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RDA and Rare Books Cataloging, Part 2
Mary Burns

Considering "Sameness" of Monographic Holdings in Shared Print Retention Decisions
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Mara L. Thacker, Thomas H. Teper, Joseph Lenkart, and Esra Çeltek Coşkun

NOTES ON OPERATIONS

A Case Study of ETD Metadata Remediation at the University of Houston Libraries
Santi Thompson, Xiping Liu, Albert Duran, and Anne Washington

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Library Resources & Technical Services

ISSN 2159-9610 **January 2019** **Volume 63, No. 1**

Editorial **2**
Mary Beth Weber

FEATURES

RDA and Rare Books Cataloging, Part 2 **4**
Mary Burns

Considering "Sameness" of Monographic Holdings in Shared Print Retention Decisions **29**
Jennifer Hain Teper

Establishing the Impact of Area Studies Collections and Exploring Opportunities for Collaborative Collecting **46**
Mara L. Thacker, Thomas H. Teper, Joseph Lenkart, and Esra Çeltek Coşkun

NOTES ON OPERATIONS

A Case Study of ETD Metadata Remediation at the University of Houston Libraries **62**
Santi Thompson, Xiping Liu, Albert Duran, and Anne M. Washington

Book Reviews **75**
Elyssa M. Gould

Cover image: Ancient Home (Roman, 1st Century), from The Complete Home: An Encyclopedia of Domestic Life and Affairs; The Household in Its Foundation, Order, Economy . . .; A Volume of Practical Experiences Popularly Illustrated, by Mrs. Julia McNair Wright, 1883, courtesy of Digital Library@Villanova University.

Editorial: Community

Mary Beth Weber

In the early stages of my career, it was challenging to stay current with standards and trends unless you attended conferences in person. Those fortunate enough to attend conferences got the opportunity to hear firsthand information from leaders and to network with like-minded individuals. Those who were less fortunate could wait and read conference proceedings, newsletters, and professional journal papers. Additionally, if one was lucky enough to serve on an ALA or ALCTS committee (there was a lot of competition and few available spots), there was a required commitment to attend both the Midwinter Meeting and Annual Conference. Attending a conference forged professional relationships and built a sense of community.

Things started to change in the mid-1990s when people began to have access to email. This enabled committees, interest groups, and task forces to communicate quickly and virtually. Discussion lists emerged from the need to share information and communicate via the internet. They helped develop online communities and were not limited to a geographic area or country. We suddenly had the ability to communicate and to exchange ideas with people worldwide whenever we wanted and from anywhere as long as one had access to a computer and the internet. Virtual relationships developed, and people sometimes also met in person at conferences and events. Information could be shared much more quickly, and discussion lists were used to announce professional meetings, calls for volunteers, and emerging standards. It was at this time that early electronic journals began to be published.

The internet enabled those who served on professional committees and groups to continue working between meetings. While budget constraints might have prevented conference attendance, the internet led to virtual conference participation. I served on the editorial board of an early e-journal composed of members from around the globe. Although editors changed over time, as did the host site, the journal continued to be published with no interruptions in service or quality. Likewise, there have been virtual members on the *LRTS* Editorial Board, plus members who are not able to attend Midwinter and Annual, or who occasionally might have to pass due to lack of funding. What matters is that, regardless of how members participate, they are engaged and participate in Board discussions via our Connect space and review and solicit papers.

In my role as *LRTS* editor, as an ALCTS member, and through membership on various technical services-related discussion lists, I feel a strong sense of community within my profession. We are collaborative, supportive, generous with our expertise, and patient when explaining things to others. When I need help resolving a problem, I have many resources available through my professional association and the larger online community. Additionally, I develop a working relationship with authors during the submission and review process for *LRTS* papers. These relationships often continue after a paper has been published. A number of Board members published papers in *LRTS* prior to joining the Board. When I see that an author's paper published in *LRTS* is cited, I share that information with the author. I appreciate and enjoy the support of my professional community.

The emergence of social media has added yet another dimension to the virtual library community. There are now Facebook groups and Instagram posts for libraries and library personnel, creating additional opportunities for learning, collaboration, and, in some cases, even friendship. We can respond to each other instantaneously and disseminate information to a wide audience almost effortlessly.

I hope that *LRTS* readers feel a sense of community regarding the journal and its mission to provide access to scholarly papers on technical services topics. That leads to the final part of this column, which is an overview of this issue's contents:

- Mary Burns's paper "RDA and Rare Books Cataloging, Part 2" completes the discussion of the challenges for catalogers using the Descriptive Cataloging of Rare Materials: Books, or DCRM(B) when Resource Description and Access was implemented. Burns's paper includes a wealth of information and supplementary materials, including illustrations taken from the rare book *Stirpium adversaria nova.*
- Jennifer Hain Teper addresses the issue of space management in libraries as realized through selection policies for withdrawal, particularly those for copies held in shared print repositories. Her study compares forty-seven monographic titles cataloged as identical items with differences in editions, printings, condition, preservation, and repair. A survey that she conducted revealed wide variability in the accuracy of cataloging records, historical use, physical damage, chemical deterioration, provenance, and presence in HathiTrust.
- "Establishing the Impact of Area Studies Collections and Exploring Opportunities for Collaborative Collecting," by Thacker, Teper, Lenkart, and Coşkun, examines the use of area studies materials by assessing five years of Interlibrary Loan (ILL) lending data and local circulation data from a single research library. The authors seek to establish the groundwork for future explorations into the implementation of a cooperative collection development model for area studies at the national level.
- In "A Case Study of ETD Metadata Remediation at the University of Houston Libraries," Thompson, Liu, Duran, and Washington provide a case study on remediating electronic theses and dissertations (ETD) metadata at the University of Houston Libraries. They detail the team's efforts to revise existing ETD metadata in their institutional repository as part of their commitment to aligning ETD records with the Texas Digital Library Descriptive Metadata Guidelines for Electronic Theses and Dissertations, Version 2.0 (TDL guidelines, version 2).
- Lastly, book reviews, as solicited and provided by my colleague, Elyssa Gould, *LRTS* book review editor.

RDA and Rare Books Cataloging, Part 2

Mary Burns

Editor's Note: This paper has been published in two parts. Part two includes resource description for a rare book and resumes with 260 $a Place of Publication ; 264 _1 $a Place of Publication ; 264 _3 $a Place of Manufacture and provides the remainder of the description for the rare book *Stirpium adversaria nova*.

Catalogers using Descriptive Cataloging of Rare Materials: Books (DCRM(B)) were challenged when the Library of Congress (LC) adopted Resource Description and Access (RDA). DCRM(B) is based on AACR2, which is organized according to International Standard Bibliographic Description (ISBD) areas. RDA is based on FRBR. As of this writing, the RBMS Bibliographic Standards Committee intends to finish an initial version of RBMS Policy Statements for the RDA Toolkit. This paper discusses the creation process of three catalog records for the same rare book developed according to DCRM(B), the PCC-RDA-BSR with rare materials provisions, and RDA with exceptions for early printed resources.

Record Creation Process

260 $a Place of Publication; 264 _1 $a Place of Publication; 264 _3 $a Place of Manufacture

Publication statements on rare books can present some of the most challenging transcription issues for RDA rules. "Londini 1570" is recorded in the scroll at the bottom of *Stirpium adversaria nova*'s title page (see figure 1). The colophon contains a complete statement of manufacture: "Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomæ Purfœtij, ad Lucretię symbolum" (see figure 2). The source of information for the place of publication element in the DCRM(B) record was identified first. DCRM(B)4A2.1 states:

> The prescribed sources of information for the publication, distribution, etc., area are the title page, colophon, other preliminaries, and dust jacket (see introductory section IX.2), in that order of preference. If the information for an element is not present in these sources, any source may be used to supply needed information (see 0G6). If statements belonging to different elements are found in separate sources, combine them to make a complete statement in the publication, distribution, etc., area. However, do not combine statements belonging to a single element when they appear in different sources within the publication.[1]

The title page and colophon were the sources of information for the publication statement in *Stirpium adversaria nova*'s DCRM(B) record. This

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information was taken from the title page. The printer's name in the colophon functioned as the publisher name element (DCRM(B)4A6).

Stirpium adversaria nova's PCC-RDA-BSR treated the manufacturer statement in the colophon as a publication statement using a 264 field with second indicator 1. RDA 2.8.1.1 states: "For early printed resources, distribution and manufacture statements relating to booksellers and printers may be treated as publication statements."[2] The PCC-RDA-BSR directs catalogers to RDA 2.8.2 regarding place of publication. RDA 2.8.2 directs catalogers to RDA 2.8.2.2, the rules for sources of information for the place of publication. A list of sources of information in preference order is provided, with the first preference the same as the source of information for the publisher's name. The publisher's name preference directs catalogers to RDA 2.8.4.2 for sources of information for the publisher name element. RDA 2.8.4.2 provides a list of sources for the publisher's name in preference order. The first preference is the same source as the title proper. The second preference was applied, another source within the manifestation. The colophon functioned as the source of information for the place of publication in *Stirpium adversaria nova*'s PCC-RDA-BSR record. RDA 2.8.4.2 further directs catalogers to RDA 2.2.2. which contains instructions for preferred sources of information that include RDA 2.2.2.2: "Manifestations Consisting of One or More Pages, Leaves, Sheets, or Cards (or Images of One or More Pages, Leaves, Sheets, or Cards)."[3] This rule contains an early printed resources exception: "If a source other than a title page, title sheet, or title card (or an image of it) is used as the preferred source of information, make a note on the source of the title proper (see 2.17.2.3 RDA)."[4] This rule does not address the need for a note indicating that the colophon was the preferred source of information for the place of publication element. Two 500 field general notes were created for the PCC-RDA-BSR by applying RDA 2.17.7.3: "Make notes on details relating to place of publication, publisher, or date of publication not recorded in the publication statement element, if considered important for identification or access."[5] The first 500 general note recorded place of manufacture and name of the printer and were taken from the colophon for the place of publication element. The second note recorded the complete colophon in normalized form.

Figure 1. *Stirpium adversaria nova* title page (Dittrick Medical History Center, Case Western Reserve University)

The manufacturer statement in the RDA record did not functions as a publication statement as it did in the DCRM(B) record or in the PCC-RDA-BSR by applying RDA 2.8.1.1. The printer's statement in the colophon was recorded as a single 264 statement of manufacture with a second indicator 3. A different option was considered for recording the publication information in the RDA record before the single statement of manufacture was chosen as the most suitable treatment. It was thought that a 264 _1 field with a publication statement would be developed that transcribed the place and date on the title page and recorded "[Publisher not identified]" in the publisher name element. A second 264 with second indicator 3 would be created to record the statement of manufacture from the colophon.

This two 264 field creation process for *Stirpium adversaria nova*'s RDA record began with RDA 2.8.1.2, which directs catalogers to sources of information for elements in the publication statement. The first element is the place of publication that directs catalogers to RDA 2.8.2.2, which instructs that the first preference for sources of information recorded in the place of publication element are the same as those for the publisher name element. There is no publisher name on *Stirpium adversaria nova*'s title page, only a place name and date. The second preference listed in RDA 2.8.2.2 is another source within the manifestation. This preference directs catalogers to the colophon with the complete manufacturer's statement containing the later date. The decision was then made to create a single 264

field with second indicator 3 in *Stirpium adversaria nova*'s RDA record. This 264 _3 field recorded the colophon with the manufacturer's statement.

The single 264 _3 field creation process for *Stirpium adversaria nova*'s RDA record began with determining the sources of information for the place of manufacture element. RDA 2.10.1 provides basic instructions on recording manufacturer statements. RDA 2.10.1.2 provides instructions for the source of information for manufacturer elements. Catalogers are directed to RDA 2.10.2.2 for sources of information for place of manufacture. The sources are listed in preference order. The first preference listed is the same source as the manufacturer's name, directing catalogers to RDA 2.10.4.2, which lists sources for the manufacturer's name in preference order. The second preference, another source within the manifestation, was applied because the colophon was the source of information for the manufacturer statement. This second preference directs catalogers to RDA 2.2.2, preferred source of information, the same rule applied when the place of publication element was developed in the PCC-RDA-BSR. RDA 2.2.2.2 applies to a manifestation consisting of one or more pages, but the early printed resources exception directs catalogers to make a note if the source of the title proper is not the title page. The exception does not address the need for a note to indicate that the source of information for *Stirpium adversaria nova*'s place of manufacture was the colophon. Two 500 field general notes were recorded in the RDA record. The first 500 note recorded the source of the place of manufacture and manufacturer's name. The second recorded the colophon in normalized form. RDA 2.17.9.3 instructs: "Make notes on details relating to a place of manufacture, a manufacturer's name, or a date of manufacture not recorded in the manufacture statement element, if considered important for identification or access."[6] The title page was the source of information for the place of publication in the DCRM(B) record. The sources for the place of publication in the PCC-RDA-BSR and place of manufacture in the RDA record was the colophon. Table 1 summarizes the sources of information for *Stirpium adversaria nova*'s place of publication elements and place of manufacture element with their related notes.

The transcription of the places of publication and place of manufacture elements for the 260 and 264 fields in *Stirpium adversaria nova*'s records were developed after the sources of information were identified and the notes necessary to clarify the publication and manufacture statements were recorded. The transcription of the place of publication element for the DCRM(B) record was created first. DCRM(B)4B1.1 states:

> Transcribe the names of places associated with publishers, distributors, and booksellers as part of this element. Transcribe the names of places associated with printers and other manufacturers only if appropriate according to the instructions in 4A6 (i.e., when the wording, layout, or typography of the publication suggests that the manufacturer is also functioning as the publisher, distributor, etc.).[7]

"Londini," the place of manufacture that functioned as the place of publication, was recorded in the 260 $a element in the DCRM(B) record.

The place of publication element in the PCC-RDA-BSR was transcribed according to RDA 2.8.2.3, which directs catalogers to RDA 2.8.1, Basic Instructions on Recording a Publication Statement. RDA 2.8.1 contains RDA 2.8.1.4: "Transcribe a place of publication and a publisher's name as they appear on the source of information (see 1.7 RDA)."[8] The place of publication elements in *Stirpium adversaria nova*'s PCC-RDA-BSR and DCRM(B) records were transcribed in the same form, "Londini." The place of publication element in the PCC-RDA-BSR publication statement was recorded in a 264 _1 $a field.

The PCC-RDA-BSR contains a rare materials provision for the place of publication element that should be noted even though it was not applicable to *Stirpium adversaria nova*'s record:

> Rare materials: Generally transcribe all places of publication (see DCRM(B,C,G,M) 4B6). If a place of publication is known to be fictitious or incorrect, supply a correction in square brackets (see DCRM (B,C,G,M) 4B9).[9]

The provision's first part supersedes the RDA core requirement for place of publication. RDA 2.8.2 states: "If more than one place of publication appears on the source of information, only the first recorded is required."[10] The second part of the provision negates the instructions RDA rules contain for transcribing inaccuracies. RDA 1.7.9 states:

> When instructed to transcribe an element as it appears on the source, transcribe an inaccuracy or a misspelled word unless the instructions for a specific element indicate otherwise (e.g., exception at 2.3.1.4 RDA). Make a note correcting the inaccuracy if considered important for identification or access (see 2.17 RDA).[11]

A correction cannot be recorded in square brackets following an inaccuracy according to RDA rules. DCRM(B)4B9 instructs:

> If the place of publication, distribution, etc., appearing in the publication is known to be ficti-

Table 1. Place of Publication/Manufacture (260 $a ; 264 _1 $a ; 264 _3 $a)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 260 $a ; 264 _1 $a ; 264 _3 $a
Descriptive Cataloging of Rare Materials (Books) Sources of information for place of publication: DCRM(B)4A2.1 Prescribed sources of information for publication statements Transcription of place of publication: DCRM(B)4B Place of publication distribution etc. DCRM(B)4B1 General rules transcribing place of publication DCRM(B)4B1.1 Transcribing place of publication	Not Applicable	Prescribed source of information for place of publication is the title page 260 $a Londini
PCC-RDA-BSR (BIBCO Standard Record) (Element included in BSR: RDA core element) Sources of information for place of publication: RDA 2.8.1.1 Publication statement: printers may be treated as publishers RDA 2.8.2 Instructions for place of publication RDA 2.8.2.2 Sources of information for place of publication same as name of publisher RDA 2.8.4.2 Sources of information for printer/publisher name another source within manifestation itself RDA 2.2.2 Preferred sources of information RDA 2.2.2.2 Manifestation of one or more pages, leaves, sheets, or cards: Source is title page RDA 2.17.7.3 Note recording source of place of publication and printer/publisher name RDA 2.17.7.3 Note recoding complete colophon Transcription of place of publication: RDA 2.8.2.3 Recording place of publication RDA 2.8.1 Basic instructions on recording publication statement RDA 2.8.1.4 Transcribing place of publication	RDA 2.8.2 "Rare materials: Generally transcribe all places of publication (see DCRM(B,C,G,M)4B6). If a place of publication is known to be fictitious or incorrect, supply a correction in square brackets (see DCRM(B,C,G,M)4B9)."	Source of information for place of publication is the colophon 264 _1 $a Londini 500 $a Place of manufacture and printer's name from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.
Resource Description and Access (RDA) (Place of manufacture not RDA core element) Sources of information for place of manufacture: RDA 2.10.1 Basic instructions recording manufacture statement RDA 2.10.1.2 Sources of information RDA 2.10.2.2 Sources of information for place of manufacture same as manufacturer's name RDA 2.10.4.2 Sources of information for manufacturer's name another resource within the manifestation RDA 2.2.2 Preferred source of information RDA 2.2.2.2 Manifestations Consisting of One or More Pages, Leaves, Sheets, or Cards RDA 2.17.9.3 Note recording source for place of manufacture and name of manufacturer RDA 2.17.9.3 Note recording complete colophon Transcription of place of manufacture: RDA 2.10.2.3 Recording place of manufacture RDA 2.10.1 Basic instructions on recording manufacturer statement RDA 2.10.1.4 Transcribing manufacturer statement		Source of information for place of manufacture is the colophon 264 _3 $a Londini 500 $a Place of manufacture and printer's name from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.

> tious or incorrect, transcribe it nonetheless and make an explanatory note. If the actual place is known, or can be reasonably surmised, supply a correction in square brackets.[12]

The place of manufacture element for the RDA record was created after the PCC-RDA-BSR place of publication element was recorded. RDA 2.10.2.3 directs catalogers to RDA 2.10.1, Basic Instructions on Recording a Manufacturer Statement. RDA 2.10.1.4 states: "Transcribe a place of manufacture and a manufacturer's name as they appear on the source of information (see 1.7 RDA)."[13] The place of manufacture was transcribed as "Londini," in the 264 _3 $a element in the RDA record. *Stirpium adversaria nova*'s place of publication elements and place of manufacture element were recorded in the same form in the three records, "Londini" (see table 1).

Rare books often present more complicated transcriptions for place of publication, distribution, or manufacture than *Stirpium adversaria nova*'s place of publication and place of manufacture. DCRM(B) contains special instructions to address them that are not included in the PCC-RDA-BSR or RDA rules. DCRM(B)4B11 states:

> Supply in square brackets the name of the place of publication, distribution, etc., using a modern English form of the name, if there is one, when only an address or sign appears in the publication. (Transcribe the address or sign as the publisher, distributor, etc., statement; see 4C4.1) When supplying the place, give a justification in a note if necessary.
> [Paris]
> (Comment: Imprint reads: "à l'enseigne de l'éléphant," the trade sign of a Parisian printer).[14]

Another unique transcription problem that rare books catalogers encounter is statements with two or more places of publication, distribution or manufacture containing grammatically inseparable elements. DCRM(B)4B6.4 states: "Do not, however, transcribe a subsequent place as a place of publication, distribution, etc., if it must be recorded as a grammatically inseparable part of another element."[15] The publication statement example that accompanies this rule would not result in a very clear transcription following RDA rules:

> Printed at Worcester, Massachusetts : By Isaiah Thomas : Sold by him in Worcester, by said Thomas and Andrews in Boston, and by said Thomas and Carlisle, in Walpole, Newhampshire.[16]

The places and names would need to be separated to accommodate the 264 fields necessary to record the booksellers as distributors (264 _2). Isaiah Thomas functions as both a printer (manufacturer) and bookseller (distributor). RDA 2.8.1.1 could be applied, and both the printer and the booksellers treated as publishers recorded in a single 264 _1 field. The cataloger still must transcribe places of distribution that follow the name of the distributor that are grammatically inseparable, "Sold by him in Worcester." Thomas and Carlisle's function as booksellers in Walpole, Newhampshire is lost when their segment is broken away from the complete distributor segment: "and by said Thomas and Carlisle, in Walpole, Newhampshire."[17] Their function as booksellers is communicated by the complete distribution segment: "Sold by him in Worcester, by said Thomas and Andrews in Boston, and by said Thomas and Carlisle, in Walpole, Newhampshire"[18] The PCC-RDA-BSR and RDA rules do not serve the needs of rare book transcription in these kinds of situations.

260 $b Name of Publisher ; 264 _1 $b Name of Publisher ; 264 _3 $b Name of Manufacturer

The source of information for the publisher name element in the DCRM(B) record was the colophon with the printer's name (DCRM(B)4A2.1). The printer functioned as the publisher as DCRM(B)4A6 directs catalogers:

> Consider the wording, layout, and typography of the publication itself when determining the most appropriate place to transcribe information relating to the publication, distribution, etc., area. Keep in mind that statements relating to printing will sometimes be more appropriately transcribed as elements of publication, distribution, etc., and sometimes as elements of manufacture.[19]

The PCC-RDA-BSR directs catalogers to RDA 2.8.4 regarding the publisher name element. RDA 2.8.4.2 lists sources of information in preference order. The second preference applied, another source within the manifestation, the colophon. RDA 2.10.4 provides the instructions used to create the manufacturer name element. RDA 2.10.4.2 lists sources of information in preference order for the manufacturer name. The second preference applied, another source within the resource, the colophon. The colophon was the preferred source of information for *Stirpium adversaria nova*'s publisher name element in the PCC-RDA-BSR and the manufacturer name element in the RDA record.

