

Bethany D. Greene. An Investigation of Perpetual Access Rights to Electronic Resources at The University of North Carolina at Chapel Hill. A Master's paper for the M.S. in L.S. degree. April, 2017. 37 pages. Advisor: Christine Stachowicz

This is an investigation of perpetual access rights and archival provisions for licensed electronic resources at The University of North Carolina at Chapel Hill. Perpetual access refers to post-cancellation access to e-resources. Archival provisions specify the format of perpetual access to these resources. E-resources, including e-journals and databases, make up the majority of many libraries' collections budgets. Tightening budgets may force librarians to make the difficult decision to cancel large e-journal packages or other subscribed resources. Negotiating strong perpetual access clauses into license agreements ensures continued access to these resources. In addition, provider participation in third-party archiving services allows for long-term preservation and access. This investigation examines the state of perpetual access and archival provisions for licensed e-resources at UNC-Chapel Hill.

Headings:

Academic libraries

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AN INVESTIGATION OF PERPETUAL ACCESS RIGHTS TO ELECTRONIC
RESOURCES AT THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

by
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Introduction

This project is a perpetual access investigation of licensed e-resources -- namely e-journal packages -- at The University of North Carolina at Chapel Hill. The aims of this project are to investigate perpetual access arrangements per the license records in the University Library's electronic resources management system (ERM), through analysis of the University Library's knowledgebase, SerialsSolutions, and the Keepers Registry in order to obtain data about archival provisions for e-journals and participation in third-party archiving services. This data can be obtained through investigation of packages licensed by the University. Hundreds or thousands of unique journal titles may be included in each package. Information about perpetual access arrangements and the form of post-cancellation access can be obtained through analysis of the individual license records in the ERM, in which these arrangements are reflected via fixed field coding.

For purposes of this investigation, perpetual access refers to post-cancellation access to e-journal content -- access to content published during the subscription term, which will persist beyond cancellation of the subscription. Perpetual access is a standard phrase used in many academic libraries' license agreements for e-resources. The form of post-cancellation access is often indicated in the archival provisions language in the license agreement. Such provisions are not always explicitly stated in the license, causing confusion about how exactly post-cancellation access will be provided. One form of post-cancellation access discussed at length in this investigation is through third-party archiving agencies.

This investigation is important because, as the University Library moves away from traditional print resources, long-term access to e-journals can be threatened. It is important for librarians to track publisher or vendor participation in third-party archives, as described in the license agreement, in order to hold publishers or vendors accountable. Literature suggests that as libraries shift from print to electronic access, librarians should be more vigilant about asking for perpetual access rights and for ensuring that publishers can, indeed, provide ongoing access to the materials, particularly after a subscription is canceled. In addition, librarians should advocate for license agreements that are clearer about perpetual access rights and archival provisions, as well as encourage publishers to participate in third-party archiving services that preserve e-journal content.

Literature Review

The literature asserts that librarians are responsible for the preservation of scholarly materials and collections (Mering, 2015; Beh & Smith, 2012). As more librarians choose electronic access for journals over print, the access and preservation of these materials becomes more complex. While a library owns the print journals received on subscription, perpetual access rights can only ensure post-cancellation access to subscribed e-journal content. Calvert (2013) notes that, “While the inclusion of perpetual access rights in license agreements has become more standard, it is not universal” (p.69). Much has been written on the move from print to electronic journals, securing rights for post-cancellation access, and the digital preservation of these materials through archiving agencies.

Defining perpetual access

A perpetual access right, as defined by the Digital Library Federation Electronic Resource Management Initiative, is “the right to permanently retain an electronic copy of the licensed materials” (Riggio et al., 2004). Stemper and Barribeau (2006) note that a perpetual access right is different than an archiving right. Perpetual access ensures that access will continue beyond a subscription term, while archival provisions describe the manner in which libraries can preserve copies of leased material. Zhang and Eschenfelder (2014) state that perpetual access is a right granted through a contract, while “digital preservation ensures that the electronic materials, regardless of access rights, stay usable”

(p.63). That is why the relationship between perpetual access and archival provisions is important to ensuring post-cancellation access for libraries. Bullock (2014) addresses different ways in which publishers describe perpetual access in license agreements. Some license agreements state that the licensee will be granted perpetual access, but do not explain in what manner. Bullock also noted that over half of the surveyed librarians preferred a third-party archiving service over having the licensed content hosted on the library server or at the publisher's site.

Securing perpetual access rights

Surveys and other research illustrate both that librarians recognize the importance of securing perpetual access for electronic journals, and that negotiated license terms are often ambiguous and unclear (Glasser, 2014; Bullock, 2014). The variety of options available for securing perpetual access furthers complicates the matter. Bullock found that most librarians, if they tracked perpetual access provisions at all, preferred an archiving service such as LOCKSS (Lots of Copies Keep Stuff Safe) or Portico to provide the content if the publisher was no longer able to host it on its site. The majority of librarians surveyed preferred not to host the content on the library server, known as self-archiving. Bullock also noted that respondents expressed feeling “overwhelmed or frustrated by their attempts to track perpetual access” (p.101). In a later article, the author presents a case for tracking perpetual access. In addition to providing information on the different tracking systems available, Bullock (2015) proposes scenarios in which these systems would work.

