digital inclusion efforts and digital privacy concerns among marginal Internet users or new Internet users who come from underserved, marginalized communities.[41] Apart from discoveries of persistent anxieties among marginal users, the study also found that, in focus groups, staff members expressed anxiety about their knowledge gaps about privacy and the Internet and the repercussions that gap could have for patrons in need of digital literacy skills and access to the Internet. Subsequently, BPL found funding from the Institute of Museum and Library Services to implement the Digital Privacy and Data Literacy Project (DPDL), a professional training program that targets librarians and technology resource specialists[42] with skills and know-how about digital privacy and the library.[43]

B. *Survey Results*

In order to establish a baseline of knowledge and values among training participants, the author administered two surveys in advance of digital privacy and data literacy trainings offered to BPL professionals.[44] The trainings were advertised several months in advance to the entire staff at the library, and staff members were invited to complete the first survey about digital privacy. This survey asked respondents about their views of digital privacy as well as their knowledge of both common privacy threats and protections. Nearly 250 individuals—professionals of various backgrounds from across an institution that employed approximately 800 individuals (according to 2014 data)—completed the survey.[45]

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[41] Gangadharan, *supra* note 11.

[42] Technology resource specialists are non-librarians who assist patrons in their digital technology needs and teach digital literacy classes.

[43] *See BPL Focuses on Digital Privacy with IMLS Laura Bush 21st Century Librarian Grant*, BROOKLYN PUB. LIBR. (May 18, 2015), http://www.bklynlibrary.org/media/press/bpl-focuses-digital-priva-0 [https://perma.cc/3QZD-7TYV].

[44] *Id.*

[45] *Library Systems: FY 2014 Public Libraries Survey*, *supra* note 34.

The second, shorter survey took place immediately prior to the trainings and captured input from trainees, mainly consisting of librarians and technology resource specialists, both of which interact with patrons on a day-to-day basis. The questions aimed to ascertain respondents' core concerns as well as common habits with respect to digital privacy. Again, approximately 250 professionals completed the questionnaires. Responses from surveys were either tabulated or thematically coded, in the case of open-ended answers. Thematic coding followed an iterative process, allowing categories of values and practices to surface in a ground-up manner, rather than being grouped with a pre-established set of themes.[46]

The results of both surveys cast a sobering light on the state of privacy literacy among library professionals. Unsurprisingly, professional norms of privacy run high among library staff. Not only do staff members feel that the library should take technical measures to support staff, but they also see a role for the library in educating patrons about privacy. As detailed in Figure 1 below, ninety-one percent of respondents agreed or strongly agreed that the library should install software to protect the privacy of its patrons, and eighty-seven percent agreed or strongly agreed that the library should educate patrons about privacy. As for respondents' estimation of how well it thinks the library is protecting privacy, seventy-six percent agreed or strongly agreed that the library was doing as much.

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[46] RICHARD E. BOYATZIS, TRANSFORMING QUALITATIVE INFORMATION: THEMATIC ANALYSIS AND CODE DEVELOPMENT 30 (1998).
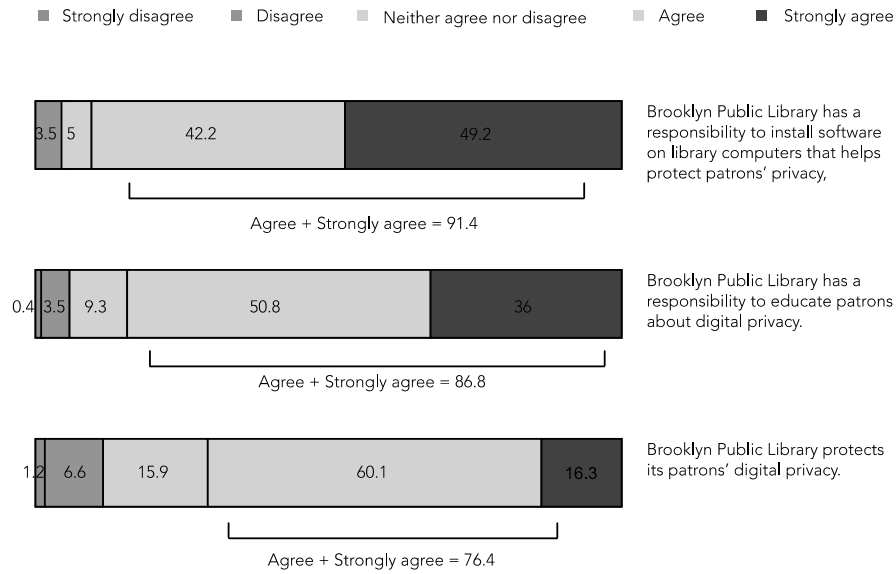
Figure 1. Percentage of Agreement Among Library Staff Regarding Statements on Patron Privacy Protections