The next step in creating *Stirpium adversaria nova*'s three records was transcribing the name elements. The publisher name element in the DCRM(B) record was

recorded first. Publisher name appears in the colophon in the phrase, “excudebat prelum Thomæ Purfœtij, ad Lucretię symbolum” (see figure 2). DCRM(B)4C1 instructs catalogers:

> Transcribe the names of printers and other manufacturers only if appropriate according to the instructions in 4A6 (i.e., when the wording, layout, or typography of the publication suggests that the manufacturer is also functioning as the publisher, distributor, etc.).[20]

DCRM(B)4C2 directs catalogers to: “Transcribe the name of the publisher, together with any associated words or phrases, as it appears in the publication.”[21] The complete phrase that names Thomas Purfoot as the printer at the sign of Lucretia was recorded in the publisher name element. There were five transcription issues to be addressed for the publisher name element. The first two involved ligatures, “æ” in “Thomae” and “œ” in “Purfoetij.” DCRM(B)0G1.1, directs catalogers to transcribe the component letters of a ligature separately. The third transcription issue was “Thomae” divided between two lines. It was transcribed as a single word (DCRM(B)0G3.6). The fourth transcription issue was the “j” at the end of “Purfœtij” that is proceeded by an “i.” DCRM(B)G4.1 instructs: “j used in the medial or final position only after a preceding i (more typical on the European continent), signifying vocalic use; e.g., commentarij (modern form: commentarii).”[22] The “j” was transcribed as it appears in “Purfœtij.” The last transcription issue, the “ę” contraction in “Lucretię,” was transcribed as “[ae]” as directed in the table of early contractions provided in DCRM(B)G3 (see appendix A). The completed publisher name element was recorded as “excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum” in the 260 $b in the DCRM(B) record. Two 500 general notes were created for the DCRM(B) record. The first recorded “Printer’s name from colophon.” The second recorded the complete colophon in normalized form, “Londini, 1571, Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.” DCRM(B)7B8 directs catalogers: “Make a note on publication details that are not included in the publication, distribution, etc., area if they are considered important.”[23]

The publisher name element for *Stirpium adversaria nova*’s PCC-RDA-BSR record was developed next. RDA 2.8.1.4, which guides the transcription of the place of publisher, also directs the publisher name element transcription: “Transcribe a place of publication and a publisher’s name as they appear on the source of information (see 1.7 RDA).”[24] The transcription of the manufacturer name in the RDA record was instructed by the same rule used for the place of manufacture. RDA 2.10.1.4 states: “Transcribe a place of manufacture and a manufacturer’s name as they appear on the source of information (see 1.7 RDA).”[25] The publisher name element and the manufacturer name element in *Stirpium adversaria nova*’s PCC-RDA-BSR and RDA records were recorded in the same form. The RDA 1.7.1 alternative to use DCRM(B) as the chosen published style manual facilitated the transcription of the “æ” and “œ” ligatures in “Thomæ Purfœtij,” the letterform “ij” in “Purfœtij,” and the contraction “ę” in “Lucretię” in the publisher name and manufacturer name elements. The PCC-RDA-BSR publisher name was recorded in a 264 _1 $b element and the manufacturer name was recorded in a 264 _3 $b element. The RDA 1.7.1 alternative ensured that the name elements in *Stirpium adversaria nova*’s three records were recorded in the same form, “Excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.” (See table 2 for an illustration.)

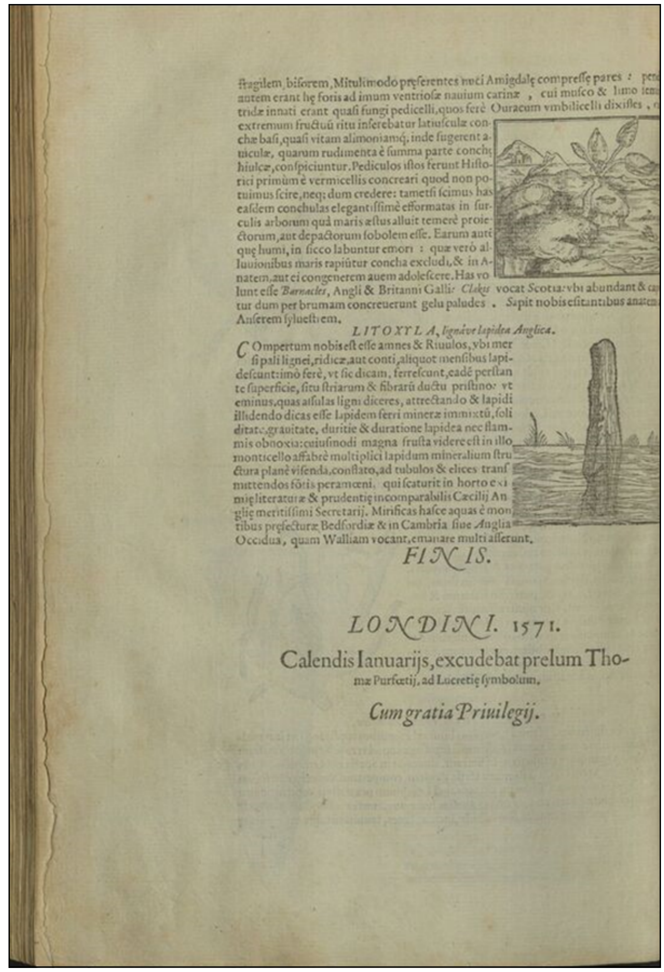

Figure 2. *Stirpium adversaria nova* colophon (Dittrick Medical History Center, Case Western Reserve University)

Although it did not apply to the transcription of *Stirpium adversaria* nova’s publisher name element, the PCC-RDA-BSR contains a rare materials provision:

> Rare materials: Generally transcribe all publisher's names (see DCRM(B,C,G,M) 4C6). If a publisher's name is known to be fictitious or incorrect, supply a correction in square brackets (see DCRM(B,C,G,M) 4C5).[26]

The first part of the provision supersedes the RDA core requirement dictating that only one publisher name is recorded if multiple publisher names appear on the preferred source of information. The second part of the provision negates RDA 1.7.9, the rule directing catalogers to record corrections in a 500 note, rather than enclosing the correction in square brackets following the inaccuracy. DCRM(B)4C5 instructs:

> If the publisher, distributor, etc., statement is known to be fictitious or incorrect, transcribe it nonetheless and make an explanatory note. If the actual details are known, or can be reasonably surmised, supply a correction in square brackets and give the basis for the correction in the note.[27]

260 $c Date of publication ;
264 _1 $c Date of publication ;
264 _3 $c Date of manufacture

The sources of information for the date elements were identified first, beginning with the source of information for the date of publication element in the DCRM(B) record. The date of publication for the DCRM(B) record was taken from the title page, the same source as the place of publication (DCRM(B)4A2.1). The PCC-RDA-BSR directs catalogers to RDA 2.8.6 where RDA 2.8.6.2 provides a list in preference order for the sources of information for the date of publication. The first preference is the same source as the title proper. The title page was the source of information for the title proper, and the date of publication in the PCC-RDA-BSR was taken from the title page. RDA 2.10.6.2 provides a list of sources in preference order for the date of manufacture element. The first preference applied the same source as the title proper. The source of information for the date of manufacture element for the RDA record was the title page. The sources of information for the date elements in *Stirpium adversaria nova*'s three records was the title page.

The transcription of the dates of publication and date of manufacture elements in *Stirpium adversaria nova*'s records were developed after the sources of information for the elements were identified. DCRM(B)4D1.2 directs catalogers: "Transcribe dates as they appear in the publication, including the day and month, if present."[28] The date on the title page, 1570, was recorded in the 260 $c element. The later date of publication appearing in the colophon, 1571, was supplied in square brackets following the title page date: "1570 [i.e., 1571]." DCRM(B)4D2.4 instructs catalogers: "If the date of publication, distribution, etc., is known to be fictitious or incorrect, transcribe it as it appears and supply the actual date in square brackets."[29] A 500 field general note was added to the DCRM(B) to indicate that the printing date came from the colophon. DCRM(B) instructs catalogers that the source of publication date is recorded in a note when the source is not the title page.

The date of publication element for *Stirpium adversaria nova*'s PCC-RDA-BSR was created after the date of publication element was recorded in the DCRM(B) record. The PCC-RDA-BSR includes a rare materials provision for the date of publication:

> Rare materials: Transcribe date(s) found in the resource (see DCRM(B,C,G,M)4D1). If a date of publication is known to be fictitious or incorrect, supply the correct year in square brackets (see DCRM(B,C,G,M)4D2.4).[30]

The PCC-RDA-BSR directs catalogers to RDA 2.8.6 for instructions regarding date of publication. RDA 2.8.6.3 states: "Record a date of publication by applying the basic instructions at 2.8.1 RDA."[31] RDA 2.8.1, the Basic Instructions on Recording Publication Statement, contains RDA 2.8.1.4: "Record a date of publication as it appears on the source of information."[32] The date of publication was recorded as "1570 [i.e., 1571]" in the 264 _1 $b element. The rare materials provision was applied: "If a date of publication is known to be fictitious or incorrect, supply the correct year in square brackets (see DCRM(B,C,G,M)4D2.4)."[33] "Ianuarijs" was transcribed as "I" (DCRM(B)G4.1) following the RDA 1.7.1 alternative to use DCRM(B) as the published style manual. The date of publication elements in *Stirpium adversaria nova*'s PCC-RDA-BSR and DCRM(B) records were recorded in the same form.

The date of manufacture element in *Stirpium adversaria nova*'s RDA record was created after the date element in the PCC-RDA-BSR was recorded. RDA 2.10.6 provides instructions for the date of manufacture. RDA 2.10.6.3 directs catalogers: "Record a date of manufacture by applying the basic instructions at 2.10.1 RDA."[34] RDA 2.10.1 contains RDA 2.10.1.4: "Record a date of manufacture as it appears on the source of information."[35] The later date of manufacture in the colophon was indicated in the 500 general note recording the complete colophon. RDA does not allow recording of corrections in square brackets directly following an inaccuracy. According to RDA 1.7.9., an inaccuracy may be corrected in a note if considered important for access. A 500 general note was created to record a note with the complete colophon in normalized form. The title

Table 2. Publisher/Manufacturer Name (260 $b ; 264 _1 $b ; 264 _3 $b)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 260 $b ; 264 _1 $b ; 264 _3 $b
Descriptive Cataloging of Rare Materials (Books) Sources of information for publisher name: DCRM(B)4A2.1 Prescribed sources of information DCRM(B)4A6 Printer functions as publisher Transcription of publisher name: DCRM(B)4C Name of publisher, distributor, etc. DCRM(B)4C1 Transcribe printer as publisher DCRM(B)4C2 Transcribing publisher name DCRM(B)0G1.1 Transcribing ligatures DCRM(B)0G3.6 Line endings; words divided between two lines DCRM(B)G.4.1 Transcribing "ij" DCRM(B)G3 Transcribing early contractions DCRM(B)7B8 Note recording printer name from colophon DCRM(B)7B8 Note recording complete colophon	Not Applicable	Prescribed source of information for publisher name is the colophon 260 . . . $b Excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum. 500 $a Printer's name and date of printing from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.
PCC-RDA-BSR (BIBCO Standard Record) (Element included in BSR: RDA core element) Sources of information for publisher name: RDA 2.8.1.1 Printers may be treated as publishers RDA 2.8.4 Publisher's name is core element RDA 2.8.4.2 Sources of Information, another source within the manifestation itself Transcription of Publisher Name: RDA 2.8.4.3 Recording publisher's name RDA 2.8.1 Basic instructions on recording publication statement RDA 2.8.1.4 Recording publication statement RDA 1.7.1 DCRM(B) designated published style manual as guide for transcription DCRM(B)0G1.1 Transcribing ligatures DCRM(B)0G3.6 Line endings; words divided between two lines DCRM(B)G4.1 Transcribing "ij" DCRM(B)G3 Transcribing early contractions	Transcription: RDA 2.8.4 "Rare materials: Generally transcribe all publishers' names (see DCRM(B,C,G,M)4C6). If a publisher's name is known to be fictitious or incorrect, supply a correction in square brackets (see DCRM(B,C,G,M)4C5) RDA 1.7.1 General guidelines on transcription. Alterantive (1st): "Rare materials: Use *Descriptive Cataloging of Rare Materials* as the 'designated published style manual' in place of the instructions given under RDA 1.7.2-1.7.9 for transcribing punctuation, numerals, symbols, abbreviations, etc."	Source of information for publisher name is the colophon 264 _1 . . . $b Excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum. 500 $a Place of manufacture and printer's name from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.
Resource Description & Access (RDA) (Manufacturer name not RDA core element) Sources of information for manufacturer name: RDA 2.10.4 Manufacturer's name RDA 2.10.4.2 Sources of information for manufacturer's name, another source within the resource itself Transcription of manufacturer name: RDA 2.10.4.3 Recording manufacturer's name RDA 2.10.1 Basic instructions on recording manufacturer's statement RDA 2.10.1.4 Recording manufacturer statement RDA 1.7.1 DCRM(B) published style manual as guide for transcription DCRM(B)0G1.1 Transcribing ligatures DCRM(B)0G3.6 Line endings; words divided between two lines DCRM(B)0G.4.1 Transcribing "ij" DCRM(B)G3 Transcribing early contractions	Transcription: RDA 1.7.1 Alternative: "The agency creating the data may establish in-house guidelines for capitalization, punctuation, numerals, symbols, abbreviations,etc., or choose a published style manual, etc (e.g. The Chicago Manual of Style) as its preferred guide. In such situations, use those guidelines or that style manual instead of the instructions at 1.7.2 RDA-1.7.9 and in the appendices."	Source of information for manufacturer name is the colophon 264 _3 . . . $b Excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum. 500 $a Place of manufacture and printer's name from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.

page date, 1570, was recorded in the 264 _3 $c element. Table 3 summarizes the rules used to record the date of publication elements and the date of manufacture element in *Stirpium adversaria nova*'s three records.

300 $a Statement of Extent

The Dittrick Medical History Center copy of *Stirpium adversaria nova* is imperfect. It is missing the [superscript pi]A, [superscript pi]B and chil leaves. DCRMB(0B2.2) instructs catalogers to base the description of an imperfect copy on a description of a perfect copy if one is available. The description of a perfect copy of *Stirpium adversaria nova* was taken from *The Cleveland Herbal, Botanical, and Horticultural Collections: A Descriptive Bibliography of Pre-1830 Works from the Libraries of the Holden Arboretum, the Cleveland Medical Library Association, and the Garden Center of Greater Cleveland* compiled by Stanley H. Johnston. DCRM(B)0B2.2 then further directs catalogers to DCRM(B)7B14.1, which instructs them to make a reference to the description. The PCC-RDA-BSR has a rare materials provision for RDA 3.4 Extent. Catalogers are instructed to "always record extent, even though RDA only considers extent core if the resource is complete or the total extent known." The total extent was taken from the Johnston bibliography for PCC-RDA-BSR record. RDA does not specifically address describing statement of extent for imperfect copies. RDA 3.4.5.6 addresses incomplete volumes but only if the last part is missing. RDA 3.4.1.2 instructs, "Use evidence presented by the manifestation itself (or on any accompanying material or container) as the basis for recording an extent of the manifestation. Take additional evidence from any source." The extent element for the RDA record was included because the total extent information could be taken from Johnston bibliography.

The statement of extent is another area that is not well served by RDA transcription rules. Statements of extent for some rare books are complex and difficult to record. For example, a rare book may contain many sequences of leaves and pages that are both numbered and unnumbered. In general, RDA does not allow abbreviations so that "p." cannot be used to record the number of pages in sequences that fall between pages of leaves, which lengthens a statement of extent (RDA appendix B7). Records for rare books with sequences of unnumbered pages or unnumbered leaves can produce cumbersome statements of extent. RDA does not permit catalogers to enclose the number of unnumbered pages or unnumbered leaves in square brackets in the statement of extent. These statements are recorded with the number of unnumbered pages or unnumbered leaves followed by "unnumbered pages" or "unnumbered leaves" (RDA 3.4.5.3.1). Although the statements of extent recorded in *Stirpium adversaria nova*'s records were not as complicated as some rare books, they demonstrate inherent problems with recording statements of extent following RDA rules.

The comparison of the statements of extent elements developed in *Stirpium adversaria nova*'s three records began with the 300 $a element for the DCRM(B) record. DCRM(B)5B1.1 instructs: "The statement of extent should account for every leaf in the volume as issued by the publisher, including leaves of text, leaves of plates, and blank leaves. It should not include leaves added as part of the binding or the binding itself."[36] DCRM(B)5B3.1 further specifies:

> If unnumbered pages or leaves (printed or blank) are not included in a sequence of pagination or foliation, count them according to the terms used to describe the rest of the publication or the part of the publication with which they are associated.[37]

The title page of *Stirpium adversaria nova* is engraved. DCRM(B)5B9.4 specifically addresses the treatment of engraved title pages in the statement of extent:

> Count title pages (and added title pages) as leaves or pages of plates if they are entirely or chiefly non-letterpress (e.g., engraved or lithographed) and not integral to any letterpress gatherings. Make a note to indicate any title page counted as a plate.

The statement of extent developed for Stirpium adversaria nova's DCRM(B) record was recorded in the form: "[18], 455, [3] p., [l] leaf of plates." A 500 field general note, "Engraved title page" was also created for this record.

The statement of extent element for *Stirpium adversaria nova*'s PCC-RDA-BSR is discussed next. The instructions for extent in the PCC-RDA-BSR contain the provision: "Rare materials: Apply *Descriptive Cataloging of Rare Materials* (DCRM) conventions when recording extent; however, do not use abbreviations."[38] This provision allows DCRM(B)5B1.1 and DCRM(B)5B3.1 to be applied when recording the statement of extent for records created according to the PCC-RDA-BSR. The 300 $a element developed for *Stirpium adversaria nova*'s record was recorded in the form: "[18], 455, [3] pages, [1] leaf of plates." The only difference between the DCRM(B) record's statement of extent and that in the PCC-RDA-BSR was that "pages" was recorded in the PCC-RDA-BSR element instead of "p." The 500 field general note recording "Engraved title page" was created according to RDA 3.21.2.11, which allows catalogers to record other details of extent.

Recording the statement of extent in the RDA record was more complicated than recording it in the other two records. Requirements for recording unnumbered

Table 3. Date of Publication (260 $c ; 264 _1 $c ; 264 _3 $c)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 260 $c ; 264 _1 $c ; 264 _3 $c
Descriptive Cataloging of Rare Materials (Books) Sources of information for date of publication: DCRM(B)4A2 Sources of information DCRM(B)4A2.1 Prescribed source for date of publication DCRM(B)4A2.2 Note created when source of date of publication is not the title page Transcription of date of publication: DCRM(B)4D1.2 Transcribing dates of publication including month DCRM(B)4D2.4 Fictitious or incorrect dates DCRM(B)G.4.1 Transcribing "ij" and "I"		Prescribed source of information for date of publication is the title page 260 . . . $c 1570 [i.e. 1571, calendis Ianuarijs] 500 $a Printer's name and date of printing from colophon. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.
PCC-RDA-BSR (BIBCO Standard Record) (Element included in BSR: RDA core element) Sources of information for date of publication: RDA 2.8.1.1 Printers may be treated as publishers RDA 2.8.6 Date of publication, core element RDA 2.8.6.2 Sources of information, date of publication in order of preference, same source as title proper Transcription of date of publication: RDA 2.8.6 Date of publication RDA 2.8.6.3 Recording Date of Publication RDA 2.8.1 Recording Publication Statement RDA 2.8.1.4 Recording Publication Statement RDA 1.7.1 DCRM(B) designated published style manual as guide for transcription DCRM(B)4D1.2 Transcribing dates of publication including month DCRM(B)4D2.4 Fictitious or incorrect dates DCRM(B)G.4.1 Transcribing "ij" and "I" RDA 2.17.7.3 Note on details relating to publication statement	Transcription: RDA 2.8.6 "Rare materials: Transcribe date(s) found in the resource (see DCRM(B,C,G,M) 4D1). If a date of publication is known to be fictitious or incorrect, supply the correct year in square brackets (see DCRM(B, C, G, M) 4D2.4)" RDA 1.7.1 General guidelines on transcription. Alterantive (1st): "Rare materials: Use *Descriptive Cataloging of Rare Materials* as the 'designated published style manual' in place of the instructions given under RDA 1.7.2-1.7.9 for transcribing punctuation, numerals, symbols, abbreviations, etc."	Source of information for date of publication is the title page (the same source as the title proper) 264 _1 . . . $c 1570 [i.e. 1571, calendis Ianuarijs] 500 $a Place of manufacture and printer's name from colophon. 500 $a Colophon: Londini, 1571, Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.
Resource Description & Access (RDA) (Date of manufacture core element if no other date) Sources of information for date of manufacture: RDA 2.10.6 Date of manufacture, core element if no other date RDA 2.10.6.2 Sources of date of manufacture in order of preference, same source as title proper Transcription of date of manufacture: RDA 2.10.6.3 Recording date of manufacture RDA 2.10.1 Basic instructions on recording manufacture statement RDA 2.10.1.4 Recording date of manufacture as it appears on source of information RDA 1.7.9 Inaccuracies recorded in a note if considered important for identification or access RDA 2.17.9.3 Note on details relating to manufacture statement		Source of information for date of manufacture is the title page (the same source as the title proper) 264 _3 . . . $c 1570. 500 $a Date of manufacture recorded in colophon, 1571. 500 $a Colophon: Londini. 1571. Calendis Ianuarijs, excudebat prelum Thomae Purfoetij, ad Lucreti[ae] symbolum.