Glasser (2014) observes that the “vagueness in the language of perpetual access license clauses has caused skepticism regarding publishers’ ability to provide perpetual access” (p.145). The author posits that standardization of language would alleviate the

challenge of confirming perpetual access. In addition to navigating ambiguous terminology, libraries are often required to initiate requests for the post-cancellation access to which they are entitled. Calvert (2013) noted that a library was surprised to discover that it needed to request that a publisher enable post-cancellation access, having assumed from the license agreement that it would be automatic. Other struggles include communicating with publishers to better understand the type of access libraries have to the content, and determining whether tracking perpetual access rights is worth the effort. Tokoro and Olivier's (2012) report on a discussion by two electronic resources librarians provides useful information about the current state of perpetual access in the field. The librarians investigated perpetual access rights for a few of their larger e-journal collections, noting the variety of information they now inquire after -- including the format in which access would be provided, related costs, and availability of archiving services. The librarians concluded that while tracking perpetual access remains difficult and sometimes unmanageable, the process is worthwhile.

Researchers have called for librarians to be more assertive in ensuring that their libraries retain perpetual access rights for their resources, and have illustrated ways in which these rights can be secured. Luther et al. (2010) address the issue of who should be responsible for tracking perpetual access. The authors note that traditional libraries of record tend to be more concerned with perpetual access than other libraries. Rick Anderson, for The Scholarly Kitchen (2012), defines a library of record as "A library, typically funded by a large university or in some cases by a large municipality, with a broadly inclusive and relatively stable circulating collection" (para. 7). Carr (2011) examines academic research libraries' commitment to securing perpetual access. The

majority of surveyed librarians indicated that perpetual access was important and valuable. The surveyed librarians preferred that the content be hosted on a web platform free of charge, or by a third-party archive. Of particular interest was the finding that many respondents “predicted that budgetary factors will force their libraries to downgrade subscribed journal access to subscription levels with decreased perpetual access provisions” (p. 10). Stemper and Barribeau concluded that librarians must communicate with content providers and peers in order to create “robust license language and stable options and procedures for perpetual access to subscribed material” (p.103). The researchers also noted that the more institutions inquired about perpetual access rights, the more successful others would be in securing them.

E-journal preservation and archival provisions

Shannon Regan’s 2015 NASIG presentation entitled “Strategies for Expanding eJournal Preservation” partly inspired this investigation at UNC-Chapel Hill. She discussed the efforts by Columbia and Cornell University Libraries to understand which of their journals were not preserved, why, and how they could change that. Regan noted that establishing perpetual access was not a goal of her project. The emphasis was on archival access to, or preservation of, the e-journals. In the article documenting her presentation (2016), “Preservation or archival rights ensure access to content in an event wherein the only remaining point of access is the archival copy. Preservation rights guarantee that libraries have the ability to exercise its [sic] perpetual access rights” (p.91).

The development of third-party archives has assisted in the digital preservation of these materials. Founded in 2006, CLOCKSS (Controlled LOCKSS) is a dark archive

whose aim “is to protect the digital content from any degradation that can occur when there is constant access to the content” (Kiefer, 2015, p. 92). The Keepers Registry is “an international initiative to monitor the extent of e-journal archiving” (Burnhill, 2013, p.3). This service keeps tracks of which agency archives what content. Participants include the British Library, Portico, LOCKSS, CLOCKSS, and the Library of Congress, among others. The Keepers Registry also aims to highlight e-journals that are “at risk of loss” (Mallery, 2016, p.101). In her investigation of the service, Mallery discovered just how little comprehensive archiving of e-journals has been done. Portico is one such service that works to permanently preserve e-journal content in an archive. Fenton (2008) discusses Portico in the context of the challenge of preserving e-journal content, and suggests that librarians should work to support the community-based archive. Mering (2015) investigates LOCKSS, CLOCKSS, Portico, CHORUS, and the Keepers Registry, and compares their efforts to improve e-journal preservation. Mering notes the collaborative efforts of libraries, publishers, and non-profit organizations in the establishment of these successful endeavors.

Jansen (2006) illustrates how perpetual access benefits libraries, publishers, and authors of content. While this seems to be a foregone conclusion, Jansen addresses the technical challenges of digital preservation that arise out of permanent access to e-journal content, such as migration or conversion of content and degradation of storage mediums. Cantara (2003) also addresses some of these concerns: “Long-term preservation of digital information on a scale adequate for the demands of future research and scholarship will require a deep infrastructure capable of supporting a distributed system of digital archives” (p.3). In addition, this digital archive infrastructure relies on the shared

participation of many organizations and stakeholders. Currently, “The format based, issue-centric focus remains the most popular model” (O’Donohue, 2005, p.49). In terms of the type of archive most preferred for digital preservation of e-journal content, Pool (2016) discusses the development of more short-term archiving options such as Arkivum, offering faster access than dark archives such as LOCKSS and Portico, for which long-term preservation is the primary focus, not access. Pool reiterates the challenges of preserving different file formats and the metadata surrounding digital content.