However, survey results demonstrate a noticeable gap between professional norms and professional practices. A handful of questions from the same survey asked respondents to flex their knowledge about a range of digital privacy-related issues. A little more than half answered the questions correctly. These questions, which covered anonymity, digital security, privacy policies, and digital tracking, drew the most right answers in relation to the lack of anonymity on library Wi-Fi (more than two-thirds of respondents) and the fewest right answers in relation to consumer privacy policies and data sharing between companies (nearly forty percent of respondents).

Table 1. Knowledge Items with Correct Answers and Survey
Percentage Correct Among Library Staff (N=258)

Knowledge Items on Collecting and Disclosing Personal Data	Correct Response	Percent Correct
Using public library Wi-Fi means your behavior is anonymous.	FALSE	69.4
It is safe to use the same password for multiple user accounts, as long as it contains a few different letters, numbers, or symbols.	FALSE	61.6
The privacy policy for Brooklyn Public Library's Wi-Fi lets patrons know the network is not secure and that information sent to and from their laptops can be captured by others using a wireless device and appropriate software.	TRUE	53.9
It is possible for Facebook to link what people do when they access the Internet on a public library terminal with what they do on their cell phones' or tablets' apps.	TRUE	46.1
An "https" in the browser's address bar means that your communications with a website are encrypted.	TRUE	46.1
When a website has a privacy policy, it means the site will not share my information with other websites and companies without my permission.	FALSE	41.5

The intake survey—the second survey that library staff took before participating in their first training workshop—yielded additional insights into professional norms and practices. Survey respondents were consumer focused, indicated by the scope of privacy concerns revealed in open-ended answers. The majority (fifty-three percent) of concerns expressed by staff had to do with insecurity or accessibility of personal information and illicit uses of digital data. Government or commercial surveillance accounted for four and six percent of privacy concerns, and issues related the library's information and privacy policies and

practices—or, "library surveillance"—amounted to four percent of concerns. Library staff also frequently and explicitly referred to hackers and identity theft in their mentions of illicit use of, unsecured or easy-to-access digital data, with twelve and forty-two mentions (respectively), thirty of which discuss both in a single answer. That accounts for nearly seventeen percent of all expressions of concern.

Additional concerns reflect broad interests in digital technologies, wrong or ill-informed user behavior, and their impacts. For example, the second most prominent set of worries (nineteen percent) focused on the nature and state of privacy, with library staff waxing in broad terms about the rapid pace of technological change, its impact on the ability of individuals to exert control over the flow of personal data, and the permanence of digital data (e.g., "can't be deleted"). The third prominent set of anxieties—which accounts for eleven percent of concerns—had to do with anxieties that users have about themselves or people they know (typically patrons) and whether they are failing to or lack the knowledge to protect their privacy.