Table 4. Statement of Extent (300 $a)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 300 $a
Descriptive Cataloging of Rare Materials (Books) DCRM(B)0B2.2: Imperfect copies DCRM(B)7B14.1: References to published descriptions in bibliographies when used to supply elements DCRM(B)5B1.1: Extent should account for every leaf in the volume DCRM(B)5B1.3: Recording "complete number" of leaves, pages or columns DCRM(B)3.1: Recording unnumbered plates or leaves using square brackets DCRMB5B9.4: Engraved title pages counted as leaves of plates; make note to indicate title page counted as plate		300 $a [18], 455, [3] p., [1] leaf of plates 500 $a Engraved title page.
PCC-RDA-BSR (BIBCO Standard Record) (Element included in BSR: RDA core when volume complete or extent known) DCRM(B)5B1.1: Extent should account for every leaf in the volume DCRM(B)5B1.3: Recording "complete number" of leaves, pages or columns DCRM(B)3.1: Recording unnumbered plates or leaves using square brackets DCRMB5B9.4: Engraved title pages counted as leaves of plates; make note to indicate title page counted as plate	RDA 3.4 "Always record extent, even though RDA only considers extent core if the resource is complete or the total extent known Use RDA elements under 3.4.1-3.4.6, as appropriate to the resource." RDA 3.4 "Rare materials: Apply *Descriptive Cataloging of Rare* Materials (DCRM) conventions when recording extent; however, do not use abbreviations."	300 $a [18], 455, [3] pages, [1] leaf of plates. 500 $a Engraved title page.
Resource Description & Access (RDA) (Core element when manifestation is complete and total extent known) RDA 3.4: Extent known from published bibliography RDA 3.4.1.2: Take additional evidence from any source for recording extent RDA 3.4.5.3.1: Numbered and Unnumbered Sequences: if the manifestation consists of both numbered and unnumbered sequences of pages, leaves, or columns, disregard the unnumbered sequences . . . RDA 3.4.5.2: Record extent according to type of sequence used in the manifestation RDA 3.21.2.11: Other details of extent recorded in note: engraved title page	RDA 3.4.5.3.1 Exception: Early printed resources: "For early printed resources, record unnumbered sequences of pages, leaves, or columns . . ." RDA 3.4.5.2 Exception: Early Printed Resources: "For early printed resources, record each sequence of leaves, pages, or columns in the terms and form presented . . ."	300 $a 18 unnumbered pages, 455 pages, 3 unnumbered pages, 1 unnumbered leaf of plates. 500 $a Engraved title page.

pages or unnumbered leaves was the first issue addressed. DCRM(B)5B3.1 instructs catalogers that every leaf must be accounted for in a volume. RDA 3.4.5.3.1 instructs catalogers that unnumbered sequences of pages are disregarded unless they form a substantial part of the resource or are referred to in a note. The first unnumbered sequence in *Stiprium adversaria nova*'s text is substantial because it contains a dedication to Queen Elizabeth and an index to the book's contents. However, RDA 3.4.5.3.1 contains an exception for rare books when the unnumbered sequences do not form a substantial part of the volume: "Early printed resources. For early printed resources, record unnumbered sequences of pages, leaves, or columns."[39] Although the issue of inclusiveness is solved by this early printed resources exception, RDA does not address the lengthy extent statements resulting from recording unnumbered pages or unnumbered leaves. The statement of extent element developed for the RDA record was recorded as "20

unnumbered pages, 455 pages, 3 unnumbered pages." Table 4 summarizes the three different possible statement of extent elements recorded for *Stirpium adversaria nova* and the rules used to construct them.

It is informative to highlight another RDA rule that does not adequately address rare book extent statements, although it did not affect *Stirpium adversaria nova*'s RDA record. There are often errors in the pagination of rare books and a number that does not accurately represent the extent of the item is used to record the last numbered page. DCRM(B)5B7.2 directs catalogers:

> If the number of the last numbered page, leaf, or column of a sequence does not indicate the correct number of pages, etc., either record the sequences exactly to indicate the source of the error or record the number as given in the publication and supply a correction in square brackets. Provide an explanatory note if considered important.
> xiv, 823 [i.e., 328] p.
> Optional note: Page 328 wrongly numbered 823.[40]

RDA 3.4.5.5 addresses misleading numbering:

> In some cases, the numbering on the last page, leaf, or column of a sequence does not represent the total number in that sequence. When this occurs, do not correct it unless it gives a completely false impression of the extent of the manifestation (e.g., when only alternate pages are numbered or when the number on the last page, leaf, or column of the sequence is misprinted).
>
> When correcting misleading numbering, record the numbering as it appears on the last page or leaf followed by that is and the correct number.[41]

The extent statement for a rare book with several sequences of unnumbered pages and unnumbered leaves ending with an incorrectly numbered page or leaf would be cumbersome to record. The extent statement for a rare book consisting of separate parts issued together with separate paginations of numbered and numbered pages and leaves could potentially produce unwieldy 300 $a elements in bibliographic records.

300 $b Illustrative Matter

The Dittrick Medical History Museum's copy of *Stirpium adversaria nova* is illustrated with 271 woodcuts printed throughout the text.[42] DCRM(B)5C1.1 directs catalogers: "To indicate the presence of illustration, use the abbreviation 'ill.' after the statement of extent."[43] DCRM(B)5C1.5 adds: "Optionally, add the graphic process or technique in parentheses, preferably using a term found in a standard vocabulary. Give more detailed descriptions of the illustrations in a note, if considered important."[44] DCRM(B)5C1.5 includes a link to the Getty Art & Architecture Thesarus (AAT). The 300 $b element for the DCRM(B) record was recorded as "ill. (woodcuts)."

The PCC-RDA-BSR does not include the 300 $b illustrative matter element. The decision was made to include the element in *Stirpium aadversaria* nova PCC-RDA-BSR record based on statements contained in the introduction to the standard:

> The BSR establishes a baseline set of elements that emphasize access points over descriptive data. The standard seeks to ensure inclusion of the essential data elements necessary to meet user needs. . . . The standard also does not preclude the use of any data in bibliographic description representing more extensive cataloging treatment.[45]

The illustrative matter was recorded in the 300 $b element in *Stirpium adversaria nova*'s PCC-RDA-BSR as RDA 7.15.1.3 instructs: "Record the illustrative content if considered important for identification or selection. Use one or more appropriate terms from the following list. Record the type of illustrative content in place of or in addition to the general term *illustration*."[46]

Since the list RDA provides does not include graphic processes such as woodcut or engraving, the 300 $b element in *Stirpium adversaria* nova's PCC-RDA-BSR only recorded "illustrations." The abbreviation "ill." was not recorded. The same 300 $b element with "illustrations" was recorded in the RDA record. RDA 7.15.1.3 directs catalogers: "Record an illustrative content if considered important for identification or selection."[47] Table 5 summarizes the rules used to form the 300 $b element in *Stirpium adversaria nova*'s three records.

DCRM(B) provides catalogers with more detailed instructions for recording illustrative content in rare book records. DCRM(B)5C1.3 states: "Do not regard ornaments (e.g., head-pieces, vignettes, tail-pieces, printers' devices), pictorial covers, or pictorial dust jackets as illustrations. If considered important, these may be mentioned in a note (see 7B10)."[48] DCRM(B)5C1.4 provides more specific instructions: "Optionally, treat significant title-page illustrations as illustrations rather than ornaments. Make a note to indicate any title-page illustration so treated, if considered important (see 7B10)."[49] It is important that catalogers record the presence of hand coloring in a rare book. DCRM(B)5C3.2 clarifies how to record hand-coloring and publisher-issued hand coloring:

Table 5. Illustrations (300 $b) & Dimensions (300 $c)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 300 field $b & $c
Descriptive Cataloging of Rare Materials (Books)		$a [18], 455, [3] p., [1] leaf of plates : $b ill. (woodcuts) ; $c 32 cm (fol.)
Illustrations (300 $b) DCRM(B)5C1.1 Indicate the presence of illustrations with abbreviation ill. DCRM(B)5C1.5 Optionally add the graphic process or technique in parentheses		300 . . . $b ill. (woodcuts) 500 $a Engraved title page.
Dimensions (300 $c) DCRM(B)5D1.1 Give height in centimeters; round up to next full centimeter Preface: Periods are dropped after cm and mm, p. 8 DCRM(B)5D1.3 Bibliographical format following dimensions		300 . . . $c 32 cm (fol.) 500 $a Engraved title page.
PCC-RDA-BSR (BIBCO Standard Record)		300 $a [18], 455, [3] pages, [1] leaf of plates : $b illustrations ; $c 32 cm (folio)
Illustrations (300 $b) (Element not included in BSR: not RDA core element) Introduction p. 3: Catalogers may include bibliographic data representing more extensive cataloging treatment RDA 7.15.1.3: Record if considered important for identification or selection		300 . . . : $b illustrations 500 $a Engraved title page.
Dimensions (300 $c) (PCC core element: not RDA core element) RDA 3.5 Dimensions RDA 3.5.1.3 Record dimensions in centimetres Bibliographic format (300 $c) (PCC Recommended element) RDA 3.12 Bibliographic format	Dimensions: "PCC Core for . . . rare materials . . . Use RDA elements under 3.5-3.5.3, as appropriate." Bibliographic format: "Rare books, rare music, rare atlases: PCC recommends this element when it is applicable and can be determined."	300 . . . ; $c 32 cm (folio) 500 $a Engraved title page.
Resource Description & Access (RDA)		300 $a 18 unnumbered pages, 455 pages, 3 unnumbered pages, 1 unnumbered leaf of plates : $b illustrations ; $c 32 cm (folio)
Illustrations (300 $b) (Not RDA core element) RDA 7.15.1.3: Record if considered important for identification or selection		300 . . . : $b illustrations 500 $a Engraved title page.
Dimensions (300 $c) (Not RDA core element) RDA 3.5.1.3 Record dimensions in centimetres to the next whole centimetres up using symbol cm RDA 3.12.1.3 Record book format of early printed book		300 . . . ; $c 32 cm (folio) 500 $a Engraved title page.

> Do not describe hand-colored illustrations as "col." unless there is evidence that the publication was issued with the hand coloring. In case of doubt, consider any machine-press publication with hand coloring to have been issued that way by the publisher. Always mention publisher-issued hand coloring in a note (7B10.3); make a local note on the presence of other hand coloring, if considered important (see 7B19.1.3).[50]

The PCC-RDA-BSR and RDA rules lack the detailed instructions that DCRM(B) provides rare book catalogers for recording illustrative matter.

300 $c Dimensions

The dimensions element in the DCRM(B) record was recorded first. DCRM(B)5D.1.1 states:

> Give the height of a publication (based on the copy in hand) in centimeters, rounding up a fraction of a centimeter up to the next full centimeter. If a publication measures less than ten centimeters, give the height in millimeters. If more than one copy of the publication is held, and the heights of the different copies vary, record the height of the tallest copy and give the height of the other copies in a local note.[51]

The height of *Stirpium adversaria nova* is 31.5 cm. The height was rounded up and recorded in the DCRM(B) dimensions element as "32 cm."

The PCC-RDA-BSR contains a rare materials provision for dimensions: "PCC core for . . . rare materials (for rare graphic materials, always specify what was measured."[52] This provision supersedes RDA rules that do not identify dimensions as a core element. RDA 3.5.1.3 directs catalogers: "Unless instructed otherwise, record dimensions in centimetres to the next whole centimetres up and use the metric symbol *cm* (e.g., if the height measures 17.2 centimetres, record *18 cm*)."[53] RDA 3.5.1.4.14 instructs: "Record the height of the volume. If the volume measures less than 10 centimetres, record the height in millimetres and use the metric symbol *mm*."[54] *Stirpium adversaria nova*'s height was rounded up and recorded as "32 cm" without a period in the PCC-RDA-BSR record. The dimensions element was included in *Stirpium adversaria nova*'s RDA record although it is not a core element. It was recorded according to RDA 3.5.1.3, the same rule used to record the dimensions element in the PCC-RDA-BSR record. *Stirpium adversaria nova*'s height was rounded up and recorded as thirty-two centimeters in the 300 $c element in all three records. The DCRM(B) record recorded the centimeters as an abbreviation, "cm." The PCC-RDA-BSR and RDA records recorded the centimeters as "cm," a metric symbol.

The dimensions element can also include the bibliographical format of the rare book. DCRM(B)5D1.3 directs:

> For hand-press publications, add the bibliographical format of the publication in parentheses following the size statement whenever the format can be determined. Optionally, give the format also for machine-press publications. Give the format in abbreviated form (fol., 4to, 8vo, 12mo, etc.). Use 'full-sheet' for publications made up of unfolded sheets.[55]

The dimensions element in *Stirpium adversaria nova*'s DCRM(B) record was recorded as "32 cm. (fol.)" indicating that the rare book is a folio. The PCC-RDA-BSR contains a rare materials provision for bibliographical format: "Rare books, rare music, rare atlases: PCC recommends this element when it is applicable and can de be determined."[56] The dimensions element in *Stirpium adversaria nova*'s PCC-RDA-BSR record format was recorded as "32 cm (folio)." The bibliographical format was also included in *Stirpium adversaria nova*'s RDA record. RDA 3.12.1.3 directs catalogers: "Record the book format of an early printed book using an appropriate term from the list below."[57] The RDA record recorded the bibliographical format as "32 cm (folio)." *Stirpium adversaria nova*'s bibliographical format was recorded in all three records. The DCRM(B) record used an abbreviation for folio and recorded "(fol.)" in the dimensions element. The PCC-RDA-BSR and RDA records did not abbreviate folio and recorded "folio" in the dimensions element. Table 5 summarizes the rules used to form the 300 $c dimensions element.

500 General Note: Signatures

After the elements in the physical description area in *Stirpium adversaria nova*'s three records were created, a 500 field general note was created that was not associated with the statements of publication or statement of manufacture recorded in the 260 and 264 fields. Rare book records often contain a 500 field general note that records the signatures of the volume. A 500 field general note was constructed to record the signatures of *Stirpium adversaria nova* in the DCRM(B) record. DCRM(B)7B9.1 directs catalogers:

> Make a note giving details of the signatures of a volume, if considered important. Give these signature details according to the formula in Philip Gaskell's *A New Introduction to Bibliography* (see p. 328-332), insofar as typographical facilities per-

> mit. Preface this note with the word 'Signatures' and a colon.[58]

The PCC-RDA-BSR lacks instructions for a signatures note. A signatures note was created for the PCC-RDA-BSR based on the guidelines provided in the introduction to the standard. Catalogers may include data in a bibliographic description that represents more extensive cataloging treatment. A signatures note was originally created for *Stirpium adversaria nova*'s RDA record for this study based on RDA 3.21.2.9, what directed catalogers:

> For early printed resources, make notes about details of the extent of the manifestation (e.g., details of pagination, aspects of collation, the layout of sheets) if these details are: not recorded as part of the extent element (see 3.4.5 RDA-3.4.5.1.3 RDA) and considered important for identification or selection.[59]

This instruction was deleted as a revision to RDA. RDA 3.21.2.11 (other details of extent) replaces it. Catalogers are directed: "Make notes on aspects of collation, if considered important for identification or selection."[60]

DCRM(B)7B9 provides catalogers with more comprehensive instructions for creating a signatures note than RDA 3.21.2.11. DCRM(B)7B9.1 directs catalogers to the specific pages in Gaskell's *A New Introduction to Bibliography* that explain the formula needed to record the signatures statement. DCRM(B)7B9.1 also provides instructions that explain how to format the note, prefaced with "Signatures" and a colon. *Stirpium adversaria nova*'s signatures statement includes unsigned leaves that fall outside the signatures sequence. DCRM(B)7B9.3 provides instructions for the special uses of pi and chi:

> Indicate unsigned leaves that fall outside the signatures sequence (see Gaskell p. 330) by using the words **pi** and **chi**. Do not enclose the words in square brackets. Do not use the Greek characters π and χ, as these will give the impression that the leaves have actually been signed with Greek letters (see 7B9.9). . . . Indicate partial duplications of an alphabet (see Gaskell p. 331) by using superscript pi and superscript chi or, if superscript letters are not available, by substituting '[superscript pi]' and '[superscript chi].'[61]

DCRM(B)7B9.3 refers catalogers to Gaskell's *A New Introduction to Bibliography* for more detailed explanation of signatures statements. *Stirpium adversaria nova*'s signatures note was recorded in the same form in all three records:

> 500 $a Signatures: [superscript pi]A² [superscript pi]B1 chi1 *₀ *2 *4 A-2P⁶ 2R1

The construction of the signatures note was greatly facilitated by the extensive instructions provided in DCRM(B). The rules used to create the 500 field signatures notes are summarized in table 6.

510 4 Citation Note

Citations notes are also common in rare book records and in the MARC 510 field, Citation/References Note. The citation note points to a published description of the book being cataloged. A published description of the Dittrick Medical History Center's copy of *Stirprum adversaria nova* is contained in a comprehensive bibliography compiled by Stanley H. Johnston, *The Cleveland herbal, botanical, and horticultural collections: a descriptive bibliography of pre-1830 works from the libraries of the Holden Arboretum, the Cleveland Medical Library Association, and the Garden Center of Greater Cleveland*.[62] The citation note for *Stirpium adversaria nova*'s DCRM(B) record was considered first. DCRM(B)7B14.1 directs:

> Give references to published descriptions in bibliographies or other authoritative reference sources if these have been used to supply elements of the description. Use the form and punctuation conventions recommended by *Standard Citation Forms for Published Bibliographies and Catalogs Used in Rare Book Cataloging*. Begin the note with the word 'References' and a colon.[63]

The PCC-RDA-BSR contains a rare materials provision for citation notes under Related Work RDA 25.1: "Rare materials: Citation notes and reference to published descriptions are encouraged. Record in the form prescribed by *Standard Citation Forms for Rare Materials Cataloging*."[64] DCRM(B) and the PCC-RDA-BSR provided clear instructions for the citation notes recorded in *Stirpium adversaria nova*'s records. Citation notes were recorded in the PCC-RDA-BSR and DCRM(B) records using the form prescribed by *Standard Citation Forms for Rare Materials Cataloging* for Johnston's descriptive bibliography. A citation note was recorded in *Stirpium adversaria nova*'s RDA record, but the instructions provided are not as clear. RDA 25.1 contains instructions for related works. RDA 25.1.1.1 defines the scope of a related work: "A work associated with a work being described."[65] RDA 25.1.1.3 contains instructions for recording a related work that include examples of structured descriptions of related works. Since a citation note is a structured description of a related work, a 510 note was recorded in the RDA record in the same form

Table 6. Signatures Note (500 field) ; Citation Source Note (510 field)

Cataloging Standard	**PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives**	**Transcription of 500 field & 510 field**
Descriptive Cataloging of Rare Materials (Books)		
Signatures (500 field) DCRM(B)7B9.1 Make note for signatures of volume if considered important. Use Gaskell's formula (pp. 328-332) DCRM(B)7B9.3 Special uses of pi and chi		500 $a Signatures: [superscript pi]A^2 [superscript pi]B1 chi1 $*$ $_{*}$ $*^{2}$ $*^{4}$ A-2P^{6} 2R1
Citation Source (510 field) DCRM(B)7B14.1 References to published descriptions in bibliographies when used to supply elements DCRM(B)7B14.2 References to published descriptions if considered important		510 4 $a References: Johnston, S.H. Cleveland herbal, botanical, and horticultural collections, $c 103.
PCC-RDA-BSR (BIBCO Standard Record)		
Signatures (500 field) (Field not included in BSR: not RDA core) Introduction p. 3: Catalogers may include bibliographic data representing more extensive cataloging treatment RDA 3.21.2.11 Notes on aspects of collation		500 $a Signatures: [superscript pi]A^2 [superscript pi]B1 chi1 $*$ $_{*}$ $*^{2}$ $*^{4}$ A-2P^{6} 2R1
Citation Source (510 field) (Field included in BSR: not RDA core) RDA 25.1 Related work p. 18	"Rare materials: Citation notes and references to published descriptions are encouraged. Record in the form prescribed by *Standard Citation Forms for Rare Materials Cataloging. . .*"	510 4 $a References: Johnston, S.H. Cleveland herbal, botanical, and horticultural collections, $c 103.
Resource Description & Access (RDA)		
Signatures (500 field) (Not RDA core) RDA 3.21.2.11 Notes on aspects of collation		500 $a Signatures: [superscript pi]A^2 [superscript pi]B1 chi1 $*$ $_{*}$ $*^{2}$ $*^{4}$ A-2P^{6} 2R1
Citation Source (510 field) (Not RDA core) RDA 3.21.2.11 Other details of extent recorded in note: source of description of total extent RDA 25.1 Related work RDA 25.1.1.1 Scope of related work RDA 25.1.1.3 Recording a related work		510 4 $a References: Johnston, S.H. Cleveland herbal, botanical, and horticultural collections, $c 103.

recorded in the PCC-RDA-BSR and DCRM(B) records shown below:

> 510 4 $a References: Johnston, S.H. Cleveland herbal, botanical, and horticultural collections, $c 103.

Table 6 summarizes the rules applied for the construction of the 510 4 field in the bibliographic records for the three standards. The BSC sponsored a proposal for revisions to RDA to accommodate descriptions of referential works such as the *Standard Citation Forms* recorded in the 510 field. This proposal was rejected.[66]

590 field Item-Specific Notes

Item-specific, or local notes, recorded in the 590 field are a hallmark of rare book cataloging records. DCRM(B)7B19.1.1 directs catalogers:

Table 7. Local Notes and Bound-with Notes (590 field)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 590 field notes
Descriptive Cataloging of Rare Materials (Books)		
Copy-Specific Local Notes (590 field) DCRM(B)7B19.1.1 Making local notes DCRM(B)7B19.1.4 Formatting local notes DCRM(B)7B10.1 Physical details of the book DCRM(B)7B10.3 Fuller details about illustrations DCRM(B)7B19.2 Provenance DCRM(B)19.3.1 Copy-specific bindings		590 Dittrick Medical History Center copy: imperfect: lacks gatherings [superscript pi]A [superscript pi]B and chi1; contains 271 woodcuts. 590 Dittrick Medical History Center copy: binding is blind-stamped pigskin over wooden boards; five rib spine; clasps with initials "WS"; title page signed by F.L. Albrecht , dr.
Bound-with Local Notes (590 field) DCRM(B)7B18.3 Works bound together subsequent to publication DCRM(B)7B19.3.4 Making local notes DCRM(B)7B18.2 Elements included in "with" notes DCRM(B)0G4.1 Spacing within words and numbers DCRM(B)0G3.4 Punctuation within roman numerals DCRM(B)4D2.1 Roman numerals DCRM(B) Appendix F 7B19 Copy-specific titles (optional)		590 $a Dittrick Medical History Center copy bound with: L'Obel, Matthias de. Plantarum seu stirpium historia. Antuerpiae : Ex officina Christophori Plantini, MDLXXVI [1576]. 740 02 $a Plantarum seu stirpium historia.
PCC-RDA-BSR (BIBCO Standard Record)		
Copy-Specific Local Notes (590 field) (Field not included in BSR: not RDA core) Introduction p. 3: Catalogers may include bibliographic data representing more extensive cataloging treatment RDA 3.22.1.4 Make notes about special features for early printed resources		590 Dittrick Medical History Center copy: imperfect: lacks gatherings [superscript pi]A [superscript pi]B and chi1; contains 271 woodcuts. 590 Dittrick Medical History Center copy: binding is blind-stamped pigskin over wooden boards; five rib spine; clasps with initials "WS"; title page signed by F.L. Albrecht , dr.
Bound-with Local Notes (590 field) (Field included in BSR: PCC recommends for bound-withs for rare materials if warranted: not RDA core) RDA 28.1 Related item RDA 1.7.1 DCRM(B) designated published style manual as guide for transcription DCRM(B)0G4.1 Spacing within words and numbers DCRM(B)0G3.4 Punctuation within roman numerals DCRM(B)4D2.1 Roman numerals BSR p. 3 Catalogers may determine fullness of records	"Rare materials: If making separate descriptions for resources bound together after publication, make a reference to the related item in a local 'with' note." RDA 1.7.1 General guidelines on transcription. Alterantive (1st): "Rare materials: Use *Descriptive Cataloging of Rare Materials* as the 'designated published style manual' in place of the instructions given under RDA 1.7.2-1.7.9 for transcribing punctuation, numerals, symbols, abbreviations, etc."	590 $a Dittrick Medical History Center copy bound with: L'Obel, Matthias de. Plantarum seu stirpium historia. Antuerpiae : Ex officina Christophori Plantini, MDLXXVI [1576]. 740 02 Plantarum seu stirpium historia.