Licensing e-resources

Many, if not most, e-resources require license agreements. While the use of print material falls under copyright law, contract law dictates the use of online material, governing license agreements for the use and/or purchase of e-resources. Dygert and Langendorfer (2014) write, “In the electronic environment, libraries typically license or lease access to content” (p.290). They suggest strategies for librarians getting started in licensing, including developing a strong network of support and familiarizing themselves with licensing terms. Lamoureux, Chamberlain, and Bethel (2010) noted the importance and primacy of the end user in negotiating license agreements. While most licenses originate with the publisher or vendor, it is the job of the library to negotiate on behalf of its users and in accordance with institutional policy. Perpetual access should be included in the conversation, as something both important for the end user and desired by librarians. Regan’s 2015 article on licensing e-resources emphasizes the centrality of licensing in e-resource librarianship and notes the absence of license training in library school. In addition to identifying mentors and other knowledgeable figures on campus, she also encourages e-resources librarians to “educate to advocate” (p.321). She provides

the example of perpetual, or post-cancellation, access to e-journal content. Regan, hypothesizing that attorneys in many offices of university counsel may not be aware that negotiating for perpetual access in licenses is a best practice in libraries, states, “the ability to have an ERL [e-resources librarian] review the license agreement before the contract or counsel’s office gives the ERL the opportunity to educate administrators regarding the importance of a clause such as perpetual access” (p.322). In addition, establishing boilerplate language, or a licensing handbook, will assist the e-resources librarian in the process of becoming more familiar with license negotiations.

Librarians have long negotiated licensing terms, including perpetual access clauses, and much documentation exists to aid in the negotiation process. Chamberlain et al. (2010) document a panel discussion including both librarians and publishers who express difficulties with licensing these resources. The size of the publisher, specific library workflows, and the number of licenses being negotiated are some of the reasons that licensing work is believed to be cumbersome. Smith and Hartnett (2015) created a licensing checklist in order to streamline the licensing process. They also made completed license agreements available to all library personnel so that any questions about terms, access, and use could be more quickly and efficiently resolved. In addition to addressing the value of constructing workflows and strategies to successfully execute licenses, other literature discusses the importance of negotiation and provides librarians with tools and strategies for licensing. Dygert and Parang (2013) identify six areas in which negotiators should feel confident in order to be successful: “negotiating skills, the planning process, putting together a proposal, negotiating the deal, building a negotiation support system, and learning from past mistakes” (p.106). They emphasize listening to

the needs of the person or vendor you are working with and being understanding of the process. In a later article, Dygert and Van Rennes (2015) present a more detailed strategy for successfully negotiating a license agreement, in addition to providing a basic overview of what should be included in a license.

Methods

To identify relevant resources, a list of active licenses was pulled from the ERM module of the University's integrated library system, Millennium. It should be noted that "resources" refers to the way e-journal packages are identified in the ERM; each package has a resource record. For the purposes of this investigation, the terms "package" and "resource" are used interchangeably. The perpetual access and archival provisions fields were analyzed and compared with the executed license agreements on record, in the University Library's shared network drives and CONTENTdm, to ensure that the ERM data remained accurate. Since perpetual access at the vendor site is not a preferred method of continued access, resources for which continued access was offered solely at the vendor site were coded as having no archival provisions.

Next, a title list comparison from the Keepers Registry was requested, using holdings data from the University's knowledgebase, SerialsSolutions. According to its website, "The Keepers Registry acts as a global monitor on the archiving arrangements for electronic journals" ("About the Keepers Registry," n.d.) (See Appendix A). SerialsSolutions, a ProQuest product to which the University Library subscribes, provides e-resource access and management tools, including lists of the Library's e-journal and database holdings. The title list comparison identified whether there were matching agencies -- third-party archiving services -- for these resources, based on the knowledgebase holdings data. If the Keepers Registry title list comparison file indicated

different archiving arrangements than identified in the ERM, data in the ERM was updated accordingly. This involved re-coding fixed fields in the license records and adding perpetual access and archival provisions language excerpted from license agreements.

At this point, the spreadsheets were normalized and refined. This process included standardizing some of the data points, removing titles without ISSNs, and removing records from aggregators. Titles without ISSNs were removed because ISSN was used as a matching data point against the other spreadsheets. Also, these titles would not show up in the Keepers Registry, as the Keepers Registry searches titles by ISSN. Records from aggregators were removed because aggregators package content from multiple providers, and as such, are not responsible for preservation of the original content. This was also the point at which resources with continued access only at the vendor site were coded, in the *Licenses with perpetual access per the ERM* spreadsheet, as having no archival provisions. Also, the titles with blank “Archival provisions” fixed fields were checked against LOCKSS and Portico. If they were found to be archived by either service, both the spreadsheet and the ERM were updated accordingly.

In order to more closely and accurately analyze the data, the following data points, organized as Microsoft Excel spreadsheets, were incorporated into a Microsoft Access database:

- *Active resource records from the ERM*
- *Active license records from the ERM*
- *Keepers Registry title list comparison*
- *Licenses with perpetual access per the ERM*

- *Licenses without perpetual access per the ERM*
- *SerialsSolutions tracked databases*
- *SerialsSolutions tracked journals*
- *Worrisome*

The 49 providers, and the packages associated with those providers, on the *Worrisome* spreadsheet were selected based on their historically high usage by the UNC-Chapel Hill user community, multiple license agreements on record with the Library, and the assumption, based on previous licenses, that those providers should participate in third-party archiving services. Current agreements for some of those providers explicitly stated that they participated in specific third-party archiving services, others stated participation more generally without naming specific agencies, and others did not specify format at all.