Table 2. Library Staff Responses: What Concerns You Most about Digital Privacy? (N=318)

Types of Concerns	%	n
Illicit access, use of personal information; insecurity and accessibility of digital data	52.5	167
Identity theft	*12.6*	*42*
Hackers	*3.8*	*12*
State/nature of privacy in digital era	18.6	59
User knowledge or practices	11	35
Commercial surveillance, tracking, targeting	6.3	20
Library information and privacy policies and practices	4.1	13
Government surveillance	3.5	11
Other concern	2.2	7
Unconcerned	1.9	6

When asked about privacy-protecting behavior online, nearly all respondents indicated some type of measure or practice to enhance digital privacy, with only a very small number of respondents (approximately two percent) reporting doing nothing at all. The vast majority of reported privacy-protecting behavior was self-referential, while eleven percent of reported behaviors focused on respondents helping others, such as advising patrons to be mindful about passwords or think twice about shopping on a public terminal. The remainder of protections—totaling approximately five percent—included efforts to make use of library policies or practices and miscellaneous efforts referred to both generalities.

Table 3. Library Staff Responses: Name One Thing You're Doing to Protect Digital Privacy. (N=256)

Steps for Protecting Privacy	%	n
Take steps for myself	81.6	209
Help others protect their privacy online	11.3	29
Make, use, or inform library policies or practices related to privacy protection	3.9	10
Do nothing or very little to protect privacy	2.3	6
Other steps	.8	2

Finally, those respondents who indicated that they are taking steps to protect themselves described a range of practices they have adopted. These are both general in nature, such as "staying aware" or "keeping informed" of matters related to digital privacy, as well as more detailed. For example, about a quarter of the total number of steps taken included opting out of particular activities, including not using smart phones or public Wi-Fi, not joining Facebook or deleting one's Facebook account, and not banking or shopping online. Password "hygiene" or taking steps such as changing passwords frequently, creating difficult passwords, or not storing them on shared computers, was also commonly self-reported and comprised nearly twenty-seven percent of examples of privacy self-protection or self-care. The most frequently mentioned step was use of particular types of software to enhance anonymity or adapting software settings to enhance user privacy, such as keeping social media accounts private,

deleting cookies, or using private browsing mode in order be less tracked by websites and third parties.

Table 4. Detail of Library Staff Responses "Take Steps to Protect Myself" (N=209)

Types of Steps	%	n
General steps	18.2	38
Opting out	24.4	51
Password "hygiene"	26.8	56
Software use or adaptation	30.6	64

IV. MAKING SENSE OF LIBRARY PROFESSIONALS' KNOWLEDGE GAPS

For more than a decade, some of the library profession's biggest battles in the domain of digital privacy have centered on defeating government surveillance. The Patriot Act's Section 215—originally known as the "library provision"—galvanized a prominent flank in the library community to push back and defend reader privacy.[47] More recently, in the wake of the revelations of Edward Snowden and during reform efforts of the Patriot Act, librarians again took the spotlight, as they publicized their efforts to resist government intrusions and to position libraries as steadfast defenders of patron privacy.[48] Actions like these contribute to public understanding of

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[47] *See* Elliott, *supra* note 9; *see also* April Glaser, *Long Before Snowden, Librarians were Anti-Surveillance Heroes*, SLATE: FUTURE TENSE (June 3, 2015), http://www.slate.com/blogs/future_tense/2015/06/03/usa_freedom_act_before_snowden_librarians_were_the_anti_surveillance_heroes.html [https://perma.cc/BZ8M-YMQW].

[48] *See* Alison Cowan, *Four Librarians Finally Break Silence in Records Case*, N.Y. TIMES (May 31, 2006), http://www.nytimes.com/2006/05/31/nyregion/31library.html [https://perma.cc/7DB2-DYQ9]; *see also* Alison Macrina & April Glaser, *Radical Librarianship: How Ninja Librarians Are Ensuring Patrons' Electronic Privacy*, BOINGBOING (Sept. 13, 2014), http://boingboing.net/2014/09/13/radical-librarianship-how-nin.html [https://perma.cc/7B5D-C5CE]; *see also* Alison Macrina & Nima Fatemi, *Library Freedom Project*, TOR PROJECT (July 28, 2015), https://blog.torproject.org/category/tags/library-freedom-project [https://perma.cc/G3PP-223B].

libraries as democratic institutions that are well positioned to "lead the fight in protecting... essential civil liberties." [49]