Make local notes on any special features or imperfections of the copy being described when they are considered important. Copy-specific information is highly desirable in the context of rare materials cataloging, which puts greater emphasis on materials as artifacts than is usual in general cataloging practice. Local notes can also provide warrant for added entries (e.g. added entries for the names of former owners or binders, for various kinds of provenance evidence, binding characteristics, etc.). Carefully distinguish local notes from other kinds of notes that record information valid for all copies of the bibliographic unit being cataloged.[67]

Table 7. Local Notes and Bound-with Notes (590 field) (continued)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 590 field notes
Resource Description & Access (RDA)		
Copy-Specific Local Notes (590 field) (Not RDA core) RDA 3.22.1.4 Make notes about special features for early printed resources		590 Dittrick Medical History Center copy: imperfect: lacks gatherings [superscript pi]A [superscript pi]B and chi1; contains 271 woodcuts. 590 Dittrick Medical History Center copy: binding is blind-stamped pigskin over wooden boards; five rib spine; clasps with initials "WS"; title page signed by F.L. Albrecht , dr.
Bound-with Local Notes (590 field) (Not RDA core) RDA 28.1 Related item RDA 28.1.1 Recording relationship to related item RDA 28.1.1.3 Example of a bound with note RDA 1.7.1 DCRM(B) published style manual as preferred guide for transcription of Roman numerals RDA 25.1 Related work	RDA 1.7.1 Alternative: "The agency creating the data may establish in-house guidelines for capitalization, punctuation, numerals, symbols, abbreviations,etc., or choose a published style manual, etc (e.g. The Chicago Manual of Style) as its preferred guide. In such situations, use those guidelines or that style manual instead of the instructions at 1.7.2 RDA-1.7.9 and in the appendices."	590 $a Dittrick Medical History Center copy bound with: L'Obel, Matthias de. Plantarum seu stirpium historia. -- Antuerpiae : Ex officina Christophori Plantini, MDLXXVI [1576]. 740 02 $a Plantarum seu stirpium historia.

DCRM(B)7B19.1.1 provides instructions for recording notes when it cannot be determined if characteristics of a rare book are copy specific:

> For many older publications, however, it will not be readily ascertainable whether the characteristics of a single copy are in fact shared by other copies. In case of doubt, consider that the characteristics of the copy in hand are not shared by other copies.[68]

DCRM(B)7B19.1.4 contains directions for formatting item-specific notes with examples:

> Include in local notes one or more of the following identifiers, if considered important: a designation of the holding institution (e.g., a library's name, acronym, or code), a designation of the item's physical location (e.g., a shelfmark), or an indication of the item's copy number (if the institution holds more than one copy). Such identifiers are especially recommended if the bibliographic record is to be contributed to a union catalog or other shared database.
>
> Copy 1: Imperfect: leaves 12 and 13 (b6 and c1) wanting; without the last blank leaf (S8)
>
> Copy 2: Extra-illustrated
>
> Folger copy on vellum; illustrations and part of borders hand colored; with illuminated initials; rubricated in red and blue
>
> LC has no. 20, autographed by author[69]

The PCC-RDA-BSR does not include instructions for item-specific notes recorded in the 590 field. Item-specific notes were recorded in *Stirpium adversaria nova*'s PCC-RDA-BSR, based on the introduction to the standard, which states that data can be included in a bibliographic description that represents a more extensive cataloging treatment. Item-specific notes were recorded in the RDA record and PCC-RDA-BSR following RDA 3.22.1.4:

> For early printed resources, make a note about special features of the specific item being described (e.g., rubrication, illumination, binding). Also make a note about other item-specific carrier characteristics as instructed at 3.22.1.3 RDA.[70]

RDA 3.22.1.4 contains examples illustrating notes on bindings, former owner signatures, hand coloring and missing leaves. The examples provided in RDA 3.22.1.3 highlight text pages with wormholes, numbered copies, and errata sheets tipped in.

Although the RDA rules were accompanied by examples of notes relevant to rare book cataloging, DCRM(B) offers more detailed instructions for constructing item specific notes. DCRM(B)7B19.2 contains directions for provenance notes:

Table 8. Genre/Form Terms (655 field) ; Access Points (7XX fields)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 300 field $b & $c
Descriptive Cataloging of Rare Materials (Books)		
Genre/Form terms (655 field) DCRM(B)7B19.1.1 Local notes provide warrant for added entries DCRM(B) Appendix C3 655 field RBMS Controlled Vocabularies: Binding Terms RBMS Controlled Vocabularies: Provenance Evidence RBMS Controlled Vocabularies: Genre Terms		655 _7 $a Pigskin bindings (Binding) $2 rbbin 655 _7 $a Blind tooled bindings (Binding) $2 rbbin 655 _7 $a Autographs (Provenance) $2 rbprov 655 _7 $a Herbals. $2 rbgenr
Access Points (7XX fields) DCRM(B)7B19.1.1. Local notes to provide warrant for added entries Appendix C3 7XX fields RDA I.2.1 Relationship designators for creators RBMS Controlled Vocabularies: Relationship Designators		700 _1 $a L'Obel, Matthias de, $d 1538-1616, $e author. 700 _1 $a Purfoot, Thomas, $d -1615, $e printer. 700 _1 $a Albrecht, F. L., $e autographer, $e former owner.
PCC-RDA-BSR (BIBCO Standard Record)		
Genre/Form terms (655 field) (Element included in BSR: Non-RDA data) Element: Subject and genre/form access: contained in "Required Non-RDA and MARC DATA (Rare Materials)," p. 37 RBMS Controlled Vocabularies: Binding Terms RBMS Controlled Vocabularies Provenance Evidence RBMS Controlled Vocabularies: Genre Terms	"Rare books: Adding genre/form terms from one of the Rare Books and Manuscripts Section (RBMS) Controlled Vocabularies is strongly recommended. Assign terms from other thesauri as appropriate."--p. 37	655 _7 $a Pigskin bindings (Binding) $2 rbbin 655 _7 $a Blind tooled bindings (Binding) $2 rbbin 655 _7 $a Autographs (Provenance) $2 rbprov 655 _7 $a Herbals. $2 rbgenr
Access Points (7XX fields) (Elements included in BSR: not RDA Core) RDA 19.2 Creator RDA 19.3 Other agent associated with work RDA 18.5 Relationship designators RDA I.2.1 Relationship designators for creators RDA I.4.1 Relationship designators for manufacturer RDA I.5.1 Relationship designators for owner	RDA 19.2 "After satisfying the RDA Core requirement, catalogers may provide additional authorized access points for creators according to cataloger's judgement" --p. 17 RDA 19.3 "After satisfying the RDA Core requirement, catalogers may provide additional authorized access points according to cataloger's judgement"--p. 17	700 1_ $a L'Obel, Matthias de, $d 1538-1616, $e author. 700 1_ $a Purfoot, Thomas, $d -1615, $e printer. 700 1_ $a Albrecht, F. L., $e autographer, $e former owner.

Make a local note to describe details of an item's provenance, if considered important. In less detailed descriptions, it is advisable to summarize provenance information, without providing exact transcriptions or descriptions of the evidence. Include the names of former owners or other individuals of interest and approximate dates, whenever possible.[71]

DCRM(B) provides more specific directions for bindings notes than RDA. DCRM(B)7B19.3.1 provides instructions for copy-specific bindings and publisher-issued bindings: "Use local notes for descriptions of copy-specific bindings, if considered important; for descriptions of publisher-issued bindings common to all copies of an edition or issue, see 7B10.4-5."[72]

Two 590 item-specific notes were recorded in the records for the Dittrick Medical History Center's copy of

Table 8. Genre/Form Terms (655 field) ; Access Points (7XX fields) (continued)

Cataloging Standard	PCC-RDA-BSR Rare Materials Provisions or RDA Early Printed Resources Exceptions or Alternatives	Transcription of 300 field $b & $c
Resource Description & Access (RDA)		
Genre/Form terms (655 field) (Non-RDA data) 655 field element contained in "MARC Bibliographic to RDA Mappings" with RDA instructions for $z (RDA 16.2.2 Preferred name for place) RBMS Controlled Vocabularies: Binding Terms RBMS Controlled Vocabularies Provenance Evidence RBMS Controlled Vocabularies: Genre Terms		655 _7 $a Pigskin bindings (Binding) $2 rbbin 655 _7 $a Blind tooled bindings (Binding) $2 rbbin 655 _7 $a Autographs (Provenance) $2 rbprov 655 _7 $a Herbals. $2 rbgenr
Access Points (7XX fields) (Not RDA Core) RDA 19.2 Creator: only one is core RDA 19.3.1.3 Other person, family, or corporate body associated with a work: additional authorized access points may be added by catalogers RDA 18.5 Relationship designators RDA I.2.1 Relationship designators for creators RDA I.4.1 Relationship designators for manufacturer RDA I.5.1 Relationship designators for owner		700 1_ $a L'Obel, Matthias de, $d 1538-1616, $e author. 700 1_ $a Purfoot, Thomas, $d -1615, $e printer. 700 1_ $a Albrecht, F. L., $e autographer, $e former owner.

Stirpium adversaria nova. DCRM(B) guided the development of these fields because it provides more comprehensive instructions than RDA. The 590 notes were prefaced with the center's name (DCRM(B)7B19.1.4). The first recorded the rare book's missing gatherings. The second recorded a description of the binding (DCRM(B)7B19.1.1) and provenance information, the signature of a former owner on the title page (DCRM(B)7B19.1.1). The 590 notes recorded in *Stirpium adversaria nova*'s three records are listed below:

> 590 Dittrick Medical History Center copy: Imperfect: lacks gatherings [superscript pi]A [superscript pi]B and chi1.
> 590 Dittrick Medical History Center copy: Binding is blind-stamped pigskin over wooden boards; five rib spine; clasps with initials "WS"; title page signed by F.L. Albrecht , dr.

These item-specific notes and a summary of the cataloging rules used to construct them are provided in table 7.

590 Field Item-Specific Note: Bound-With

The Dittrick Medical History Center's copy of *Stirpium adversaria nova* is bound preceding L'Obel's *Plantarum seu stirpium historia* printed at Antwerp by Christopher Plantin in 1576.[73] The two works were not issued together. Bound with notes were recorded in 590 notes in *Stirpium adversaria nova*'s three records beginning with the DCRM(B) record. DCRM(B)7B18.3 directs catalogers: "If the works were bound together subsequent to publication, rather than issued together by the publisher, distributor, etc., make a local note according to the instructions in 7B19.3.4, if considered important."[74] DCRM(B)7B19.3.4 instructs:

> Make a local note, if considered important, whenever a publication has been bound with one or more works subsequent to publication. Preface the note with the words "Bound with" followed by a colon. Formulate the remainder of the note according to the instructions in 7B18.[75]

DCRM(B)7B18.2 contains detailed directions for recording with notes and provides an example. A note can contain four elements. These are a heading, title proper, primary statement of responsibility and publication/distribution element. Instructions for formatting each element are provided. The instructions for the publication area contained in part d of DCRM(B)7B18.2 guided the form of the printing date recorded in *Stirpium adversaria nova*'s bound-with note: "the publication, distribution, etc., area as found in the record for the work, abridged as necessary, without using the mark of omission."[76] The printing date on

the title page of L'Obel's *Plantarum seu stirpium historia* appears as "M. D. LXXVI." The roman numerals were recorded in the 590 note as they would be transcribed in the 260 $c element in a record for *Plantarum seu stirpium historia*. The date was recorded without internal spaces (DCRM(B)0G4.1) and without periods (DCRM(B)0G3.4). The date in Arabic numerals was supplied in square brackets following the date recorded in roman numerals (DCRM(B)4D2.1). The publisher name was abridged without using the mark of omission. The 590 bound-with note was recorded in the DCRM(B) record in the form:

> "Dittrick Medical History Center copy bound with: L'Obel, Matthias de. Plantarum seu stiprium historia. Antuerpiae : Ex officina Christophori Plantini, MDLXXVI [1576]."

The PCC-RDA-BSR contains a rare materials provision for bound-with notes in the instructions for RDA 28.1, related item: "Rare materials: If making separate descriptions for resources bound together after publication, make a reference to the related item in a local "with" note."[77] RDA 1.8.3, numbers expressed as words, includes a rare materials provision directing catalogers to the same DCRM(B) rules used to record roman numeral dates in rare book records DCRM(B)0G. The 590 bound-with note in the PCC-RDA-BSR was recorded in the same form as the note in the DCRM(B) record shown above.

A 590 bound-with note was recorded in the RDA record following RDA 28.1, related item. RDA 28.1.1 contains basic instructions on recording a related item. RDA 28.1.1.3 provides an example of a structured description of a related item that is a bound-with note:

> Bound with: Report of the Committee on the District of Columbia in relation to the city of Washington : read in Senate, February 2, 1835. — [Washington] : [publisher not identified], [1835] (City of Washington : Printed at the Globe Office, 1835).[78]

The form of the RDA bound-with note varies slightly from the form DCRM(B)7B18.2 recommends. The title element and publication area element are separated by dashes. The transcription of the roman numerals in the RDA record were guided by the RDA 1.7.1 alternative to use DCRM(B) as the chosen published style manual with its directions for recording roman numerals in rare book records. The 590 item-specific note was recorded in the RDA record as: "Dittrick Medical History Center copy bound with: L'Obel, Matthias de. Plantarum seu stiprium historia. -- Antuerpiae : Ex officina Christophori Plantini, MDLXXVI [1576]." Although it was included in the RDA record, RDA does not instruct catalogers to include the name of the holding library in item-specific notes (DCRM(B)7B19.1.4). RDA does not provide the same detailed list of instructions for formatting each element in the bound-with note that catalogers can access in DCRM(B)7B18.2. Table 7 summarizes the rules used to develop the 590 bound-with notes for *Stirpium adversaria nova*'s three records.

655 7 $2 Genre/Form Headings and Controlled Vocabularies

DCRM(B)7B19.1.1 states: "Local notes can also provide warrant for added entries (e.g., added entries for the names of former owners or binders, for various kinds of provenance evidence, binding characteristics, etc.)."[79] DCRM(B) Appendix C contains guidelines for core-level rare book records. DCRM(B)C3 lists elements of a core-level bibliographic record for a rare book that includes the 655 field:

> Addition of genre/form terms to the DCRM(B) core-level record is encouraged if local policy calls for use of such terms, as appropriate to the piece. Prefer the terminology used in controlled vocabularies issued by the RBMS Bibliographic Standards Committee. Terms from other authorized vocabularies (e.g., the Art & Architecture Thesaurus Online) may also be used as appropriate.[80]

The PCC-RDA-BSR contains a rare books provision under the element Subject and genre/form access: "Adding genre/form terms from one of the Rare Books and Manuscripts Section (RBMS) Controlled Vocabularies is strongly recommended. Assign terms from other thesauri as appropriate."[81] Currently RDA does not specifically address the genre/form element recorded in the 655 field. The "MARC Bibliographic to RDA Mapping" accessible at the Tools menu in the RDA Toolkit does not contain a link to a corresponding section in the RDA rules.[82] However, the same 655 fields for genre/form access recorded in *Stirpium adversaria* nova's PCC-RDA-BSR and DCRM(B) records were recorded in the RDA record. Two 655 fields were created to record attributes of *Stirpium adversaria nova*'s binding using the RBMS Controlled Vocabularies: Binding Terms:[83]

> 655 7 Pigskin bindings (Binding). $2 rbbin
> 655 7 Blind tooled bindings (Binding). $2 rbbin

An additional 655 field was created to record the former owner signature on the title page. The term "autographs" was chosen from the RBMS Controlled Vocabularies: Provenance Evidence Terms:[84]

> 655 7 Autographs (Provenance). $2 rbprov

The rules and vocabularies used to form the 655 7 fields recorded in *Stirpium adversaria nova*'s three records are recorded in table 8.

7XX Field Added Entries

Although DCRM(B) is concerned mainly with description, DCRM(B) Appendix C3 contains the 7XX fields in its list of core elements for rare book records:

> 7XX fields: Added entries: Mandatory if applicable. Use judgement in assessing each item and assign a complement of added entries that covers primary relationships associated with the manifestation of which the item is a part. The inclusion and importance of added entries are intended to reflect individual cataloger's judgement and/or local institutional policy.[85]

The PCC-RDA-BSR lacks a rare materials provision for added entries for rare materials. However, RDA 19.2 Creator instructs catalogers: "After satisfying the RDA core requirement, catalogers may provide additional authorized access points for creators according to cataloger's judgement."[86]

RDA 19.3 Other person, family, or corporate body associated with a work includes the note: "After satisfying the RDA core requirement, catalogers may provide additional authorized access points according to cataloger's judgement."[87] RDA 19.3.1.3 directs catalogers: "Record other persons, families, and corporate bodies associated with the work if considered important for access. Apply the general guidelines at 18.4 RDA."[88] Added entries were created in all three records for the second author, Matthias de L'Obel, the printer and the former owner who signed the title page of the Dittrick Medical History Center's copy of *Stirpium adversaria nova* (see table 8).

It is standard practice in rare book cataloging to record relationship designators in 7XX fields. The PCC-RDA-BSR includes a section on relationship designators contained in the instructions for RDA 18.5. Catalogers are directed: "Follow PCC Training Manual for Applying Relationship Designators in Bibliographic Records-1XX/7XX $e $i or $j as appropriate."[89] Appendixes I–L in the RDA Toolkit contain relationship designators for added entries in bibliographic records. The RBMS Bibliographic Standards Committee website contains a list of relationship designators for rare books and special collections cataloging.[90] Catalogers are directed: "Relationship designators contained in this resource may be used in catalog records created according to any standard, including RDA, that permits use of relationship designators from a source external to the standard."[91]

The three added entries were assigned the same relationship designators in the $e subfield in *Stirpium adversaria nova*'s three records. The relationship designator "author" was recorded in the added entry for Matthias de L'Obel, the second author. RDA I.2.1 contains "author," but it is not included in the RBMS website relationship designators list. The relationship designators, "printer" and "former owner" are contained in the RBMS website list and RDA Appendix I. RDA I.4.1 contains instructions for relationship designators for manufacturers. RDA I.5.1 instructs catalogers on relationship designators for owners. The added entries recorded in the three records for the Dittrick Medical History Center's copy of *Stirpium adversaria nova* are listed below:

> 700 1 $a L'Obel, Matthias de, $d 1538-1616, $e author.
> 700 1 $a Purfoot, Thomas $d -1615. $e printer.
> 700 1 $a Albrecht, F. L., $e autographer, $e former owner.

The rules used to develop the added entries in the three records are summarized in table 8. The three catalog records created for *Stirpium adversaria nova* following the three different cataloging standards are contained in appendixes B–D.

Conclusion

The Library of Congress's adoption of RDA in 2013 has significantly impacted rare books cataloging and rare materials cataloging in at least two ways. The RBMS BSC began working to adapt the rare book cataloging standard designed for the Anglo-American cataloging community from the time RDA was in its developmental stages. As work progressed on adapting this standard to DCRM(B), the committee decided a single rare materials cataloging standard applicable to all formats was needed. The new RBMS policy statements slated to become a part of the RDA Toolkit are a radical departure for special materials catalogers used to working with the DCRM manuals. The wealth of supporting documentation and examples contained in these manuals are tailored specifically to the needs of rare materials cataloging. As this study demonstrated, there are description and transcription issues that rare materials catalogers need to address that RDA, a general cataloging standard, does not. They include the transcription of complex publication statements and statements of extent and the need for 510 citation notes to record referential relationships. It is yet to be determined how effectively RDA and the RBMS PS can guide the specialized descriptions of rare materials with artifactual value.

In addition to spurring the development of a consolidated rare materials cataloging standard, RDA has played a role in starting discussions regarding the development of an international rare materials cataloging code.[92] An indication of this trend is the recent establishment of the RSC Rare Materials Working Group. The group aims to expand the coverage of rare materials in RDA and to refine the detail of the description of rare materials. However, developing an international rare materials cataloging standard will be a challenging process. Some libraries outside the Anglo-Cataloging community follow cataloging standards based on ISBD, which conflicts with RDA. It appears that adopting rare materials cataloging practice to RDA both within and outside the Anglo-American cataloging community will continue to be a challenge for the foreseeable future.

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Appendix A. Letterforms *I/J*, *U/V*, *i/j*, and *u/v*. Descriptive Cataloging of Rare Materials (Books)

G4. Letterforms I/J, U/V, i/j, and u/v

G4.1. Historical background.
Some knowledge of the history of printing as it applies to **I/J**, **U/V**, **i/j**, and **u/v** is helpful when applying the provisions of 0G2.2.

Until the early seventeenth century, the standard Latin alphabet contained 23 letters. The letters we know as **i** and **j** were considered different minuscule shapes (or letterforms) of the same letter, as were the letters **u** and **v**. The letter **w** was not part of the standard Latin alphabet. A printer's choice for the **u** letterform in preference to the **v** letterform (or the **i** to the **j**) depended on its placement in a word and was governed by convention. Conventions varied somewhat from printer to printer, but often reflected national and regional preferences. While there were variant letterforms for lowercase letters, in the pre-modern distribution there was only one letterform for each of these letters used as capitals: **I** (with the gothic form resembling a modern **J**), and **V** (with the gothic form resembling a modern **U**). For example, Jacob = Iacob; Unſpotted = Vnspotted (capitalized as the first word of a title).