Relationships were set up to connect the tables together in order to run queries (see Appendix B). Three specific questions were answered by querying the data. The data derived from the query results were converted into percentages.

Results & Discussion

Because of UNC-Chapel Hill's participation in these third-party archiving services, the following agencies were selected for the Keepers Registry to search:

- LOCKSS
- CLOCKSS
- Portico
- Library of Congress
- HathiTrust

Participation in many of them requires a long-term financial investment, which is why UNC-Chapel Hill was most concerned with checking participation with these particular agencies.

Query 1

The first query aimed to identify providers that offer perpetual access but do not preserve content in third-party archiving agencies, according to coding in active license records in the ERM. Specifically, this query was concerned with licenses offering perpetual access solely at the vendor site, with no backup mechanism in place.

Population: 2,247 licenses indicated in the ERM to have perpetual access (from *Licenses with perpetual access per the ERM* spreadsheet)

Query 1 data points (see Appendix C):

From *Licenses with perpetual access per the ERM*

- Archival provisions

From *Active resource records from the ERM*

- Resource record number
- Code (SerialsSolutions unique identifier, as recorded in the ERM)

From *SerialsSolutions tracked journals*

- Title

From *SerialsSolutions tracked databases*

- Database name

From *Active license records from the ERM*

- License record number

After the data points were queried, the “Archival provisions” column was filtered to include values of “No” and “Blank,” indicating that perpetual access was only at the vendor site, per University Library data entry procedures for this field in the ERM. This resulted in 333 out of the 2,247 licenses with perpetual access, or approximately 15%, as having no backup archival provisions outside of perpetual access at the vendor site. The 2,247 titles do not represent all of the titles associated with those licenses. Many of the licenses cover hundreds, some thousands, of journal titles.

Query 2

The second query was to identify titles associated with licenses for which perpetual access is only on hard drives or other media. Each package, or resource, encompasses multiple journal titles. Vendors and publishers negotiate licenses and archival provisions at the resource level, rather than for each individual journal title.

Population: 2,247 licenses indicated in the ERM to have perpetual access (from *Licenses with perpetual access per the ERM spreadsheet*)

Query 2 data points (see Appendix C):

From *Active license records*

- Archival provisions
- Resource name

From *SerialsSolutions tracked databases*

- Code
- Database name

From *SerialsSolutions tracked journals*

- Title

“Database name” in the *SerialsSolutions tracked databases* file refers to a package containing multiple journal titles. UNC-Chapel Hill and other universities often purchase multiple journal titles in a single package or resource, under a single license.

After re-running Query 1, the “Archival provisions” column was filtered to display only the resources indicated to have “self-archiving” provisions. According to University Library data entry procedures for this field in the ERM, self-archiving refers to any type of perpetual access that involves hosting content on a Library server or providing access through hard drives or other types of media. The query results indicated that 205, or approximately 9%, of the same 2,247 licenses had self-archiving provisions. The low percentage is encouraging, given that perpetual access in these forms is not preferred, due to the volatile nature of these media. Similar to Query 1, this percentage encompasses thousands of individual journal titles.

Query 3

The third query aimed to examine providers that the University Library thought participated in third-party archiving agencies but discovered do not -- the *Worrisome* spreadsheet.

Population: 372 packages from the 49 providers on the *Worrisome* spreadsheet

Query 3 data points (see Appendix D):

From *Keepers registry title list comparison*

- Title (specific journal title)
- Resource (package including multiple journal titles)
- Number of matching agencies

From *Worrisome* (see Appendix E)

- Provider
- Number of titles without matching agency
- Subject team (teams responsible for particular subject areas)

The “Number of titles without matching agency” information was manually imported into the *Worrisome* spreadsheet by using the VLOOKUP function in Excel, prior to the import to Access. The “Number of matching agencies” column includes information about how many third-party archiving services archive that particular content. After running the query, the “Number of matching agencies” column was filtered to “0,” indicating lack of participation in these third-party services. The query results indicated that 97 of the 372 *Worrisome* packages, or approximately 26%, had no matching agencies according to the Keepers Registry. Of the 9,915 titles in those 372 *Worrisome* packages, 1,405 titles, or 14%, were not archived by third-party services. It was noteworthy that all

of the packages and providers without matching agencies corresponded to the “Sciences” subject team, as indicated on the *Worrisome* spreadsheet. This was unexpected, given the early adoption of electronic platforms for journal content in the science disciplines. After further consideration, lack of participation in archiving services by science publishers may be less surprising given the fact that those disciplines tend to rely more on current data rather than historic works. Data about subject areas and overall provider data offer useful information to collections staff and inform selection decisions.

Further investigation indicated that many of the titles with no matching agencies in the Keepers Registry were, in fact, archived in the Scholars Portal, an agency not relevant to this investigation because its holdings are not available to UNC-Chapel Hill. Scholars Portal, a service of the Ontario Council of University Libraries (OCUL), archives licensed journal content owned by participating libraries. According to their website, “Scholars Portal is a service available only to faculty and students at Ontario's 21 universities” (“What is Scholars Portal Journals?,” n.d.).