Between the time of experiencing and confronting "surveillance in the stacks"[50] to that of fighting and eventually partially reforming the Patriot Act,[51] libraries have undergone a mundane transformation that puts them in a unique and challenging position. As digital providers and consumers of third party digital services, libraries now serve as a gateway to the commercial web—with its own morass of consumer privacy issues, and varied types of data collection and management processes tied to providing computer and Internet access. In other words, library professionals practice their trade in a setting where risks to patron privacy far exceed those of the pre-digital era, when government attempted to access patrons' circulation records, or those of a pre-web era when libraries innovated, managed, or controlled their digital assets. Threats to patron privacy have become far more complex.

In this sense, the portrait of library staff presented here may not be surprising given their knotty institutional context. Survey respondents described above articulated faith in their library system to defend patron privacy and expressed a desire that the library adopt additional measures to ensure patron privacy. But they also expressed anxiety about the accessibility, insecurity, or illicit use of personal data, and they worried about digital technologies making it difficult to control personal data flows. These responses put them on a similar plane as ordinary consumers who have expressed concern about loss of control and insecurity of data flows.[52]

In addition, library professionals struggled with basic knowledge regarding digital privacy. As seen in other research on consumer

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[49] LJ, *Alison Macrina | Movers & Shakers 2015 – Advocates*, LIBRARY JOURNAL (Mar. 18, 2015), http://lj.libraryjournal.com/2015/03/people/movers-shakers-2015/alison-macrina-movers-shakers-2015-advocates/ [https://perma.cc/9RCL-B2HA].

[50] HERBERT N. FOERSTEL, SURVEILLANCE IN THE STACKS: THE FBI'S LIBRARY AWARENESS PROGRAM (1991).

[51] *See* Egelko, *supra* note 9; *see also* Adam Eisgrau, *You Did It! USA Freedom On Its Way to the President's Desk*, DISTRICT DISPATCH: PRIVACY & SURVEILLANCE (June 2, 2015), http://www.districtdispatch.org/2015/06/you-did-it-usa-freedom-on-its-way-to-the-presidents-desk/ [https://perma.cc/6SLG-2VUW].

[52] *See generally* Lee Rainie & Maeve Duggan, *Privacy and Information Sharing*, PEW RES. CTR. (Jan. 14, 2016), http://www.pewinternet.org/files/2016/01/PI_2016.01.14_Privacy-and-Info-Sharing_FINAL.pdf [https://perma.cc/YHL2-E2TH].

privacy, knowledge gaps are common among ordinary users,[53] stemming in part from the asymmetries between what companies know about users and do with their data (more) and what users know about companies' data collection and use practices (less).[54] Library professionals' knowledge failures are suggestive of challenges described in ordinary consumer contexts in which "people's lack of knowledge leaves them vulnerable to giving up their information every day."[55] All in all, library professionals may be more similar to ordinary consumers than previously thought, and library institutions at least as complex and confusing as the commercial web environment that ordinary users confront.[56]

These gaps give reason for pause: members of the public expect libraries will provide them privacy advice and protection, but the complex institution of the modern library no longer provides such things. According to a recent survey, seventy-six percent of individuals (ages 16 and above) said libraries should definitely "offer programs to teach patrons about protecting their privacy and security online."[57] Though not every library professional at BPL that participated in the surveys or in the digital privacy and data literacy workshops would teach such a class, they are likely to field questions from patrons in their day-to-day dealings with patrons on the library floor.[58] Not

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[53] *See* McDonald et al., *supra* note 13; *see also* Joseph Turow, *Americans & Online Privacy: The System is Broken*, ANNENBERG PUB. POL'Y CTR. (June 2003), http://www.annenbergpublicpolicycenter.org/Downloads/Information_And_Society/200 30701_America_and_Online_Privacy/20030701_online_privacy_report.pdf [https://perma.cc/P7N3-FMHS]; *see also* Turow et al., *supra* note 28; *see also*Turow et al., *supra* note 13.