The dominant patterns in use before the seventeenth century were:

- **i** used in the initial, medial, and final position, without signifying vocalic or consonantal use; e.g., iustice (modern form: justice)
- **j** used in the medial or final position only after a preceding **i** (more typical on the European continent), signifying vocalic use; e.g., commentarij (modern form: commentarii)
- **u** used in the initial, medial or final position, without signifying vocalic or consonantal use; e.g., oeuures (modern form: oeuvres)
- **v** used in the initial position, without signifying vocalic or consonantal use; e.g., vtilita (modern form: utilita)

A gradual shift took place over time, from the late fifteenth century through the middle of the seventeenth century, with **U/u** coming to phonetically signify a vowel and **V/v** to signify a consonant, regardless of case or position in the word. Likewise with **i** and j, although that shift was more irregular, with **I/i** coming to phonetically signify a vowel and **J/j** a consonant. In the modern 26-letter Latin alphabet, **i** and j and **u** and **v** are all considered separate letters.

- **I** used in all positions, without signifying vocalic or consonantal use; e.g., Iuan (modern form: Juan)
- **V** used in all positions, without signifying vocalic or consonantal use; e.g., Vrsprung (modern form: Ursprung)

Considering "Sameness" of Monographic Holdings in Shared Print Retention Decisions

Jennifer Hain Teper

In addition to the pressure of operating in a steady state of insufficient funding, academic libraries face incessant pressure to use space differently. As a result, libraries are aggressively withdrawing materials to relieve cramped shelves and reduce overall collection footprints. Selection for withdrawal may be based on various factors, but of concern is the withdrawal of materials for which copies are currently held in shared print repositories. Recent publications point to the need for thoughtful and strategic evaluation of shared print for quality and completeness, plus the evaluation of copies considered for withdrawal to ensure the perseverance of our print heritage. This study focuses on the comparison of forty-seven monographic titles cataloged as identical items that show broadly varying differences in editions, printings, condition, and preservation and repair. Survey data collected includes information about bibliographic accuracy, printing and binding variances, completeness, physical damage, chemical deterioration, provenance, and presence in the HathiTrust. The results show wide variability in the accuracy of cataloging records, historical use, physical condition of the materials, and the ability for those materials to be successfully digitized in the future. These results are illustrative of the strong potential for variation in "identical" bibliographic holdings among the broader academic library community.

For decades, libraries have made preservation and withdrawal decisions based largely on local information, considering shared or national-level holdings only in reference to identifying scarcely held materials. However, as libraries increasingly accept digitization as a trusted form of access for many titles, and as the demand for library space for user services and other functions increases, approaches to evaluating and prioritizing materials for preservation, print retention, or discard must take a wider perspective.

Currently, many academic and research libraries participate in shared print repositories—where one item serves as a physical copy for many institutions. While models and partnership agreements for print repositories vary, they share the commonality that a given title is selected for retention in agreement with a larger group. That title is retained either at the home institution or in a centralized location so that other institutions may choose to withdraw their copies to gain shelf space. Identification of titles for shared print agreements often focuses on low-use content, materials for which electronic access is available, or

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both. Although the condition of the selected physical item identified as the archived copy may be evaluated to meet minimum guidelines, rarely is it compared to other copies held locally to select the best or most historically accurate copy that, ideally, is undamaged and in an original binding. Additionally, libraries are making local retention and preservation decisions based on low OCLC holdings, assuming that this means scarcely held content. Libraries rely heavily on the accuracy of our shared cataloging records in OCLC's WorldCat. Yet many, including the University of Illinois at Urbana-Champaign, are painfully aware of both the inaccuracy of many of our local records and institutional holdings information and those found in the larger OCLC network. Still, many projects that focus on "last print copy" retention decisions, deaccessioning widely held titles, or making preservation/conservation/reformatting judgments that rely heavily on the accuracy of this data as it is the best data available for such choices.

Currently, decisions made by libraries regarding print retention affect the preservation of physical collections. Many academic libraries are moving towards a future with non-special collections print holdings occupying significantly reduced real estate in patron-focused areas, with access to many of the physical volumes provided through shared print holdings or through retention in remote storage.[1] However, without forethought and collaboration, that future could involve discarding books with potential value to our shared print heritage in lieu of lesser (damaged or incomplete) copies, simply because comparative data on like titles was not available or reviewed. Such "value" could be in the form of variances in imprint or edition, with important signatures or marginalia, original and historically/intellectually valuable bindings, or those that had received costly preservation and conservation treatments to extend their long-term usability (like deacidification). There are many who argue fervently for the value of the book as an object, such as Stauffer through his Book Traces project, a CLIR-funded program that has set out to find and record historical readers' interventions in the University of Virginia Library's circulating collections and around the United States.[2] It stands to reason that if we withdraw or "deduplicate" a large portion of our print heritage, information will be lost. That information may lie in fine bindings, historic provenance, or important but subtle variance between editions, if not properly cataloged as different editions. Will that loss disservice the scholarly community or the population at large?

A more tangible argument for why we should concern ourselves with the quality of the materials we are maintaining or withdrawing is as a safeguard against faulty digitization or a researcher's need to reference the original, physical work as it was published. Texts belonging to our cultural canon ought to have reliable copies that serve the role of "leaf master," to quote Frost, to back up their digitized expressions.[3] While the quality of digitized texts is constantly improving, vast numbers of books scanned through large-scale digitization efforts such as the Google Books Project have errors ranging from small to significant. Many of these are unintentional flaws either inherent in the source content used or resulting from the scanning process, while others are intentional decisions, such as cases in which large foldouts are not scanned because the complexity of capturing or compositing large images slows down the scanning process.[4]

Regardless of the motivation, there is a clear reason to consider the quality and completeness of archived copies of printed books and the quality and completeness of the digitized content upon which we are increasingly reliant. However, the definition of what might possibly be viewed as "acceptable" in quality and quantity of copies may differ significantly depending on the decision to retain. For digitization backup, we need to identify and retain copies that are complete, in usable condition, and provide an ample gutter margin should reimaging be required. To guard against the more variable loss of cultural heritage, copies must be assessed for persistent value individually, and an ideal number of archived copies may not be definable. While this study does not argue for either retention strategy, it attempts to bring attention to the potential risks of any pursuit of shared print management and local withdrawal of print holdings.

To better understand and evaluate the perceived risks and variability in US shared print holdings, the author designed a survey to review a sample of circulating monographic titles dating between 1851 and 1922 held in common across the Big Ten Academic Alliance (BTAA). The BTAA is an academic consortium consisting of the University of Illinois, University of Chicago, Indiana University-Bloomington, University of Iowa, University of Maryland, University of Michigan, Michigan State University, University of Minnesota, University of Nebraska, Northwestern University, Ohio State University, Pennsylvania State University, Purdue University, Rutgers University, and University of Wisconsin. The purpose of the survey was to gather data on both physical and bibliographic quality of each university's holdings. Serials were excluded since monographs were believed to display more potential for bibliographic-level cataloging errors, variant editions, and preservation actions. Circulating materials were selected for their greater likelihood to be considered for withdrawal, but also for the stronger likelihood of heavy use and damage due to a longer circulation history. The date range 1851 to 1922 was selected since it is the most common range of holdings available digitally (being in the public domain) and still held in circulating collections (e.g., not yet transferred to special collections). It was anticipated that the sample

results would illustrate the degree of variability in quality of our physical holdings and the dependability of our professional reliance on the accuracy of OCLC records for the given titles.

Literature Review

Since large-scale digitization initiatives such as the Google Books Project and the Internet Archive began scanning large numbers of US libraries' holdings, there has been concern about the future of print in libraries. Some, such as Grafton, have painted dire futures, while others within the preservation community focused on how widespread access to digital content is changing preservation and conservation selection and priorities, such as Pickwoad's "Library or Museum? The Future of Rare Book Collections and Its Consequences for Conservation and Access" and Conway's "Preservation in the Age of Google."[5]

Another area of influence is the idea of "minimum" holdings, or better defining scarcity in holdings for prioritization related to retention and preservation. The keystone of several seminal papers in this area is Yano's "Optimizing the Number of Copies and Storage Protocols for Print Preservation of Research Journals" concerning the results of a study completed several years earlier in support of research for Ithaka S+R.[6] Yano was commissioned by Ithaka S+R to produce a statistically valid evaluation and recommendation of the minimum number of copies needed, using different storage and use scenarios, to guarantee the perseverance of a print copy of a journal title held in JSTOR. From this analytical study came Schonfeld and Housewright's 2009 study "What to Withdraw? Print Collections Management in the Wake of Digitization" and Nadal and Peterson's "Scarce and Endangered Works: Using Network-Level Holdings Data in Preservation Decision-Making and Stewardship of the Printed Record."[7] Both of these frequently referenced studies use Yano's research to project longevity for titles and use those projections to suggest better withdrawal practices or selection for preservation activities.

The idea of comparing "identical" books was also considered by an Andrew W. Mellon Foundation–funded study at the British Library called "The Identical Book Project" in which four hundred identical book titles in six libraries across the UK were assessed physically and chemically to evaluate paper condition and degradation over time in different locations.[8] This work, however, primarily focused on paper strength relative to location in the UK, not overall condition of the materials. Stauffer, the faculty lead behind the Book Traces project, recently published another study that discusses the comparison of "identical books." In his 2016 paper, "My *Old Sweethearts*: On Digitization and the Future of the Print Record," Stauffer reviews ten bibliographically identical copies of the 1902 publication *My Old Sweetheart* as a case study of the potential for loss as libraries withdraw individual print holdings.[9] Stauffer asserts that materials printed between 1830 and 1923 are the most at-risk as they are predominantly out of copyright, in poor condition, and little used. He points the small sample's variance in bindings, publisher information, text, preliminary text and endleaves, illustrations, and usage marks.

In another area of study, many refer to the need for print retention to serve as backups for poor quality, incomplete, or faulty digital copies. Conway's "Preserving Imperfection: Assessing the Incidence of Digital Imaging Error in HathiTrust" addresses this concern.[10] Conway reports the results of a study of the image quality of a thousand-item sample of 1.25 million volumes in the HathiTrust consisting of English-language books and serials published before 1923 that were scanned and processed by Google between 2004 and 2010. The results of his study find that there was an average of 2.42 errors per page, though many of these were minor, and 1.5 percent were what Conway classifies as "severe errors" leading to contextual loss of information. However, a much more substantial proportion of "whole volume errors," such as missing pages, fully obscured pages, or pages out of order, was found. Of the books reviewed, 46.8 percent contained at least one of these types of errors, though not all errors meant loss of content. More importantly, the study examined the relationship between the physical condition of the original source volumes and its impact on the quality of the resulting digital scans. In this part of his study, Conway records the basic statistics on his sample of 860 physical, source volumes reviewed for overall binding integrity, narrow gutters, embrittlement, paper damage, printing errors, and annotations.

There is much research published in the past decade assessing the value of shared print retention and its possible approaches. A few publications stand out as particularly relevant. Kieft has been a key player in many conversations regarding shared print. In his 2010 paper "A Nation-Wide Planning Framework for Large-Scale Collaboration on Legacy Print Monograph Collections," he and co-author Payne present a summary of what a potential framework for collaborative management and preservation of print monographs might entail and the strengths and weaknesses of such a framework.[11] Similarly, Malpas's 2011 *Cloud-Sourcing Research Collections: Managing Print in the Mass-Digitized Library Environment* laid significant groundwork for the establishment of a more organized and collaborative network of large-scale print and digital repositories for the long-term preservation and access of low-use print books through a focused data analysis of OCLC holdings and the HathiTrust.[12] Although many of the data comparisons between the HathiTrust and academic library

holdings are now outdated, Malpas importantly calls the proposed repository system for print retention a "print preservation repository," valuing not only a commitment to *retain* but also a commitment to *preserve* shared print holdings.

The CRL has positioned itself as a leader in discussions of shared print management for serial holdings. Their 2015 report *Print Archiving and Shared Print in North America: A Preliminary Analysis and Status Report* is the outgrowth of the findings of a 2015 meeting: "Preserving America's Print Resources II: A North American Summit."[13] Though this study focused on serial holdings, many of the challenges the report addresses hold true for any physical print resource. Information available from current shared print initiatives falls short of the necessary level of detail to support sound risk assessments and decision-making for preservation, retention, and disposition of materials; information regarding the varying commitments of partners in shared print projects is unavailable or vague; and little data is available about the environmental conditions in which libraries store archived materials, thus calling into question if these commitments are simply to "retain" or to "preserve" content. Most recently, a similar call for action toward a more organized, national approach was issued by the Modern Language Association with its 2016 white paper "Concerted Thought, Collaborative Action, and the Future of the Print Record."[14] The authors argue for the creation of a cohesive system, including both governance and brick-and-mortar structures, using existing high-density book storage facilities and new purpose-built facilities to oversee the management of print collections.

Many of these writings on shared print cite the importance of copy-specific preservation information in the MARC record, most often citing the MARC 21 field 583 Action Note as a possible home for such copy-specific condition or treatment-related information.[15] While discussions about the sharing of preservation information are numerous, little has been published about the use of MARC 583. McCann's 2013 paper "Conservation Documentation in Research Libraries: Making the Link with MARC Data" presents the results of a survey about how institutions are currently recording preservation actions in MARC 583, most specifically focusing on conservation documentation of special collections materials and how it might be more comprehensively documented.[16]

Survey Design and Methodology

The first step in designing the survey was to identify how many monographic titles were held in common across the fifteen consortia members. After running reports against OCLC, the author compiled a list of 251 records identified as physical monographs in OCLC published between the dates of 1851 and 1922 and held by all consortial institutions. Of the 251 records found, the author selected a random sample of 52 titles from the list using a random number generator, giving a statistical confidence of 90 percent with a margin of error of 10 percent for title-level data. For item-level data interpretation, the total population of 3,765 commonly held individual items (15 copies for each title), and the constituent 780 items requested for review, the author predicted an item-level confidence and tolerance to be 94±3 percent. However, due to several instances where microformats and electronic formats displayed as books in the OCLC report—an actual sample of 47 titles resulted in a slightly broader margin of error of 90±11 percent, and title-level data confidence at 92±3 percent. A full list of the titles and publication information for all titles reviewed is provided in appendix A and an image of the University of Illinois's copies of the titles can be seen in figure 1, which shows the general age, size, and condition of the titles considered.

The study used interlibrary borrowing services to obtain as many of the titles as possible from the partner institutions. Due to reasons such as non-circulating status, items being checked out, or library renovation projects, not all items could be borrowed during the period in which the research was conducted. Of the possible 705 items, 625 (89 percent) were reviewed. Data collected in the assessment considered cataloging record accuracy, nearness to an "as-published state," printing variances, completeness, provenance, condition, preservation actions taken, and openly available digital surrogacy. While some records were found to be RDA compliant and some were not, for reference in relation to the cataloging accuracy and completeness review, the purpose of the cataloging record evaluation was not RDA compliance but rather to discern significant enough differences in publisher, date, and/or edition information that a patron or library employee looking at the record alone might reasonably confuse one title for another, or potentially withdraw an item based on an incorrect match. The author photographed all items, both individually and with all copies of a given title for a side-by-side comparison. The full survey tool is available in appendix B.

Survey Data

Various manipulations of the collected data yielded revealing trends. The most useful view of the data is an item-level examination of each data point collected (instances of each in an individual book). Some considerations, such as available digital content, were at a title level. The author attempted to aggregate the data by broad subject areas (as defined by the LC call number classifications on the

Figure 1. Examples of each title examined as part of the survey, as held by the University of Illinois.

items), but in nearly all cases, the titles in a given subject area were small enough in number to make this view of the data unusable. Even in the broadest of classifications, of the total forty-seven titles reviewed, only one was in the subject area of agriculture; seven were in biological sciences; three were in business and economics; one was in geography and Earth sciences; five were in history and auxiliary sciences; twenty were in language, linguistics and literature; one was in library science, generalities and reference; one was in performing arts; two were in philosophy and religion; three were in the physical sciences; and three were in sociology. Data was filtered by institution to determine whether trends could be observed for particular institutional practices. The data presented below draws predominantly from the aggregated total data. Some views of potential trends both by subject area and by institution are presented at the end of this paper.

Cataloging Record Accuracy

There were several instances of miscataloged items that were linked to the incorrect OCLC number. In all cases these were due to later or variant editions, and did not include instances of potential printing variances over later reprints of the same edition as this information was collected separately. Overall, 3.4 percent of items had some variance in publisher name, place of publication, or copyright dates. Later publication dates without changes in publisher, place of publication, or copyright were considered later printings of the same edition and therefore not a miscataloged different edition. Eight percent of the total books reviewed were later reprints of the original publication, which, while correctly sharing the same OCLC number and record, are still potential points of printing variance. While properly cataloged, these often displayed minor printing variances over the subsequent printings, including the presence of

publisher advertisements, prologues, or other differences largely in the books' front and end matter. An additional 1.0 percent of the items were preservation photocopies of the original text with varying degrees of reproduction quality, which should have been cataloged as new editions, resulting in a total finding that 4.4 percent of the items surveyed should have been cataloged using different OCLC records than those on which they were found. Another 2.7 percent displayed variances that would often not be considered different editions, bibliographically, such as "library editions" or "handmade editions" where copies were on higher-quality paper and often signed and numbered. Such physical variances, though disparate from variation in the bibliographic qualities of a given item, are nonetheless of interest to those who value books as objects and find meaning in variation between items' material components.

Nearness to "As Published" State

Just over half (56.8 percent) of the total volumes retained their original covers (this includes repaired covers with replaced spines), while 43.2 percent were rebound in their entirety. Of those rebound, 4.3 percent were issued as paperbacks with their original covers bound in with the text or mounted to the cover of the new hardback binding. Of the 43.2 percent lacking original bindings, 40.0 percent had buckram bindings and 2.2 percent were in older-style library bindings, half-bound in leather and marbled paper. The remaining 1.0 percent were rebound in a conservation lab, which is discussed in the section titled "Preservation Actions."

Printing and Binding Variance

Four percent of the total (or 7.0 percent of those with original covers) had variant covers. While some of these variances correlated with the library or handmade editions previously noted, others had no other distinguishable variance from the other pieces for that title except book cloth color or material. See figure 2 for an example of such variance.

Provenance

Eighteen percent of the items reviewed showed some evidence of provenance, either through a bookplate stating that an item was part of a particular collection or a gift of a certain person or was signed or otherwise inscribed by an identifiable previous owner. In most cases the provenancial information was relatively brief, and a few items included tipped-in letters or long inscriptions by the author

Figure 2. An example of binding variance. While the front-most book is a different edition, the rear two are identical except for their covers.

(0.8 percent of the total, or 3.6 percent of those showing provenance).

Completeness

The majority of the materials reviewed (95.7 percent) were complete, while the remaining 4.3 percent were missing some form of content. The most common missing content concerned 3.2 percent of materials that were missing plates or text within the body of the work, followed by 2.9 percent missing half title pages, and 1.1 percent missing title pages. In total, 1.1 percent of materials were missing more than one defined category of content. Not counted as missing content, but noted nonetheless, 8.6 percent of items were originally published with advertisements at the rear of the publication, which were lost or not included when an item was rebound.

Condition

A great deal of information was collected on the condition of materials. While not as important as completeness when selecting for print retention, it is common sense that materials in better condition are preferable for long-term print retention, especially if that damage hinders the readability or future digitization potential of the item at hand.

The openability and width of gutter margin of an item was reviewed and measured to ensure that future digitization efforts of a specific item would not lose text on the gutter margin nor require damaging disbinding of the bound artifact. Reduced gutter margin (e.g., text running far down

Figure 3. Distribution of Severity of Damage Noted

Cover Damage	Cover to Text Attachment	Visible Enbrittlement	Pages Torn	Underlining/ Highlighting/ Marginalia	Losses	Page Detachment	Water Damaged/ Stained/ Foxed	Broken Text Block
None/wear Only	Sound	None	None	None	None	None	None	None
67.7%	72.8%	77.6%	78.4%	59.7%	93.9%	89.8%	93.8%	96.7%
Slight	Weak	Slight	Slight	Slight	Slight	Slight	Slight	Slight
23.8%	18.2%	16.5%	16.6%	18.9%	5.9%	9.0%	3.2%	1.6%
Moderate	Part Detached	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
7.5%	5.1%	5.1%	3.7%	7.40%	0.0%	1.1%	1.8%	0.3%
Severe	Detached	Severe	Severe	Severe	Severe	Severe	Severe	Severe
1.0%	5.3%	1.6%	1.8%	12.0%	1.6%	1.8%	1.2%	1.4%

towards the spine) is often due to rebinding especially with the practice of oversewing, which was a popular library binding practice through the 1980s in which pages were sewn together through the sides of the gutter margin instead of through the fold. Of the entire collection reviewed, 63.8 percent of the materials maintained their original sew-through-the-fold page attachment method, while 26.9 percent were oversewn. An additional 0.6 percent were found to be double-fan adhesive bound (a later library binding practice of page attachment), and 0.8 percent were found side sewn. However, despite a substantial number being oversewn or side sewn (a total 27.7 percent), only 7.4 percent of the total (or 26.7 percent of those with restrictive binding structures) had margins that were too narrow to digitize without likely text image loss (measured at a visible gutter of less than ¼ inch if found in any part of the text).

Physical damage to the volumes was also evaluated, including the condition of the covers, cover-to-text attachment, and damage to the text block. While many items showed evidence of their age through wear (scuffs, scratches, and minor corner or headcap strain), 32.3 percent showed damage (defined as breaks or tears) to their covers, with most being only slight damage (see figure 3 and appendix B for a full description of all assessment questions and definitions of what was considered "slight," "moderate," and "severe" damage).