The titles were spot-checked a few months after the queries were run, and many had been archived during the intervening period. The Keepers Registry notes when issues of titles are scheduled to be archived or if archiving is in progress. The fact that holdings data evolves as subscriptions are renewed, and that some titles were archived at later dates (after data had been gathered for the project), is further support for tracking perpetual access and archiving arrangements, and noting the volatility of this data. Inconsistencies were found in the SerialsSolutions data as well, potentially due to lag time in holdings updates. Query results are only as accurate as the data available.

These results illustrate the importance of negotiation for clearer perpetual access and archival provisions language in license agreements. This could be accomplished by asking vendors and/or publishers to describe in more detail how perpetual access will be provided. Librarians should ask directly about participation in third-party archiving services like LOCKSS, CLOCKSS, and Portico. Crafting boilerplate language for license agreements aids in this process, particularly for librarians inexperienced with license negotiations or those looking to strengthen their negotiation skills. Understanding the issues surrounding perpetual access allows librarians to negotiate from a stronger position. Currently, the University Library employs the NERL (NorthEast Research Libraries Consortium) model license language for perpetual access, adapting it as appropriate:

Licensor hereby grants to Participating Member Institutions a nonexclusive, royalty-free, perpetual license to use any Licensed Materials that were accessible during the term of this Agreement. Such use shall be in accordance with the provisions of this Agreement, which provisions shall survive any termination of this Agreement. Except in the case of termination for cause, Licensor shall provide the Participating Member Institutions with access to the Licensed Materials in a manner and form substantially equivalent to the means by which access is provided under this Agreement (“Perpetual License”, n.d.).

The last sentence of the clause should be modified to reflect the manner and form of access (discussed in this paper as “archival provisions”), whether that be through continued access at the vendor or publisher site, hosting on a library server, or through a third-party archiving service.

The results also revealed that refining codes for license records in the ERM would facilitate the discovery of information contained in license agreements, without consulting the licenses themselves. A project that arose out of this investigation involved clarifying the “Archival provisions” fixed field in the license record. In the ERM,

multiple codes are available for this fixed field. (As mentioned earlier, the “self-archiving” code was used to indicate perpetual access via hosting on library servers or hard drives and other media.) Thinking that limiting the number of options would reduce potential confusion, the University Library decided to utilize only a few of the available codes, and supplement them with notes reflecting verbatim extracts from the license. The fixed field codes do not say much in and of themselves, as they are more for record-keeping and list-making purposes. The inclusion of actual license language in the ERM record allowed staff to quickly access the pertinent clause without having to search through the whole license elsewhere.

Conclusion

The significance of this investigation is rooted in its relevance to the field, particularly in e-resource management and acquisitions, as well as user access. As described by the literature, and given the ephemerality of digital materials, librarians should strive to gain perpetual access for their purchased e-resources because of their traditional roles as keepers of information and because of the understandable desire to retain purchased content. Libraries should also endeavor to clarify the form of post-cancellation access, through archival provisions language in license agreements, to ensure continued use of these resources. E-resources make up growing portions of library materials budgets and, in many cases, represent a higher proportion of the budget than do print materials. Print holdings are likely to continue decreasing as budgets tighten, their maintenance costs outweigh their usage, and access is offered via e-subscriptions or aggregators. In order for libraries to ensure continued access to their electronic holdings, it is essential that they negotiate for perpetual access and clarify archival provisions.

This investigation was useful for the University Library because it was the first time perpetual access and archival provisions had been examined at this level, taking into account all of the active license records for licensed e-journal content. In the event that library budget constraints force reconsideration of large journal packages, the library could use this information in order to make data-informed decisions about the subscribed content to which it would retain access because of perpetual access rights secured during the licensing process. TERMS (Techniques for Electronic Resource Management), a

Library Technology Reports project that aims to “codify the management of electronic resource management” (“What is TERMS?,” 2011), now includes preservation (including post-cancellation access) as a crucial component of the e-resource life cycle (Rinck, 2017). This investigation is an example of how e-resources librarians could assess and evaluate preservation of their own institutional e-journal holdings.

This study illustrates the experiences of a large research institution, but has implications for libraries of varying sizes and categories. The strategies for investigating perpetual access to e-resources described herein are applicable to other library settings, and the tools and resources used to conduct this study, such as Microsoft Excel and Access and the Keepers Registry, are widely available. This type of investigation is all the more important for libraries because of the volatility of e-resources data. For example, holdings data changes as subscriptions continue or are canceled, and providers may begin participating in third-party archiving services after a license agreement is signed. It is essential for understanding and analyzing holdings information, such as which titles and issues are available through which providers, and allows librarians to make data-driven collections decisions.

Suggestions for further research include continued exploration into third-party archiving services, such as comparing services based on price and responsiveness to librarian inquiries, and investigating the effectiveness of strategies to encourage publisher participation in e-journal preservation initiatives. Additionally, further documentation of licensing best practices would benefit e-resources librarians, as would proven strategies for incorporating clearer perpetual access and archival provisions clauses into license agreements. This study uncovered inconsistencies regarding some providers, whose

license agreements indicated their participation in third-party archiving services, but whose participation could not be independently verified in the Keepers Registry. Another area of further research could be to investigate reasons for those discrepancies. They could be a result of the time that it takes for this information to be reflected in the Keepers Registry, confusion regarding titles taken over by a new publisher, or time that it takes for providers to archive their material in third-party services.