[54] Ian Brown, *The Economics of Privacy, Data Protection and Surveillance*, SOCIAL SCIENCE RESEARCH NETWORK (July 11, 2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2358392 [https://perma.cc/TUC8-GY9Y]; *see* Acquisti et al., *supra* note 12.

[55]Turow et al., *supra* note 13, at 8.

[56] Rainie & Duggan, *supra* note 52.

[57] John Horrigan, *Libraries at the Crossroads*, PEW RES. CTR. (Sept. 15, 2015), http://www.pewinternet.org/files/2015/09/2015-09-15_libraries_FINAL.pdf [https://perma.cc/N6GH-VGG4].

[58] Seeta Peña Gangadharan, *Joining the Surveillance Society? New Internet Users in an Age of Tracking*, NEW AMERICA FOUNDATION 10-12 (Sept. 2013), http://web.archive.org/web/20140312042501/http://newamerica.net/sites/newamerica.n et/files/policydocs/JoiningtheSurveillanceSociety_1.pdf [https://perma.cc/ZF6M-AK7S].

having right or ready answers for knowledge questions such as those posed in the two surveys will have an impact on patrons, potentially weakening patrons' ability to protect the flow of their data to and through the library.

Of course, this cause for concern can also be viewed as an opportunity. The knowledge gaps described do provide clear justification for educating staff: if libraries wish to uphold the profession's longstanding commitment to privacy, then they will need to find ways to help their staff members understand and anticipate the problems of libraries' complex data-rich environments. That is, professional trainings will likely be most effective with an expectation of the steep curve that many professionals face when learning about data flows and their protection in the complex data-based environments that make up libraries today. There are also practical constraints to consider and anticipate, such as the limitations of teaching and learning in one-off or short-term courses as well as general budgetary limitations that might prevent library professionals from receiving ongoing training. [59]

V. CONCLUSION

The computerization of libraries—both as Internet providers and as digital consumers linking patrons to third-party services—has profoundly challenged the profession's ethical commitments to privacy. It will continue to do so as the profession and institution continue to evolve. These technical and institutional pressures suggest the need for a multi-sided approach to defending patron privacy.

To this end, Lessig's rubric of code, laws, markets, and norms provides useful guidance.[60] The influence of professional librarian norms and practices on patron privacy will continue to be important. Professional development programs like BPL's Digital Privacy and

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[59] Alix Dunn & Christopher Wilson, *Training Digital Security Trainers: A Preliminary Review of Methods, Needs, and Challenges*, INTERNEWS CTR. FOR INNOVATION & LEARNING 1, 3 (2013), http://www.internews.org/sites/default/files/resources/InternewsWPDigitalSecurity_2013-11-29.pdf [https://perma.cc/2W62-X65J] (explaining in the context of global human rights advocacy and digital security trainings, evaluators have discovered a number of practical constraints of educational efforts, including a "lack of sustained support for digital security trainers after they receive training" which limits the potential impact of digital security trainings for intended populations).

[60] LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE, 88, (1999).

Data Literacy Project detailed above or the Library Freedom Project, which has been lauded elsewhere,[61] will help libraries defend patron privacy. Libraries will also need technologies that effectively obscure and secure patron data flows or, in other words, access to a marketplace that meets their demand for privacy-protecting enterprise and end-user software. Moreover, libraries will require legal protections that safeguard patron data and thrive on legal advocacy that targets not only library-specific laws for reader confidentiality, but also digital privacy and cyber security practices, government surveillance, and consumer privacy laws that affect patrons broadly, as citizens and consumers. Just as significantly, self-regulatory decisions that affect libraries' information technology infrastructures and data governance policies will also critically support library professionals' ability to live up to their privacy ethic. Without this, the distance between privacy-protecting values and practices will grow, eroding the legacy of libraries as privacy-defending institutions.

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[61] B.J. Ard, *Librarians as Privacy Advocates*, 13 J.L. & POL'Y FOR INFO. SOC. 1 (forthcoming 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2812703 [https://perma.cc/U4XZ-JRHE].