The majority of materials exhibited sound cover-to-text attachment, yet 10.4 percent were either partially or completely detached. This is significant because, for large-scale scanning workflows, detached covers can seriously impede the ability to scan an object as it makes the book more challenging to secure to the cradle for imaging. Damage to the text blocks was evaluated on various considerations, including paper embrittlement, tears and losses on pages, page detachment, and text blocks split into two or more pieces. Perhaps the most significant of these in considering future usability is embrittlement. Utility of materials is dramatically decreased as the flexibility and strength of the pages decreases. The resulting fractures and potential losses of text result in difficult and/or possibly incomplete digital capture. There are many ways to test paper for degrees of embrittlement—the most common is a "double fold test," in which a corner of a page is folded back and then forward, testing the durability of paper over repeated folds. Since visibly destructive testing on actively circulating books held by other institutions was not deemed acceptable as part of this study, and other options for analytically testing paper strength were not available, embrittlement data was collected only based on visual observations of damage (breaking edges or fracturing paper off existing sewing structures). If destructive testing such as a double fold test had been completed, a much higher percentage than the 22.4 percent found to show signs of embrittlement would likely have been noted. However, with nearly one quarter of those items reviewed noted as being exceptionally brittle, this percentage is substantial in its own right as these items are exceptionally brittle and already actively fracturing. Page damage, as evidenced by tears and breaks in the paper, is often closely related to the strength of the paper but can also result from heavy use or abuse. Therefore, it is not surprising that 22.2 percent of books reviewed had some tears (tears were not counted unless they ran into the text or measured at least an inch long), while 77.8 percent of items had no torn pages across the publication. Few losses (absence of a portion of a page) were noted, with 7.5 percent having losses of any type, with the vast majority being minor amounts of paper loss, resulting in little to no text loss. Page detachment and broken text blocks (where the sewing has broken midway through a text block, rendering it in two pieces) were also reasonably rare, with 10.1 percent

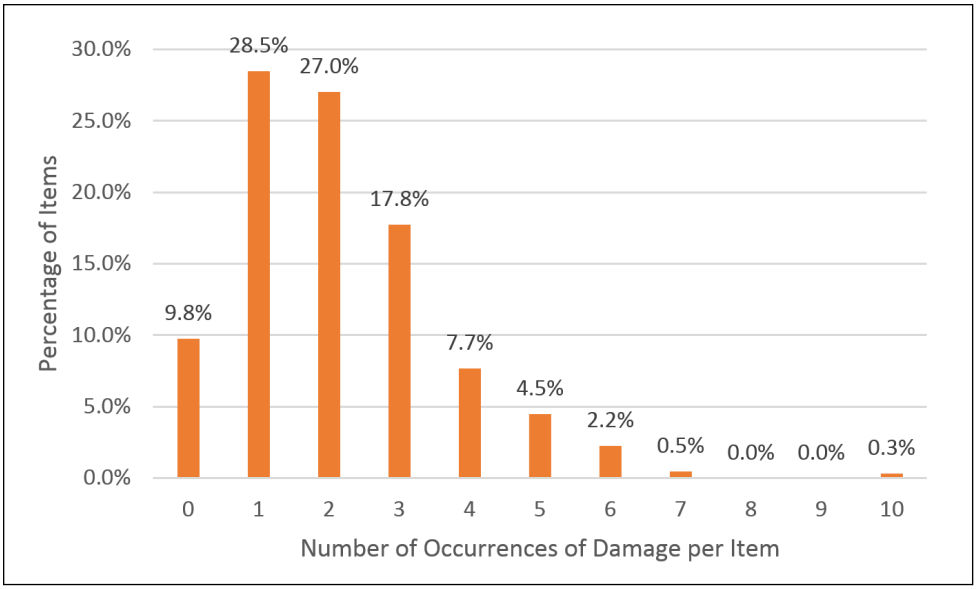

Figure 4. Instances of Multiple Occurrences of Damage on Individual Items.

of materials having some number of detached pages and 3.0 percent having broken text blocks.

Visual distractions, such as writing or staining on the pages, were considered as they can interfere with, or even obscure, the text. Such distractions were the most common type of damage observed. More than 40 percent (40.2 percent) of the materials had some level of writing on them (not inclusive of provenancial markings). Of those with markings on them, 18.9 percent were slight, 7.4 percent were moderate, and 12.0 percent were severe (with marks covering or obscuring text on at least ten or more pages). On a positive note, the majority of the marks were in pencil, which could be fully or partly removed at some future date. Water damage and staining occurred far less frequently than markings, with only 6.2 percent of materials exhibiting notable water damage or staining.

While all individual damage categories provide valuable information about the potential usability of the sampled titles, the mode of data presentation necessarily isolates each form of damage from the other. A reasonable assertion is that one occurrence of damage is often not independent of other types of damage. For instance, high use is likely to cause not only a greater likelihood of underlining, but also more tears, stains, and cover damage. Poor quality paper that has become brittle is likely to directly correlate with a much higher likelihood of tears, losses, and detached pages. Therefore, to better understand whether each instance of damage was isolated or, more likely, occurred in aggregate, each item was individually evaluated to record the total number of damage types observed per piece. Through this analysis, a relatively small percentage of items were completely undamaged (9.8 percent). The majority (55.5 percent) of items showed only one (28.5 percent) or two (27.0 percent) types of observed damage per item. Occurrences of three damage types were noted in only 17.8 percent of items and significantly less for four (7.7 percent), five (4.5 percent), and six (2.2 percent) types of damage occurring within one item. Less than 1 percent of items observed displayed multiple damages of seven types or more (see figure 4). This means that, while 60 percent of the items surveyed showed instances of more than one damage type, only 15.2 percent of items were recorded in four or more damage categories, indicating that, while multiple instances of damage per book are common, severely damaged books with many types of damage were significantly less common and few books were in what is professionally called "terrible shape." This observation indicates that, while the majority of items (nearly 85 percent) are either unbroken or show only a few categories of damage (with many of these related to paper quality), a significant proportion are severely damaged and would be poor choices as copies of record in a shared print repository environment.

Preservation Actions

Defining what was considered a "preservation action" was challenging since what was accepted as common preservation treatment forty years ago may not currently be considered acceptable preservation practice. The author decided to consider any effort to repair an item, whether with pressure-sensitive tape or through a well-performed modern conservation treatment, as a preservation action. In total, 18.9 percent of materials had received some sort of preservation action, the most common (8.6 percent) being internal hinge reinforcement or repair either through the replacement of endsheets or the addition of a reinforcing paper or tape layer. Paper repairs were a close second in frequency, with 8.0 percent of materials showing some sort of paper repair, most often with some sort of pressure sensitive tape. Another 6.2 percent of materials had received spine repair (rebacking) either independent of, or in concert with, internal hinge reinforcement repair. Enclosures were

Figure 5. Distribution of Preservation Actions

Paper Repaired with Tape (various types)	Internal Hinge Reinforcement/ Reattachment	Rebacked	New Case	Book Tape	Box	Envelope	Shrink Wrapped	Other Enclosure	Deacidified
8.0%	8.6%	6.2%	1.0%	3.2%	3.4%	1.1%	0.6%	2.2%	0.3%

relatively common, with a total of 7.3 percent having some sort of protective enclosure, though the items held in these enclosures were frequently in poor condition and unrepairable due to severely embrittled paper (see figure 5 for a summary of all preservation actions observed).

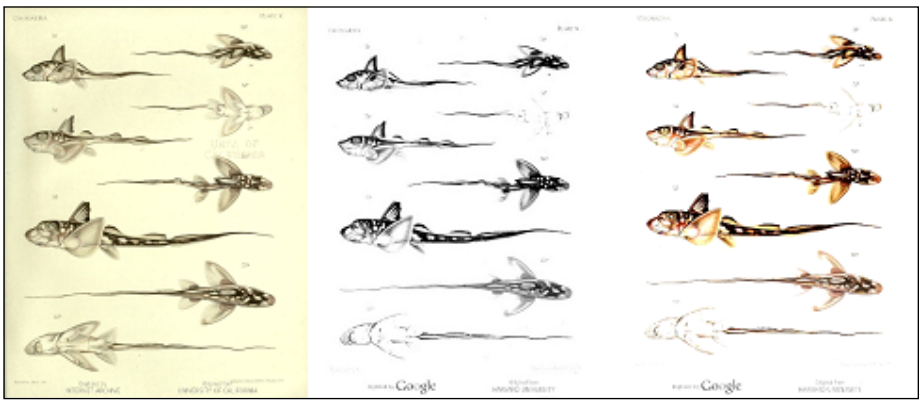

Figure 6. Comparison of various color and bitonal images on the digital copies of *Chimeroid Fishes.*

Digital Surrogacy

Lastly, the availability of digital surrogates in the HathiTrust was investigated for each title. Whereas the availability of digital content does not likely have a direct influence on the condition of the items surveyed given their age and relatively recent digitization, choices about whether to maintain a print item, especially if it is damaged, may be driven by availability of a reliable (i.e., in a trustworthy digital repository) and complete digital surrogate. Factors considered when evaluating the digital surrogates included whether the surrogate was captured in color or in black-and-white and how this related to the accurate representation of the original publication; whether the digital image was missing content when evaluated against the physical object; and whether variant editions were digitized and tagged incorrectly as the edition being evaluated. A total of 231 digital files were found in the HathiTrust when the forty-seven titles were searched for by OCLC number, producing an average of just under five (4.91) available files per title.[17] From this, 24.7 percent of the digital files were in color or grayscale and 75.3 percent were bitonal (black-and-white). The high proportion of bitonal files is a direct result of the relatively high proportion of Google Books' project output in the HathiTrust, which has largely produced bitonal images.[18] If considered on a title-by-title basis, ten titles (23.3 percent) were only available as bitonal images. Fifteen (31.9 percent) of the forty-seven titles contained significant fine detail or colored image content that is compromised in a bitonal scan. However, just two of these titles were only available as bitonal files. For examples of image quality loss due to bitonal imaging, see figure 6. The presence of foldouts was also noted in three titles (6.4 percent). In observing available digital content for those three, two titles had four distinct digital copies available in HathiTrust and one had six (fourteen copies total). One title had no available digital copies of the foldouts, while the others had either two of four or two of six with the foldouts included, for a total of only 28.6 percent of digital copies including foldouts.

Data Interpretation

The author found that cataloging errors were less common than anticipated. The 3.4 percent of errors found were all due to variant editions being cataloged using the wrong OCLC record. An additional 2.7 percent had either "Library" or "Deluxe" editions published by the same publisher in the same year, which would not always be noted as a different edition, yet were physically different from other copies with the same OCLC number. This means that, of the sample observed, approximately 6.1 percent of the books reviewed were variant from the standardly held title sharing that OCLC number, though the intellectual content of these variances may not be significantly different. Although this is accurate cataloging, one cannot assume that all books sharing the same OCLC number are physically identical copies.

Figure 7. Comparison of Paul Conway's Physical Condition Findings in His 2013 *Preserving Imperfection: Assessing Incidence of Digital Imaging Error in HathiTrust* to Condition Findings within this Study

Data Point	Conway Study	Current Study	Notes on Difference
Binding Condition			
Sound	80.5%	72.8%	
Loose	13.8%	18.2%	
Not intact	5.0%	10.4%	
Missing	0.7%	0.0%	
Gutter Margin			Measured for legibility from margin in current study inclusive of curvature of page. Measured at 1 cm. from gutter in Conway
Fine	74.9%	92.6%	
Narrow	25.1%	7.4%	
Text Block			
Intact	80.2%	83.3%	
Pages missing	1.0%	3.2%	
Pages loose	10.8%	10.2%	
Broken	5.8%	3.3%	
Embrittlement			
Not brittle	45.3%	87.6%	Measured by visual observation only in current study, and by destructive double fold tests in Conway
Brittle	54.6%	22.4%	
Page Damage			
Undamaged	89.4%	78.4%	
Damaged	10.6%	21.6%	
Annotations			
None	96.4%	59.7%	
Some	3.6%	40.3%	

Only 56.8 percent of the books reviewed maintained their original bindings. While many of the bindings were not overly decorative, some were highly embellished or illustrated, and a small percent (4.0 percent) had variant cover designs whose existence was not evident except when compared side-by-side as illustrated in figure 2. There is a loss of originality in the objects themselves by having the items rebound. This loss may not be relevant to future users mainly interested in the book's intellectual content, but to those studying the history of publishing and readership, the use of cover illustrations and variant covers for marketing is significant. Rebinding imposes another layer of risk by altering the original page attachment. All instances of oversewing (27.0 percent of pieces reviewed) occurred in rebound books. This new sewing structure dramatically decreased the visible inner margin and functional openability of books, leading to a stronger likelihood of problematic image capture if those copies are used for future digitization, and higher risk of text loss if the paper is or will become brittle.

The historical value of observable physical evidence of ownership or provenance is often debatable, but in a rare few cases, these markings hold significant and undeniable historical value. Whereas 17.8 percent of those items reviewed had some sort of marking indicating previous ownership, only 0.8 percent of items claimed evidence of any historical significance as subjectively deemed relevant by the author. These cases were comprised entirely of letters or inscriptions from the author themselves.

The completeness and condition results collected in this study were relatively consistent with the similar condition data collected in Conway's *Preserving Imperfection*, which sampled a combination of serial and monographic titles of approximately the same publication date range digitized through Google. Comparisons of Conway's data to the data collected in this study are provided in figure 7.

Overall, the data collected in this study showed a slightly greater likelihood for damage than the items Conway reviewed. There are two significant differences between the populations in the two studies. The first is

that Conway's study included both monographs and serials. The second difference is that the titles reviewed in this study were *all* held by BTAA Libraries and were therefore presumably a widely held title. While extensive holdings do not necessarily correlate directly to use, the fact that a title was widely purchased and retained by a large number of libraries indicates a broader interest in the title compared to the more scattered and sometimes esoteric titles included in Conway's study as selected by the Google digitization program, and therefore potentially higher use. If this correlation is accurate, the higher observed rates of binding damage, paper damage, and annotations are symptomatic of higher levels of use over time. Until more research is done on the relationship between widely held items and the frequency of their individual use, the supposition that such use correlates directly to potential damage is merely a hypothesis. The most significant difference in the overall populations of various types of damage observed was in the embrittlement rate. As noted earlier, this study measured embrittlement through visual observations only, such as repeated edge tears, losses, and fractures along the gutter margin. Comparatively, Conway's study performed the more destructive double fold tests, observing how many folds the paper would withstand before fracturing. Had similar tests been performed on the sample observed for this study, it is probable that the embrittlement rate would have been much closer to Conway's observed 54.6 percent than this study's 22.4 percent. In either case, embrittlement of the paper of pre-1923 publications on wood pulp paper is a considerable concern. Even if the lower 22.4 percent is considered more accurate, the likelihood of current or future loss of textual content and significant difficulty in future image capture is of considerable concern for nearly one quarter of the texts reviewed.

The observation of instances of items showing multiple occurrences of damage as opposed to isolated single instances of damage revealed that 15.2 percent of the items reviewed had four or more types of observable damage occurring in one item. This is a relatively high rate of significant damage and is likely corollary to the proposed higher-than-average use of these items. While the use data collected from this survey was inconclusive, other data observed supports this assumption, such as the rate of preservation action. At most institutions, preservation treatment is driven by use and the 18.9 percent of materials observed that sustained some sort of preservation actions is, at least anecdotally, higher than anticipated in a more randomized sample.[19] However, no recent studies of preservation or repair in general collections could be found to support this assertion.

Unfortunately, the sample was too small to extract any meaningful data regarding trends by subject area. See figure 8 for the dispersal of sample titles across broad subject areas. Some possible trends appeared through this attempted analysis that may be worth further investigation. Since the number of items observed in individual subject areas was too small for analysis, it is possible to group together the humanities and arts-related topics (language, linguistics and literature, performing arts, philosophy, and religion) against all other subject areas for a very base-level comparison. This rather blunt tool reveals some interesting data. Of the 4.4 percent of miscataloged items, including preservation photocopies, nearly all of those (98 percent) were arts and humanities titles. Occurrences of damage or incomplete texts, though slightly higher in the arts and humanities, was not significantly higher than those observed in the sciences. Items in the sciences were 5 percent more likely to retain their original cover, while items in the arts and humanities (directly related to the stronger likelihood of having been rebound) were 5 percent more likely to have a tight gutter margin. Additionally, items in the arts and humanities were 7 percent more likely to have torn pages and 9 percent more likely to have some level of annotations or markings on the pages.

Figure 8. Dispersal of Titles by Broad Subject Classifications

Agriculture	1
Biological Sciences	7
Business & Economics	3
Geography & Earth Sciences	1
History & Auxiliary Sciences	5
Language, Linguistics, and Literature	20
Library Science, Generalities & Reference	1
Performing Arts	1
Philosophy and Religion	2
Physical Sciences	3
Sociology	3

While perhaps of more interest to the individual participating institutions, aggregation of the data by institution showed a potential for certain trends by institution. To conclusively state this, a larger sample is needed from each institutional collection, as the sample size for this study is too small to conclusively show trends for the larger collections. The data summarized in figure 9 shows a wide distribution of occurrences of damage, preservation actions, and "as published" state. This type of profiling, using a broader sample, would be useful when considering cooperative shared print planning, to better strategize for selection of collections most likely to be intact and in good condition if the time-consuming item-level review of materials is not to be undertaken.

Lastly, the data collected may shed light on a very current question in print retention planning: How many archived copies are enough? Again, the sample is too small

Figure 9. Summary of Data Collected by Institution

Institution	Instances of "As Published" State	Instances of Noted Damage	Preservation Actions Noted	Items Reviewed
1	82 (med high)	156 (high)	45 (med high)	46
2	71 (med low)	125 (med high)	37 (medium)	40
3	81 (med high)	125 (med high)	31 (med low)	42
4	47 (low)	68 (low)	35 (medium)	29
5	75 (medium)	109 (medium)	33 (med low)	42
6	71 (med low)	103 (med low)	27 (low)	39
7	66 (med low)	65 (low)	35 (medium)	43
8	68 (med low)	114 (medium)	34 (med low)	44
9	76 (medium)	87 (med low)	26 (low)	40
10	90 (high)	73 (low)	40 (med high)	43
11	83 (med high)	120 (med high)	42 (med high)	44
12	84 (med high)	127 (med high)	51 (high)	46
13	69 (med low)	70 (low)	45 (med high)	39
14	84 (med high)	109 (medium)	26 (low)	44
15	65 (med low)	104 (med low)	48 (med high)	45

Figure 10. Summary of the Probability of Archiving a "Good" Copy if only One Copy of the Title is Randomly Selected to be Archived

Probability Range (chance of archiving a "good" copy)	# Titles in That Probability Range	% of Titles in That Probability Range
0% chance	4	9%
1–10% chance	2	4%
11–20% chance	6	13%
21–30% chance	4	9%
31–40% chance	7	15%
41–50% chance	3	6%
51–60% chance	10	21%
61–70% chance	2	5%
71–80% chance	5	3%
81–90% chance	3	1%
91–100% chance	1	2%

to draw statistically valid conclusions, but it is apparent that there are some trends that point to a need for further study. To do this, the author calculated the probability of randomly archiving a "good" condition copy based on the condition rankings collected through the survey sample. The probability of randomly selecting a "good" copy from the total number of copies for each title was determined using the following calculations: If one copy is selected, the probability of randomly placing a good copy into an archive is the total number of good copies divided by the total number of copies, or P = G/T, where G equals the number of good copies found for each title surveyed, and T equals the total number of books available for that title. This same probability can also be expressed as 1 (being 100 percent probability) minus the probability that all titles selected are "not good" by changing the equation to P = 1-((T-G)/T). For the title *A Bibliography of Samuel Taylor Coleridge* from 1903, for instance, eight copies of the fifteen available were in good condition, and the probability of randomly selecting a good copy is P = 1-((15-8)/15) or 53 percent probability of randomly selecting a copy in "good" condition for this title. Again, further study is required before this tool could be reliably applied in real-world selection scenarios.

To extend this to anticipate the probability if two or more copies are archived, the calculation changes to P = 1-(((T-G)*((T-G)-1))/(T*(T-1))) if two copies are archived, and P = 1-(((T-G)*((T-G)-1)*((T-G)-2))/(T*(T-1)*(T-2))) for three copies archived, etc. Again, for *A Bibliography of Samuel Taylor Coleridge*, the probability of archiving a good copy if two copies are randomly selected increases to 80 percent, and if three copies are archived, rises to 92 percent. These calculations were done for each title, calculating the probability of archiving a good copy if one through ten copies were archived. This data, alone, however, shows only title-level probability. But, if considered in aggregate at the number of times all titles showed a certain probability of archiving a "good" copy, we can infer a few trends. For instance, by examining the model of "one copy archived" across all titles, the following is apparent (see figure 10): Showing that the bulk of the titles have a 51 to 60 percent chance of archiving a "good" copy when only one copy is archived, while only 6 percent of the titles have a probability of 71 percent or higher in randomly archiving that copy.

Assuming a desired confidence of at least 71 percent, looking at all models simultaneously (see figure 11), one can extrapolate that the probability of getting a "good" copy increases steadily until five copies are archived and plateaus between 81 to 87 percent of the titles being in that confidence range regardless of how many more copies are archived (with eighty-seven as the maximum in this case because four titles lacked good copies and, mathematically, could not generate a good copy no matter how many copies were archived). However, a significant jump

in probability occurs when three copies are archived. That same jump occurs if the confidence level is raised to 81 percent or higher, but moves to four copies archived if 91 percent confidence or higher is desired.

What this cursory analysis shows is that, at least in a limited sample, the probability of archiving a copy in good condition through random selection increases dramatically with the number of copies archived, possibly as low as three copies. Further research in this area might mitigate some of the question of the value of time-consuming item-level condition review by considering an ideal number of duplicate copies in shared print repositories, statistically reducing the risk of poor-quality copies.

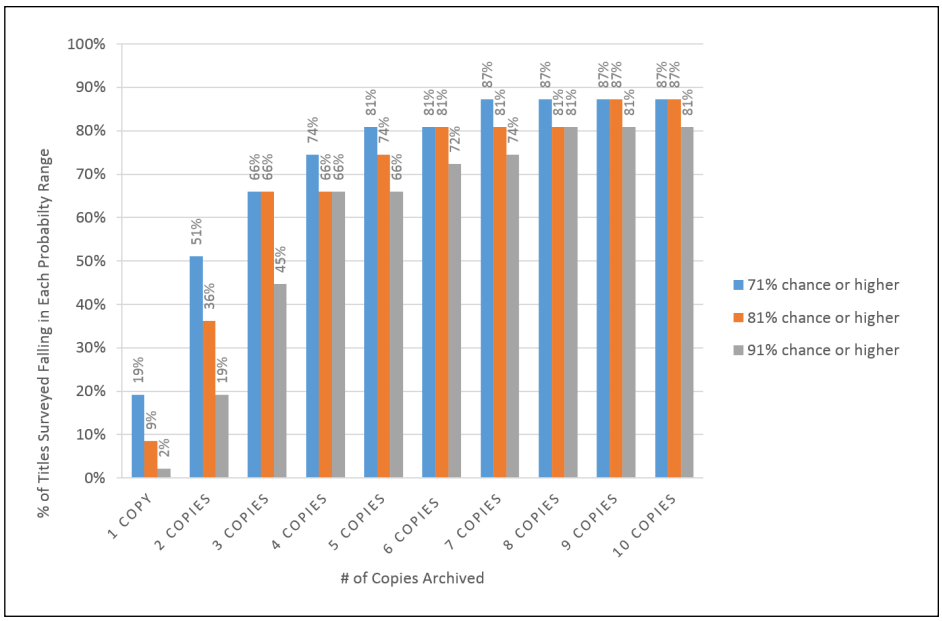

Figure 11. Probability of archiving a "good" copy for all titles with varying numbers of copies archived.