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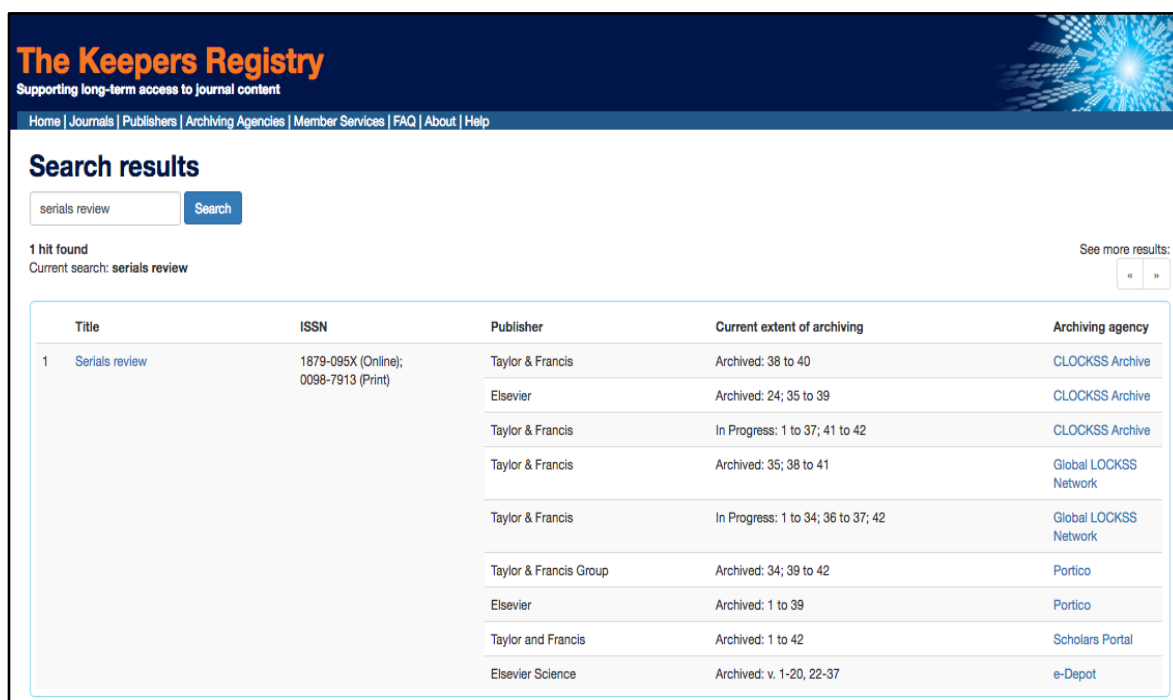
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Appendix A



The Keepers Registry
Supporting long-term access to journal content

Home | Journals | Publishers | Archiving Agencies | Member Services | FAQ | About | Help

Search results

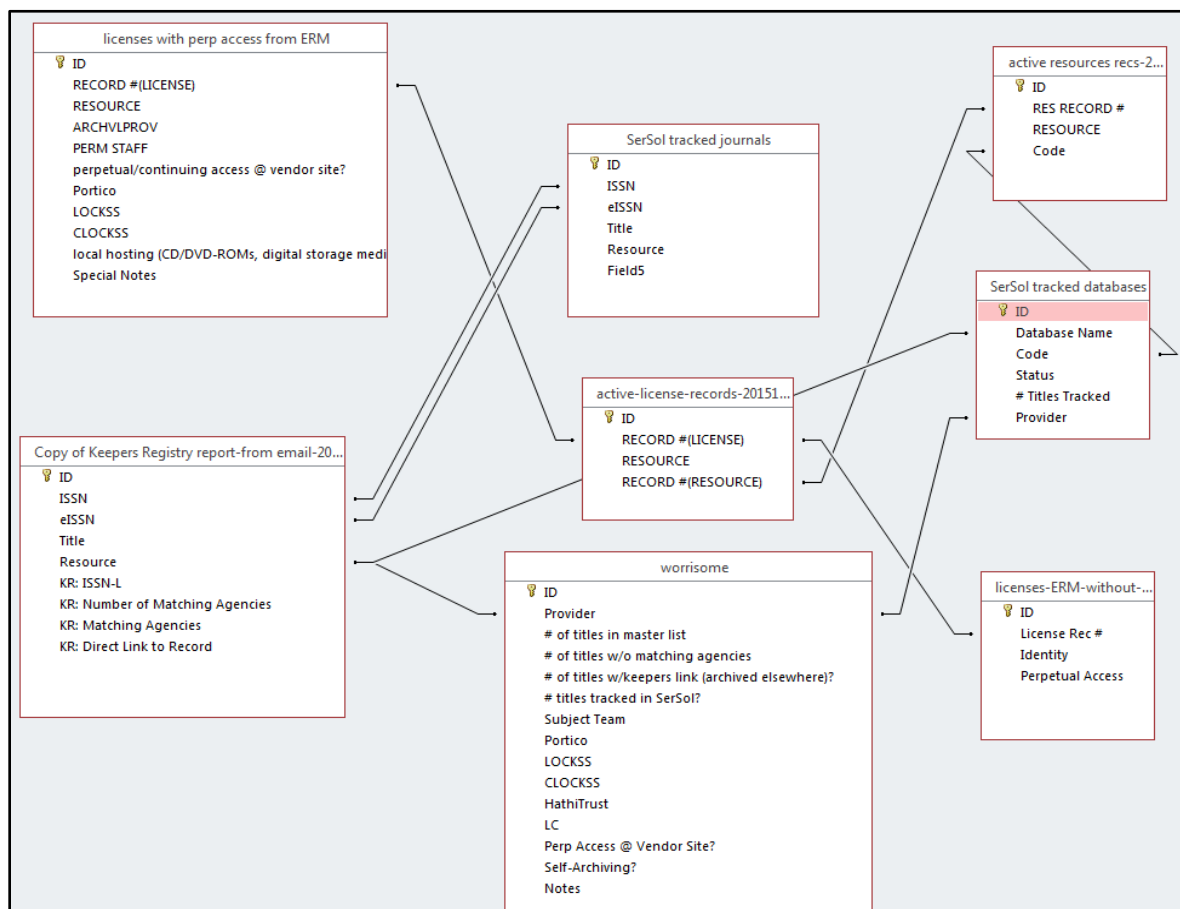
serials review [Search](#)

1 hit found
Current search: serials review [See more results:](#)

Title	ISSN	Publisher	Current extent of archiving	Archiving agency
1 Serials review	1879-095X (Online); 0098-7913 (Print)	Taylor & Francis	Archived: 38 to 40	CLOCKSS Archive
		Elsevier	Archived: 24; 35 to 39	CLOCKSS Archive
		Taylor & Francis	In Progress: 1 to 37; 41 to 42	CLOCKSS Archive
		Taylor & Francis	Archived: 35; 38 to 41	Global LOCKSS Network
		Taylor & Francis	In Progress: 1 to 34; 36 to 37; 42	Global LOCKSS Network
		Taylor & Francis Group	Archived: 34; 39 to 42	Portico
		Elsevier	Archived: 1 to 39	Portico
		Taylor and Francis	Archived: 1 to 42	Scholars Portal
		Elsevier Science	Archived: v. 1-20, 22-37	e-Depot

Screenshot from The Keepers Registry

Appendix B



Relationship structure in Access database

Notes: The “ID” fields were primary keys added by Access to each spreadsheet. They do not represent actual data points.

Data in “active-license-records,” “active resources recs,” and “licenses-ERM-without” are from the ERM. These correspond to the *Active license records from the ERM*, *Active resource records from the ERM*, and *Licenses without perpetual access per the ERM* spreadsheets, respectively.

Data in “SerSol tracked journals” and “SerSol tracked databases” are from SerialsSolutions. These correspond to the *SerialsSolutions tracked journals* and *SerialsSolutions tracked databases* spreadsheets, respectively. Field5 is not relevant to this investigation.

Copy of Keepers Registry report represents the Keepers Registry title list comparison file.

Data specific to this report includes:

- KR: Number of Matching Agencies -- The number of third-party agencies, of the five selected for this study, that hold that title
- KR: Matching Agencies -- The list of third-party agencies, of the five selected for this study, that hold that title
- KR: Direct Link to Record -- A URL link to the record of that title in the Keepers Registry

Licenses with perp access from ERM represents data points from different sources. Data specific to this report includes:

- Record # (license) -- ERM-generated identifier for the license associated with a journal package

- Resource -- The title of the e-journal package, as noted in the ERM
- Archvlpov -- Code in the archival provisions fixed field, from the ERM
- Perm staff -- A note in the ERM record used by staff indicating license text

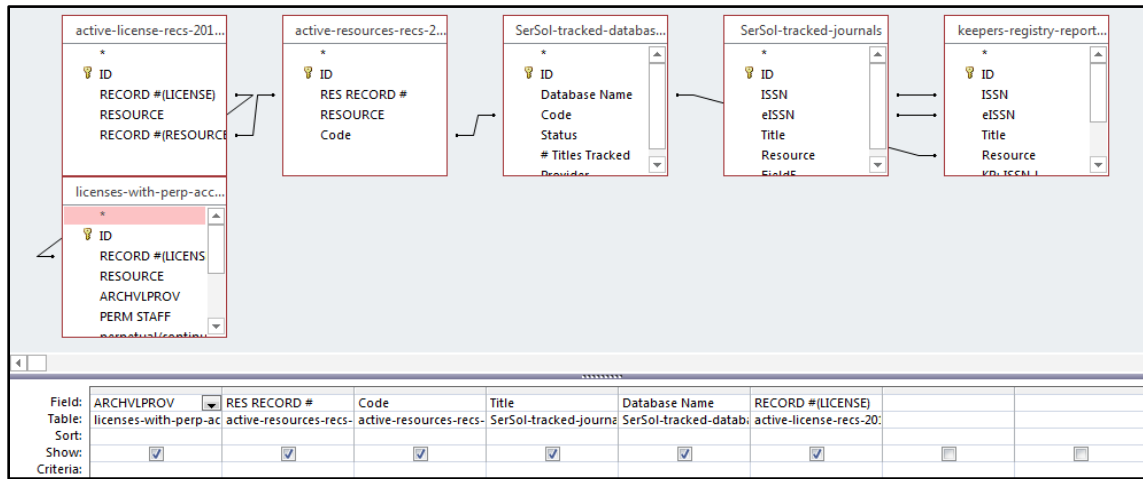
Data illustrating the breakdown of archiving options was pulled in from license records and Keepers Registry data.