Conclusion

The data collected and analyzed shows that for the types of items reviewed—widely held, pre-1923 monographs—there were several trends that should cause concern for those planning the withdrawal of widely held monographic titles, or selecting individual copies of such items for shared print programs. The most important identified trends include:

- A relatively small but significant likelihood (3.4 percent) of miscataloged editions (especially in the arts and humanities)
- A relatively small but significant likelihood (4.0 percent) of binding variances within a single edition
- A very high occurrence (91 percent) of damage of some type and significant risk (14.4 percent) of more than three instances of damage being found in one title, which represents reduced usability
- A significant likelihood (43.2 percent) of items lacking original bindings, meaning loss of authenticity of the original, as published work
- A relatively small, but significant likelihood (4.3 percent) of items missing content, typically within the text or plates

As institutions undertake shared print projects, resulting in potential for large-scale withdrawal of titles now held by those projects, the data above stresses the risks that libraries are currently taking. By making withdrawal decisions without item-level review of titles (or incorporating item-level information from shared MARC fields), we are collectively establishing an insecure foundation on which our shared print heritage is being built. The author recognizes that item-level review is logistically impossible in many of these projects; however, this research strongly indicates that further inquiry into the number of copies that must be retained in order to statistically avoid the risk of such losses must be conducted.

Additionally, this research illuminates other areas of potential future research. A comparative study of "unique" items—unique copies as identified through OCLC records—would further expose the potential risks of reliance on OCLC records to denote scarcity or duplicity across institutional holdings. Further research into trends in condition and completeness by subject area could help to focus on subject areas that are prone to miscataloging, damage, or incompleteness, thus targeting limited resources on those collections most likely to be at risk. Lastly, this study shows the potential for strong institutional (or perhaps consortial) trends in condition and preservation action. If a larger-scale research project to review trends in condition and completeness across many institutions were undertaken, data may show certain types of institutions or regions to be more likely than others to possess copies suitable for shared print retention selection—and it is possible that those institutions are not currently contributing copies into such repositories or retention agreements.

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Appendix A. Monographic Titles Selected for Assessment, Listed by Date of Publication

Twenty years of Congress: from Lincoln to Garfield; with a review of the events which led to the political revolution of 1860. James Gillespie Blaine. Norwich, CT: Henry Bill. 1884. OCLC # 20498700.

Walter of Henley's Husbandry, together with an anonymous husbandry, Seneschaucie, and Robert Grosseteste's Rules. Walter de Henley; Elizabeth Lamond, W Cunningham, Robert Grosseteste. London; New York: Longmans, Green, and Co. 1890. OCLC # 02146299.

A popular treatise on the physiology of plants for the use of gardeners or for students of horticulture and of agriculture. Paul Sorauer. London, New York: Longmans, Green & Co. 1895. OCLC # 0151333.

The fire of love, and the mending of life; or, The rule of living. The first Englisht in 1435, from the De incendio amoris, the second in 1434, from the De emendacione vitæ of Richard Rolle, hermit of Hampole. Richard Rolle, Richard Misyn, Rev. Ralph Harvey. London: Published for the Early English Text Society by K. Paul, Trench, Trubner & Co. 1896. OCLC # 00374731.

Histoire de la langue et de la littérature française des origines à 1900, L. Petit de Julleville, Paris: A. Colin & cie, 1896–99. OCLC # 00930890.

The Works of John Ruskin. John Ruskin (Edward Tyas Cook and Alexander D. O. Wedderburn, eds). London, New York: Longmans, Green and Co. 1903–1912. OCLC# 32081530.

A bibliography of Samuel Taylor Coleridge, John Louis Haney, Philadelphia: Printed for private circulation, 1903. OCLC # 01244508.

Compromises. Agnes Repplier. Boston: Houghton, Mifflin & Co. 1904. OCLC # 01844986.

Sexual reproduction and the organization of the nucleus in certain mildews. R. A. Haper. Washington, DC: Carnegie Institution of Washington. 1905. OCLC # 00535542.

Chimæroid fishes and their development. Bashford Dean. Washington, DC: Published by the Carnegie Institution of Washington. 1906. OCLC # 02323291.

Biographia literaria, John Shawcross. Oxford: The Clarendon Press. 1907. OCLC # 02774821.

Variation and differentiation in Ceratophyllum. Raymond Pearl. Washington D. C. Carnegie Institution of Washington. 1907. OCLC # 02360085.

Roman Holidays: and Others. William Dean Howells. New York, London: Harper & Bros. 1908. OCLC # 02663185.

Fennel and Rue: a novel. William Dean Howells. New York; London: Harper & Brothers Publishers. 1908. OCLC # 01021078.

Actions and Reactions. Rudyard Kipling. New York: Doubleday, Page & Co. 1909. OCLC # 00236439.

A study of the absorption spectra of solutions of certain salts of potassium, cobalt, nickel, copper, chromium, erbium, praseodymium, neodymium, and uranium as affected by chemical agents and by temperature. Harry C. Jones; W. W. Strong. Washington, DC: Carnegie Institution of Washington. 1910. OCLC # 02336051.

The Old Order Changeth; A View of American Democracy. William Allen White. New York: Macmillan. 1910. OCLC # 00854253.

Clayhanger. Arnold Bennett. New York: E. P. Dutton. 1910. OCLC # 00918462.

Shakespeare bibliography: a dictionary of every known issue of the writings of our national poet and of recorded opinion thereon in the English language. William Jaggard. Stratford-on-Avon: Shakespeare Press. 1911. OCLC # 01978611.

Railway Economics: A Collective Catalogue of Books in Fourteen American Libraries. Richard Holland Johnston, Bureau of Railway Economics (Washington D.C). Chicago: Bureau of Railway Economics by the University of Chicago Press. 1912. OCLC # 01437582.

Regesta regum anglo-normannorum, 1066-1154. H. W. Carless Davies, R. J. Whitwell, Charles Johnson eds. Oxford: Clarendon Press. 1913–1969. OCLC # 00661506.

The germ-cell cycle in animals. Robert William Hegner. New York: Macmillan Co. 1914. OCLC # 2361630.

Genetic studies on a cavy species cross. John Adolph Detlefsen. Washington, DC: Carnegie Institution of Washington. 1914. OCLC # 02678826.

Chief contemporary dramatists: twenty plays from the recent drama of England, Ireland, America, Germany, France, Belgium, Norway, Sweden, and Russia. Boston: Houghton Mifflin Company. 1915. OCLC # 02666849.

The song of the lark. Willa Cather. Boston, New York: Houghton Mifflin Company. 1915. OCLC # 00702452.

The Cambridge History of American Literature. William P. Trent; John Erskine; Stuart Pratt Sherman; Carl Van Dorer. New York: G. P. Putnam's Sons. 1917. OCLC #01090047.

God the Invisible King. H. G. Wells. New York: The Macmillan Company. 1917. OCLC# 00383754.

Outdoor Theaters; the Design, Construction and Use of Open-Air Auditoriums. F. A. Waugh. Boston: R. G. Badger. 1917. OCLC # 01187029.

The History of Henry Fielding. Wilbur L. Cross. New Haven: Yale University Press; London: Humphrey Milford; Oxford University Press. 1918. OCLC # 01593752.

Credit of the nations; a study of the European War. J.

Laurence Laughlin. New York: C. Scribner's Sons. 1918. OCLC # 00597768.

On contemporary literature. Stuart Pratt Sherman. New York: Holt. 1917. OCLC # 00674623

The principles of American diplomacy. John Bassett Moore. New York, London: Harper & Bros. 1918. OCLC # 00993154.

Forced movements, tropisms, and animal conduct. Jacques Loeb. Philadelphia: Lippincott. 1918. OCLC # 01891338.

Reminiscences of Lafcadio Hearn. Setsu Koizumi. Boston, New York: Houghton Mifflin. 1918. OCLC # 00478394.

Dramatic technique. George Pierce Baker. Boston, New York: Houghton Mifflin Company. 1919. OCLC # 00330380.

Linda Condon. Joseph Hergesheimer. New York: Alfred A. Knopf. 1919. OCLC # 00242478.

Pawns, four poetic plays. John Drinkwater. Boston: Houghton Mifflin Company. 1920. OCLC # 02476717.

The unsolved riddle of social justice, Stephen Leacock. New York: John Lane Company; London, John Lane. 1920. OCLC # 00497082.

England in transition, 1789-1832, a study of movements. William Law Mathieson. London, New York: Longmans, Green, and Co. 1920. OCLC # 00907796.

Life and letters of Henry Lee Higginson. Henry Lee Higgenson, Bliss Perry. Boston: Atlantic Monthly Press. 1921. OCLC # 00234045.

The Jew and American ideals. John Spargo. New York, London: Harper & Bros. 1921. OCLC # 00555558.

The mind in the making: the relation of intelligence to social reform. James Harvey Robinson. New York: Harper & Brothers. 1921. OCLC # 00255133.

Fossil Echini of the West Indies. Robert Tracy Jackson. Washington, DC: Carnegie Institution of Washington. 1922. OCLC # 03133717.

The revolt against civilization; the menace of the under man. Lothrop Stoddard, New York: C. Scribner's Sons, 1922. OCLC # 01027004.

Claudian. Claudius Claudianus; Maurice Platnauer. London: W. Heinemann; New York: G. P. Putnam's Sons. 1922. OCLC # 00313897.

The fiscal and diplomatic freedom of the British oversea dominions. Edward Porritt; David Kinley. Oxford: The Clarendon Press; London, New York: H. Milford. 1922. OCLC # 21007534.

Appendix B. Assessment Data Points Collected and Definitions of Rankings

Storage Location	From ILL slip or book
Circulation history	If known from book
Barcode	
Title	
Author	
Publisher	
Publisher location	
Publisher date	
Other variance	
Facsimile	Y = 1, N = 0
Reviewed	Y = 1, N = 0
If no, reason	Y = 1, N = 0
Complete	
If no, describe	
Original cover	Y = 1, N = 0
Book plate showing provenance	Y = 1, N = 0
Original cover (from paperback release) mounted or bound in	Y = 1, N = 0
Evidence of original binding variance	Y = 1, N = 0
Library binding (older style in 1/4 or 1/2 binding)	Y = 1, N = 0
Library binding (buckram)	Y = 1, N = 0
Cover damage	none/wear only = 0, slight = 1, moderate = 2, severe = 3

Appendix B. Assessment Data Points Collected and Definitions of Rankings (continued)

Storage Location	From ILL slip or book	
Cover to text attachment	sound = 0, weak = 1, part detached = 2, detached = 3	
Tight inner margin or over trimmed (implies text loss if digitized)	Y = 1, N = 0	
Repaired	Y = 1, N = 0	
Rebacked	Y = 1, N = 0	
New case, inhouse	Y = 1, N = 0	
Book tape	Y = 1, N = 0	
Paper repaired with tape (various types)	Y = 1, N = 0	
Internal hinge reinforcement/reattachment?	Y = 1, N = 0	
Deacidified	Y = 1, N = 0	
Box	Y = 1, N = 0	
Envelope	Y = 1, N = 0	
Shrink wrapped	Y = 1, N = 0	
String tied	Y = 1, N = 0	
Other enclosure	Y = 1, N = 0	
Discolored	0-9 with 9 being most discolored	Standardized photography against grayscale calibration card
Brittle (visibly)	none = 0, slight = 1, moderate = 2, severe = 3	slight = minor edge or gutter breakages, moderate = regular edge or gutter breakages, severe = at least 1/3 of book showing edge or gutter breakages
Surface pH gutter	value taken on page 20 with Astro pH tester pen	
Surface pH edge	value taken on page 20 with Astro pH tester pen	
Tears greater than ½ inch	none = 0, slight = 1, moderate = 2, severe = 3	slight = 1 occurrence, moderate = 2-3 occurrences, severe = >3 occurrences
Underlining/highlighting/marginalia	none = 0, slight = 1, moderate = 2, severe = 3	slight = 1 occurrence, moderate = 2-3 occurrences, severe = >3 occurrences
Losses greater than ½ inch	none = 0, slight = 1, moderate = 2, severe = 3	slight = 1 occurrence, moderate = 2-3 occurrences, severe = >3 occurrences
Method of page attachment	sew through fold, oversewn, side sewn, adhesive, other	
Page detachment	none = 0, slight = 1, moderate = 2, severe = 3	slight = 1 occurrence, moderate = 2-3 occurrences, severe = >3 occurrences
Water damaged/stained/foxed	Y = 1, N = 0	
Broken text block	none = 0, slight = 1, moderate = 2, severe = 3	slight = 1 occurrence, moderate = 2-3 occurrences, severe = >3 occurrences
Notes		

Establishing the Impact of Area Studies Collections and Exploring Opportunities for Collaborative Collecting

Mara L. Thacker, Thomas H. Teper, Joseph Lenkart, and Esra Çeltek Coşkun

This study examines the use of area studies materials by assessing five years of Interlibrary Loan (ILL) lending data and local circulation data from a single research library. It seeks to lay groundwork for future explorations into the implementation of a robust cooperative collection development model for area studies at the national level, with analysis demonstrating that existing ILL programs support scholars from research institutions far beyond their owning institution. They can do so with minimal adverse impact on the local community of scholars at a typical top-tier research library. This case study also investigates the similarities and differences between lending patterns of Less Commonly Taught Language (LCTL) materials and non-domestic area studies titles that are authored in commonly taught languages. The authors conclude with an argument that communities of institutions could develop highly structured cooperative collection building efforts in the area studies that would permit them to redirect resources strategically, collecting area studies materials both more deeply across the community and with a greater emphasis on primary source materials.

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Area studies units at research libraries play a critical role in supporting networks of scholarly communities through resource sharing and cooperative acquisitions of materials from around the world. Understanding the dynamics between institutions, resource sharing, and collection building remains vital to research libraries and international and area studies programs in higher education.

Area studies collections comprise interdisciplinary materials pertaining to particular geographical or cultural regions. The division of regions and countries in area studies collections reflect the national priorities set forth by the office of International and Foreign Language Education (IFLE) at the US Department of Education. The areas can be divided as follows: Africa, Central Asia/Inner Asia, East Asia, Middle East, Russia/East Europe, South Asia, Southeast Asia and the Pacific Islands, and Western Hemisphere (Canada, Mexico, Caribbean, and Central/South America). Library collections for these areas may be scoped based on whether the content is about the area, published in the area, or is in the area's

vernacular language. The most complicated of these for US libraries to collect are non-English, vernacular language materials. Vernacular language collections in area studies require specialized knowledge to build and, therefore, often emerge as the focal point of discussions about area studies collections. Yet, for regions with a colonial legacy, the colonial language of governance often persists as a primary language of both scholarship and governance. Therefore, it is important that research about area studies collections use country of imprint as one parameter to identify area studies materials, rather than simply relying on the language of the materials. This study embraces that outlook and analyzes the impact of area studies collections using one research library's ILL lending data as a case study.

Presently, academic libraries seek opportunities to more effectively manage and share resources, enhance programs and services, and navigate a changing scholarly communications environment. Although there is a long history of collaboration among libraries, many librarians channeled concerns expressed by their local constituents, objecting to calls for broader, systematic collaboration in collection development out of fear that local needs could not be adequately addressed by broad collection policies and distributed collections. That concern is ebbing, as "at scale" commercial solutions aggregate content for sales and expedited delivery. The success of these models led to ambitious non-profit solutions that seek to tackle challenges libraries face in combining, sharing, preserving, and delivering collections. Taken together, this softening opposition and the successes already experienced are leading toward a greater desire among librarians to realize the "library of everything."[1]

As the desire to build a library of everything grows, the motivation of individual libraries to build a "collective collection" is becoming a reality. This desire is driven by multiple factors. As Levine-Clark noted, the changing nature of institutional funding challenges old collecting models. Similarly, Walter and Kaufman highlighted the refocusing of library missions from collection-centric to service-centric as a factor in motivating change. Similarly, works focused on rethinking resource sharing efforts, the availability of more robust data about our collections, and the prospect of retaining a cohesive—if distributed—corpus all lend credence to the notion that libraries should deliver "everything" from a collective collection.[2]

Long a mainstay of the academic library service model, resource sharing is taking on new dimensions as research libraries develop cooperative frameworks upon which collection development programs can be built. The collaborative efforts that emanated from the early twentieth century often stand as component parts of a mosaic of agreements that allowed participants to serve their local constituencies. These initial resource sharing agreements were largely subsumed by regional consortial arrangements such as the Triangle Research Libraries Network (founded in 1977 upon the expansion of an initial collaboration dating to 1933) and other arrangements in which the fundamental ownership model was not changed.[3] In these models, member institutions owned the volumes they acquired and shared them with other member institutions. The 1950s witnessed the advent of a new collective model with the creation of the Midwest Inter-Library Consortium (MILC). As the precursor to the Center for Research Libraries (CRL), the MILC's ten founding member institutions and financial underwriter, the Carnegie Corporation, recognized that less commonly used items could be cooperatively acquired, preserved, and shared more cost effectively through a single agency than through individual members.[4] CRL's model served as an early demonstration of the value that "at scale" solutions brought to bear in addressing common challenges among research libraries.

The challenges that CRL's early operational model addressed for member institutions ring true today, including the impact of a changing educational environment on space, personnel, and financial resources. During the postwar expansion of higher education, institutional leaders realized that space and resources would not permit them to collect everything. Today, changes in the educational environment are redefining the roles that libraries take in serving both faculty and students, compelling them to adopt a more service-oriented posture. Furthermore, the relative ease with which institutions can collect and analyze data about their collections is compelling institutions to rethink how those collections are built and serviced. The fundamental question that many librarians face regarding these changes with the constituencies they serve is whether shared resources held remotely will be sufficient to meet local needs.

This paper continues the authors' work published in *College & Research Libraries*.[5] In both the previous and present study, the authors analyzed five years of ILL lending data, focusing on successful fulfillment of requests for area studies materials received from other institutions. While the previous study identified area studies materials based on language by looking at ILL requests for materials published in languages other than the more commonly taught English, Spanish, French, and German, this study is more expansive. In the present study, the authors identify area studies materials by place of publication. This ensures that countries and regions with a rich tradition of publishing materials in the more commonly taught languages are not underrepresented in terms of their impact. By analyzing these data, the authors drew conclusions about the usage of area studies materials by scholars beyond their home institutions and how such usage might influence the development of more formal initiatives in cooperative collection

development, collective collections, and shared print management. They examined collection use within the context of the types of institutions borrowing the materials via ILL to measure the impact for researchers outside of research libraries. They also analyzed the regional impact of area studies materials by reviewing locations of requesting institutions. The present study provides further evidence that research libraries could invest more resources into developing enhanced models of cooperative collecting in area studies while still meeting most local constituent needs.

Literature Review

In the last ten years, the subject of area studies collections and their overall management gained considerable momentum among libraries, academic institutions, consortia, and other non-governmental agencies. This renewed interest produced, in addition to scholarly publications, a series of workshops and conferences designed to identify strategic areas for cooperation, collaboration, and resource sharing. In these settings, formal presentations and research papers introduced new ideas for cooperatively managing area studies collections and strengthening national resource sharing networks. A few notable works that focused exclusively on area studies include: *International and Area Studies Collections in 21st Century Libraries*; *Collaboration, Advocacy, and Recruitment: Area and International Studies Librarianship Workshop*; *NRC Conference: Demonstrating the Impact of National Resource Centers*; and *International and Area Studies Collections in the 21st Century*.[6] Many of these discussions highlighted strategies for collective action on a number of fronts to ensure that area studies information networks flourish in the twenty-first century.

Research on the use of international and area studies materials is limited when viewed within the context of a defined network of borrowing institutions and the set parameters of this study. Although there is considerable scholarly literature on examining interlibrary loan (ILL) operations and extensive research on the development, history, and role of international and area studies collections, limited research exists that specifically draws conclusions about the role of interlibrary lending in serving the needs of scholars requiring access to area studies collections. However, threads can be drawn between disparate studies that lead to solid conclusions.

Mak's 2011 study, which examined thirty-five years of resource sharing data among American Research Libraries (ARL) in the United States, tracked the growth of resource sharing among institutions and identified key ingredients for sustaining a "technically robust" national resource sharing infrastructure.[7] Similarly, Juergens and Prather reported OCLC-based ILL patterns among institutions.[8] This study provides an invaluable snapshot of ILL activity at the institutional, state, and regional levels. Additionally, Juergens and Prather examined an unidentified ARL library's borrowing and lending behavior during fiscal years 1992 and 1993 to highlight "how resource sharing has evolved into an essential element in library collection management."[9] A topic addressed in several presentations at the aforementioned workshops, this is also echoed by Jakubs in her 2015 study "Trust Me: The Keys to Success in Cooperative Collections Ventures."[10] As she states:

> The strategy of building on strength, recognizing de facto lead institutions, and encouraging the deepening of locally strong collections, has made it possible for some libraries to stop collecting in areas that are supported elsewhere . . . and to invest the funds in more specialized materials. The ultimate result has been the expansion of the 'commons,' the larger universe of research resources available to all researchers.[11]

Mak, Juergens and Prather, and Jakubs point to the requirements for a strong lending network, the role of such networks in major research libraries, the initial impact of that on cooperative collections work, and, in some cases, where this has been explicitly successful in relation to collecting and serving area studies materials.