Worrisome also incorporates data from different sources. Data specific to this report includes:

- Provider -- As indicated in the ERM
- #of titles in master list -- All of the titles associated with subscribed resources or packages from that provider, as indicated in the ERM
- #of titles tracked in SerSol -- The number of e-journal titles from that provider tracked in SerialsSolutions (ultimately not relevant to this investigation)
- Subject team -- Manually added based on the content of the provider

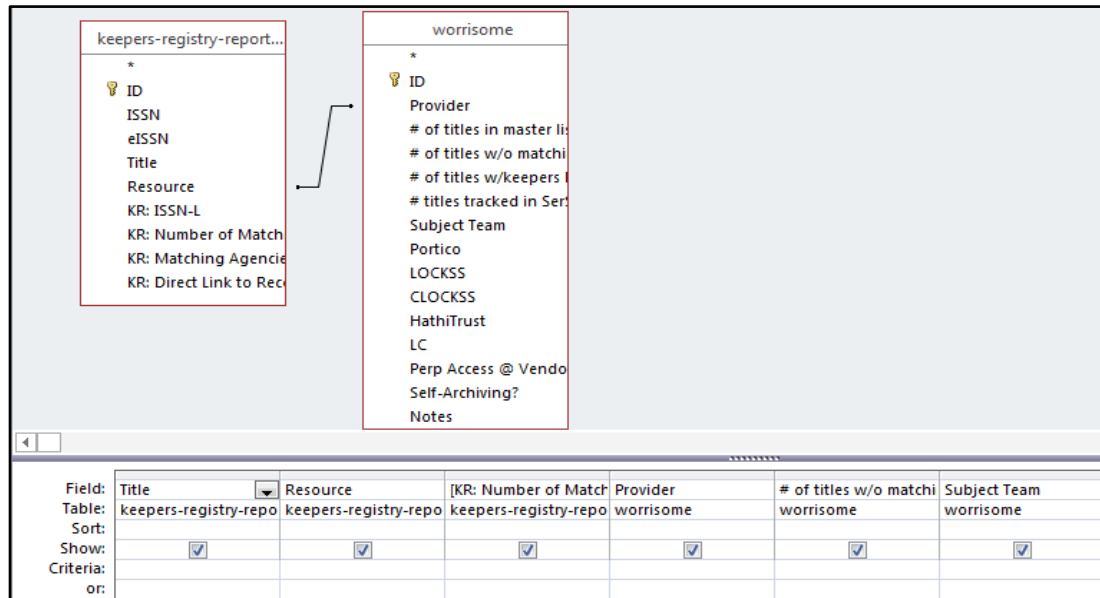
Archiving options information was pulled in from license records and the Keepers Registry.

Appendix C



Structure of Queries 1 and 2, from Access database

Appendix D



Structure of Query 3, from Access database

Appendix E

	A	B	C	D	F	G	H	I	J	K	L	M
	Provider	# of titles in master list	# of titles w/o matching agencies	# of titles w/keepers link (archived elsewhere)?	Subject Team	Portico	LOCKSS	CLOCKSS	HathiTrust	LC	Perp Access @ Vendor Site?	Self-Archiving?
1	ACM Digital Library	200	62	3	Sciences	yes	yes	yes		yes		yes
2	American Anthropological Association	50	13	4	A&H	yes	yes	yes		yes		
3	American Chemical Society	60	9	0	Sciences	yes			yes		yes	yes
4	American Economic Association	4			SocSci	yes						
5	American Institute of Physics	45	14	0	Sciences	yes		yes				
6	American Library Association	3	2	0	Sciences		yes					
7	American Mathematical Society	25	11	0	Sciences	yes		yes	yes			
8	American Meteorological Society	4			Sciences	yes	yes	yes			yes	yes
9	American Physical Society	22	10	0	Sciences	yes			yes			
10	American Phytopathological Society	3	3	0	Sciences							
11	American Society for Biochemistry and Molecular	1			Sciences		yes				yes	
12	American Society for Microbiology	10	3	0	Sciences		yes					
13	Annual Reviews	59	2	0	Sciences	yes	yes				yes	
14	BioOne	73	4	3	Sciences	yes	yes	yes	yes			
15	Blackwell Publishing	1	1	0	A&H							
16	Brill	29	2	0	A&H	yes	yes	yes				
17	CAIRN	286	281	0	A&H							
18	Cambridge University Press	194	7	0	A&H	yes	yes	yes		yes	yes	yes
19	Cell Press	7			Sciences	yes		yes			yes	yes
20	Cold Spring Harbor Laboratory Press	2			Sciences		yes	yes				
21	Company of Biologists	2			Sciences		yes	yes				yes
22	CSIRO Publishing	8	1	0	Sciences	yes					yes	yes
23	Duke University Press	22	3	0	All	yes	yes	yes			yes	
24	Ecological Society of America	1			Sciences	yes						

Screenshot from *Worrisome* spreadsheet