Taken a step further, Jackson et al.'s 2006 study provides a useful analysis of global collecting patterns within ARL institutions.[12] This research shows both the distribution of publications from outside of North America within ARL member institutions and the level of overlap, concluding that there is much less overlap of publications from outside of North America. Williams and Woolwine's study "Interlibrary Loan in the United States: Analysis of Academic Libraries in a Digital Age" examined ILL statistics for all materials from 1997 to 2008. This extensive study on resource sharing in American academic libraries analyzed two primary elements: the effect of full-text databases and the size of print collections on ILL rates and activity.[13]

Although librarians and scholars express caution about remote collections, two frequently cited studies support the thesis that cooperatively developed collections could serve broad networks of libraries. The usage patterns in these networks are fluid enough that collecting activities could shift toward both the most heavily used and least commonly held items without diminishing network-wide service. The first study, O'Neill and Gammon's "Building Collections Cooperatively: Analysis of Collection Use in the OhioLINK Library Consortium," demonstrated that statewide networks may over-acquire to serve their user populations and touched on the notion that opportunities exist for Less Commonly Thought Languages (LCTL) collections to serve

broader populations.[14] While multiple holdings benefitted users in some cases, usage indicated that significant bodies of material within the OhioLINK network did not require duplicate holdings to serve the membership. O'Neill and Gammon concluded that a typical book circulated 0.109 times per year. They also concluded that foreign language items only circulated an average of 0.019 times per year, supporting the notion that both less commonly held and less frequently used materials could be effectively shared across a network of academic libraries.[15] Presumably, this could be accomplished without critically hampering local services.

The conclusions of O'Neill and Gammon's results were tested and largely confirmed by Wiley et al.'s 2011 examination of the usage of domestically produced monographs among the Consortium of Academic and Research Libraries in Illinois (CARLI).[16] Both studies reinforce beliefs espoused by pioneers in international and area studies collecting such as Hazen and Spohrer that the longtail of our holdings, those items infrequently used and not needed for regular on-site reference-type consultation, could effectively serve broader populations of scholars if resource sharing networks existed to facilitate access and usage.[17] This conclusion was tested in a live setting by Columbia and Cornell University Libraries as they sought to fully integrate services and collections for Slavic, East European, and Eurasian Studies (SEEES) across the two universities' libraries. As detailed by Davis in "2CUL Slavic: The View So Far," the integration concluded its sixth year of serving the needs of scholars at the two Ivy League universities in 2016.[18] A strong network, a history of collaboration, and a common goal allowed the two universities to reduce duplication, share resources, and collect more deeply across the partnership. Indeed, Davis' conclusions echoed those of Jakubs related to trust as a key component to successful collaboration, and Lenkart et al. related to the potential for a broader network to similarly serve the needs of scholars in need of access to area studies materials.

While lending data may support networked collecting and conclusions about 2CUL SEEES's success may support similar conclusions, the decision to shape local collection development practices by using ILL data concerns some librarians. For example, Leykam's study "Exploring Interlibrary Loan Usage Patterns and Liaison Activities: The Experience at a US University" cautions against using ILL statistics for collection development decisions, as they may reflect the interests of individual users and not broader institutional needs.[19] While this is true, in the realm of international and area studies collecting, the concept of the collective collection long permeated discussions and planning among scholars, subject specialists, and administrators. Recently, Bailey-Hainer et al. suggested new collaborative models and proposed partnerships on collection development, chronicling innovative strategies to promote interlibrary lending among institutions from around the world.[20]

As cautioned above, reliance on interlibrary lending statistics and bibliographic data listed in ILL forms as the basis for comparative analysis is problematic if no attention is given to actual publishing patterns. National trends and publishing in languages covered in statistical yearbooks and national bibliographies provide additional sources for comparative analysis.[21] Using a key set of indicators, the International Publishers Association tracks global trends in publishing in its annual reports, which provide supplemental coverage for publishing analysis.[22] Moreover, the German Book Office's report on publishing in India and Atbach's study on publishing in national languages reveal local dynamics associated with the use of national and regional languages.[23]

Research Questions

The overarching question behind this investigation was: given the long-established collaboration in area studies collecting, how can one determine whether international and area studies collections are serving their intended purpose? Area studies collections are meant to serve both local scholars who need to incorporate international perspectives and materials into their research and also contribute to the national collection, which may serve anyone doing international and area studies research in the United States. Given the history of collaboration among research libraries in collecting international resources, this question requires that librarians and administrators consider both local usage and the impact those collections may have across institutions and geographic boundaries. Specifically, the authors sought to determine:

1. What types of libraries borrow materials from the University of Illinois at Urbana-Champaign's area studies collection?
2. How are the benefits of lending area studies materials from the University of Illinois at Urbana-Champaign to institutions dispersed across different geographic regions of the United States?
3. Does the impact of materials from the University of Illinois at Urbana-Champaign's area studies collections vary when using the country of publication to identify materials rather than the language of publication?
4. How does demand for materials on a particular subject change based on language or country of publication of those materials?
5. Is there any correlation between local circulation of area studies materials and lending of those same materials outside of the University of Illinois at Urbana-Champaign?

6. Do rarely held materials experience the same demand as widely held materials in terms of both local circulation and ILL requests?
7. Can low-use unique collections serve broadly distributed populations of users?

Method

After receiving approval from the local Institutional Review Board, the team reviewed data generated and made available to them by the library's Interlibrary Loan and Document Delivery Unit (ILL/DD). It consisted of monthly lending reports spanning 2009 through 2013. The ILL/DD unit removed any personally identifying information prior to delivering the data.

The team merged the monthly reports to create a single database containing all lending records for the five years covered. This database included records for 177,366 transactions, which altogether contained 105,849 unique titles. With the help of a student worker, records indicative of renewals were removed to ensure that the demand for a particular item did not appear inflated. The student also removed ILL lending records for which critical information like imprint city or OCLC number were missing, as the absence of this data point eliminated the ability to firmly identify publication location and crosswalk it to a region. The data was then further processed in a number of ways as explained below.

The team created a new field in the spreadsheet and manually entered "Imprint Country" information based on the "Imprint City" field in the database. Region names were also assigned to these countries based on the Title VI Region List. To assign regions to borrowing institutions within the United States, the team used the US Census Bureau's Region and Division list—the Southern, North Eastern, Western, and Midwestern United States. The research team also added "Library Type" information (academic, public, corporate, etc.) based on the categories listed by OCLC.[24] Finally, OCLC holdings counts showing number of copies available from other OCLC member institutions for the same item were added to the database. Local circulation counts for the same period were added for each item.

The authors made no attempt to deduplicate the titles associated with the OCLC numbers recorded in the ILL data against alternate bibliographic records in OCLC that might represent the same item, meaning that there could have been local circulation associated with the same title cataloged in a variant manner. Additionally, the authors did not clean up volume and issue information associated with journal requests or identify item linking errors in local lending transactions. The data in these particular requests often include significant inaccuracies, particularly with volume information. However, disregarding this information shifts the entire loan request to a single bibliographic record, making comparisons between monograph and journal lending inexact. Consequently, the subsequent analysis often differentiates between lending data for monographs, journals, or both.[25]

Results

Lending by Institution Type

Through analyzing the borrowing activities by institutions according to the OCLC institution type and attributes that those institutions self-assigned when creating OCLC institutional accounts, the results show that primary beneficiaries of outgoing lending transactions consisted of institutions coded as "Academic" libraries, comprising 57.32 percent of borrowing institutions and "Major Academic Research" libraries, which accounted for 28.40 percent of lending transactions. The distinction between these categories is that "Major Academic Research" libraries connote doctoral granting universities, whereas an "Academic" institution is a general phrase that can include community colleges, baccalaureate colleges, and colleges with limited graduate or professional programs. Their combined total of 85.73 percent of lending is not unexpected given that such institutions serve similarly minded patron groups that use local collections and well-established ILL services to meet their research needs.

It is not just academic libraries that benefit from lending activities. "Public" libraries account for 8.87 percent of lending, "Corporate" libraries account for 1.22 percent of lending transactions, and "Federal Government" libraries for 1.15 percent. Since many area collections receive some federal funding through the Title VI National Resource Centers Program of the US Department of Education, it is important to highlight this tangible return on federal investment. All remaining institution types combined account for only 3.03 percent of lending.

In addition to which types of institutions submit the most borrowing requests, the authors further analyzed the data to determine whether differences existed in the subject areas of materials borrowed by the various institution types. As the table below illustrates, two subjects are particularly popular across institutional types—science and language and literature. These subjects appeared among the two most borrowed subject areas for five different institution types. For "Law Libraries" and "Medical Libraries," it is not surprising that law and medicine respectively ranked among the most borrowed subjects. There were only two subject areas that could be considered outliers:

Table 1. ILL Lending by Library Type

Library Type	ILL Lending	% of Total
Academic	97,389	57.32%
Major Academic Research	48,255	28.40%
Public	15,064	8.87%
Corporate	2,080	1.22%
Federal/National Government	1,955	1.15%
Junior, Community, Technical Colleges	1,248	0.73%
Law Libraries	906	0.53%
Theological	670	0.39%
Schools Below College Level	505	0.30%
State or Municipal Governments	482	0.28%
Association/Foundation	473	0.28%
State Library	471	0.28%
Other	205	0.12%
Medical	176	0.10%
Vendor	9	0.01%
Art Music History	2	0.00%
Total	169,890	99.98%

Note: Percentages do not add up to 100% because of rounding.

(1) agriculture was the second most popular subject for materials borrowed by state and municipal governments and (2) fine arts was the second most borrowed subject area for foundations and associations—perhaps reflecting the association of museums and museum libraries with various other non-profit operating models.

Regional Impact Across the United States

As noted, "Academic" and "Major Academic Research" predominate among borrowing institutions. These borrowing institutions are scattered across the country, yet the intensity of borrowing is heavily influenced by two factors: consortial affiliation and the presence of Title VI national resource centers. As might be expected given the University of Illinois's membership in the Big Ten Academic Alliance (BTAA), the majority of outgoing transactions went to institutions within the consortia, even when lending activity within the state of Illinois is excluded. When Illinois is excluded, the states with the highest percentage of lending transactions were: Michigan (14 percent), Indiana (9 percent), Wisconsin (8 percent), Pennsylvania (7 percent), and Minnesota (7 percent). These contributed to an overall lending rate of 59 percent to states with BTAA member institutions. Beyond the BTAA member institutions, the states that borrowed the most materials were California (5 percent), Texas (4 percent), New York (4 percent), North Carolina (3 percent), Missouri (3 percent), and Massachusetts (3 percent). The remaining states borrowed less than 3 percent each and, combined, represent under a quarter of total lending.

Country of Imprint versus Language of Publication

The juxtaposition of lending patterns for area studies materials that are in LCTLs and area studies materials identified as such based on country of imprint loomed large in the authors' original motivation for this study. The data shows that for some areas excluding Commonly Taught Language Materials (defined as English, French, German, Italian, and Spanish) diminished the perceived impact of these collections.

For example, one may consider materials from Latin America, which were largely excluded from the original study because of two factors. First, Spanish is a Commonly Taught Language (CTL). Second, the difficulty of disambiguating whether Portuguese publications, despite the language's status as a LCTL, were from Europe, Brazil, or other former Portuguese colonies located outside of Latin America made their inclusion based on language impossible. Using the metrics resulting from the exclusion of these languages, Latin American materials did not comprise a full percentage point of overall lending when the key marker was LCTL. Using the country of imprint as a filter, however, results in Latin American materials comprising 4 percent of total lending.

In another example, figure 3 demonstrates that English language publications from South Asian countries comprise a greater percentage of the total lending than any region outside of the United States, the United Kingdom, and Western Europe. Overall, South Asian materials published in English account for nearly 3 percent of the total lending in English.

Materials in vernacular South Asian languages account for only 0.2 percent of total lending. Yet, when place of publication rather than language is considered, South Asian imprint materials account for 2.2 percent of total lending. Should this information be used to influence funding, the incompleteness of the language-only model should be apparent when colonial languages continue to predominate in the publishing of particular regions. Table 3 illustrates the differences in lending by publication region versus by language for all world regions. It should be noted that Portuguese and CTLs like English, French, and German are their own language category to draw distinctions between materials published in CTLs in the United States and Western Europe and materials in those languages published elsewhere, particularly in formally colonized countries. Otherwise, languages are presented as regional language groups. In the Latin American and Caribbean language

Table 2. ILL Lending by Library Type and LC Subject

	Library Type																
LC Subject	Academic	Major Academic Research	Public	Corporate	Federal/National Government	Junior, Community, Technical Colleges	Law Libraries	Theological	Schools Below College Level	State or Municipal Governments	Association/Foundation	State Library	Other	Medical	Vendor	Art Music History	**Total**
Agriculture	1.29%	0.40%	0.28%	0.06%	0.06%	0.02%	0.01%	0.00%	0.01%	0.02%	0.01%	0.01%	0.02%	0.00%	0.00%	0.00%	**2.19%**
Auxiliary Sciences of History	0.73%	0.37%	0.10%	0.01%	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**1.25%**
"Bibliography, Library Science, Information Resources (General)"	0.80%	0.40%	0.14%	0.01%	0.01%	0.03%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	**1.42%**
Education	1.60%	0.68%	0.18%	0.00%	0.01%	0.03%	0.01%	0.01%	0.02%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	**2.56%**
Fine Arts	2.53%	1.63%	0.54%	0.01%	0.04%	0.05%	0.04%	0.01%	0.01%	0.01%	0.03%	0.01%	0.01%	0.00%	0.00%	0.00%	**4.92%**
General Works	0.77%	0.33%	0.05%	0.00%	0.01%	0.01%	0.00%	0.01%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	**1.20%**
Geography, Anthropology, Recreation	1.78%	0.90%	0.28%	0.01%	0.02%	0.03%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	**3.08%**
History of the Americas	1.68%	1.05%	0.50%	0.01%	0.01%	0.03%	0.02%	0.01%	0.01%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	**3.34%**
Language and Literature	8.36%	4.79%	1.79%	0.02%	0.03%	0.12%	0.02%	0.08%	0.08%	0.01%	0.02%	0.02%	0.01%	0.00%	0.00%	0.00%	**15.34%**
Law	0.96%	0.41%	0.13%	0.02%	0.01%	0.01%	0.12%	0.01%	0.01%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	**1.68%**
Medicine	2.80%	0.88%	0.39%	0.09%	0.04%	0.05%	0.02%	0.03%	0.01%	0.01%	0.01%	0.02%	0.00%	0.03%	0.00%	0.00%	**4.37%**
Military Science	0.31%	0.15%	0.06%	0.01%	0.01%	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.56%**
Music and Books on Music	2.04%	1.13%	0.37%	0.00%	0.00%	0.02%	0.00%	0.01%	0.01%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	**3.61%**
Naval Science	0.05%	0.01%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**0.10%**
Philosophy, Psychology, Religion	3.51%	2.23%	0.78%	0.01%	0.02%	0.04%	0.02%	0.09%	0.01%	0.00%	0.02%	0.01%	0.00%	0.01%	0.00%	0.00%	**6.75%**
Political Science	0.90%	0.53%	0.08%	0.00%	0.01%	0.01%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	**1.57%**
Science	5.97%	2.10%	0.54%	0.24%	0.28%	0.06%	0.01%	0.02%	0.01%	0.14%	0.04%	0.05%	0.03%	0.01%	0.00%	0.00%	**9.50%**
Social Sciences	5.18%	2.77%	0.76%	0.08%	0.09%	0.08%	0.10%	0.03%	0.03%	0.00%	0.01%	0.02%	0.01%	0.01%	0.00%	0.00%	**9.18%**
Technology	3.46%	1.34%	0.58%	0.54%	0.26%	0.04%	0.03%	0.01%	0.01%	0.02%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	**6.34%**
"World History and History of Europe, Asia, Africa, Australia, New Zealand, etc."	3.72%	2.50%	0.71%	0.01%	0.05%	0.04%	0.03%	0.04%	0.02%	0.00%	0.02%	0.03%	0.00%	0.00%	0.00%	0.00%	**7.18%**
N/A	8.88%	3.81%	0.57%	0.10%	0.18%	0.06%	0.06%	0.02%	0.02%	0.01%	0.05%	0.04%	0.02%	0.02%	0.00%	0.00%	**13.85%**
Total	**57.32%**	**28.40%**	**8.87%**	**1.22%**	**1.15%**	**0.73%**	**0.53%**	**0.39%**	**0.30%**	**0.28%**	**0.28%**	**0.28%**	**0.12%**	**0.10%**	**0.01%**	**0.00%**	**100.00%**

Table 3. ILL Lending by Publication Region and Language

Publication Region	Language																			% of Publication Region Lent
	African	Creole Languages	East Asian	English	Esperanto	EU	French	German	Italian	Latin American and Caribbean	Middle Eastern	North American	Portuguese	Slavic, East European, Eurasian	South Asian	Southeast Asian	Spanish	N/A	Total	
Africa	110	2		1,373			189	4	1		56		15				4	29	1,783	1.0%
Australia/New Zealand				1,605										2		1	4	27	1,639	1.0%
Canada			5	1,908			222		2		1	1		21			12	86	2,258	1.3%
East Asia/Oceania			4,400	2,200		1	8	2						5	3	280	2	146	7,047	4.1%
Latin America/ Caribbean			2	385		4	96	7	1	13	1		1,075	3			5,778	133	7,498	4.4%
Middle East	1			488		3	64	13	2		665			89			6	30	1,361	0.8%
Slavic/East Europe/ Eurasia				2,123		150	139	99	7	1	28			7,900			8	241	10,696	6.3%
South Asia			5	3,265		2	1				25			1	340			95	3,734	2.2%
United Kingdom	1		1	23,803		61	30	13	6		3			22	2		16	1,169	25,127	14.8%
United States	1	2	23	67,217		40	79	47	18	4	18		20	150	4	3	302	3,697	71,625	42.2%
Western/Northern Europe	6	2	2	13,515	3	1,168	5,765	6,975	4,183	1	29		175	144	2		3,179	1,489	36,638	21.6%
N/A	1		2	111		1	5	3			8		2	19	11		7	314	484	0.3%
Total	120	6	4,440	117,993	3	1,430	6,598	7,163	4,220	19	834	1	1,287	8,356	362	284	9,318	7,456	169,890	
% of Language Lent	0.1%	0.0%	2.6%	69.5%	0.0%	0.8%	3.9%	4.2%	2.5%	0.0%	0.5%	0.0%	0.8%	4.9%	0.2%	0.2%	5.5%	4.4%		100%

grouping this would therefore exclude Spanish and Portuguese and instead describe languages like Nahautl, Quechua, Mayan languages, and others.

Lending by Subject Area

As defined by Library of Congress Subject Headings, the most popular subject areas lent from all regions, including the United States, and irrespective of language of publication were: (1) Language and literature; (2) Science; (3) Social sciences; (4) World history and history of Europe, Asia, Africa, Australia, New Zealand, etc.; (5) Philosophy, psychology, and religion; and (6) Technology. Each of these areas accounted for more than ten thousand ILL transactions for the five-year period.

Among the geographic regions, the authors identified the top three categories per area. While all regions focused largely on the same categories, they were not always in the same order, and a few exceptions appeared. Africa and Australia/New Zealand were the only regions in which "World history and the history of Europe Asia, Africa, Australia, New Zealand, etc.," appeared as the most popular subject area. Furthermore, Australia/New Zealand had a tie between the "World history . . ." category and "Science" as the most popular. "Science" was also in the top three for Slavic/East Europe/Eurasia and Canada. For materials with a US imprint, "Technology" ranked as the third most popular subject. The difference in popularity of subjects for materials from different regions may reflect research and publication trends within institutions in those countries. Institutions in a geographic area

Table 4. ILL Lending by Publication Region and LC Subject

	Publication Region												
Region LC Subject	Africa	Australia/New Zealand	Canada	East Asia/Oceania	Latin America/ Caribbean	Middle East	Slavic/East Europe/ Eurasia	South Asia	United Kingdom	United States	Western/Northern Europe	Insufficient Information	Total
Agriculture	0.02%	0.02%	0.03%	0.07%	0.05%	0.01%	0.05%	0.08%	0.27%	1.00%	0.27%	0.00%	1.89%
Auxiliary Sciences of History	0.01%	0.00%	0.01%	0.05%	0.04%	0.01%	0.06%	0.01%	0.17%	0.31%	0.27%	0.00%	0.94%
"Bibliography, Library Science, Information Resources (General)"	0.02%	0.02%	0.02%	0.05%	0.04%	0.01%	0.07%	0.03%	0.22%	0.70%	0.31%	0.00%	1.48%
Education	0.04%	0.02%	0.02%	0.07%	0.11%	0.01%	0.06%	0.03%	0.30%	1.53%	0.18%	0.00%	2.38%
Fine Arts	0.02%	0.03%	0.04%	0.25%	0.19%	0.03%	0.25%	0.06%	0.56%	1.66%	1.60%	0.01%	4.71%
General Works	0.01%	0.01%	0.02%	0.07%	0.12%	0.00%	0.16%	0.02%	0.10%	0.31%	0.26%	0.00%	1.09%
Geography, Anthropology, Recreation	0.04%	0.03%	0.06%	0.12%	0.11%	0.01%	0.13%	0.04%	0.55%	1.42%	0.48%	0.00%	3.00%
History of the Americas	0.00%	0.00%	0.09%	0.03%	1.29%	0.01%	0.02%	0.00%	0.10%	2.28%	0.24%	0.01%	4.08%
Language and Literature	0.21%	0.06%	0.23%	0.94%	1.45%	0.27%	0.96%	0.45%	1.78%	6.04%	4.95%	0.02%	17.36%
Law	0.04%	0.02%	0.03%	0.06%	0.08%	0.03%	0.05%	0.04%	0.32%	1.01%	0.37%	0.00%	2.06%
Medicine	0.02%	0.02%	0.03%	0.04%	0.06%	0.01%	0.03%	0.06%	0.59%	2.04%	0.36%	0.00%	3.26%
Military Science	0.01%	0.00%	0.00%	0.01%	0.01%	0.00%	0.02%	0.02%	0.09%	0.22%	0.06%	0.00%	0.46%
Music and Books on Music	0.02%	0.02%	0.04%	0.05%	0.16%	0.02%	0.25%	0.03%	0.45%	2.07%	1.34%	0.04%	4.48%
Naval Science	0.00%	0.00%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.03%	0.05%	0.01%	0.00%	0.10%
Philosophy, Psychology, Religion	0.05%	0.01%	0.06%	0.30%	0.18%	0.14%	0.25%	0.31%	1.18%	2.94%	2.06%	0.01%	7.49%
Political Science	0.04%	0.01%	0.02%	0.08%	0.18%	0.03%	0.10%	0.03%	0.34%	0.63%	0.44%	0.00%	1.90%
Science	0.04%	0.07%	0.08%	0.32%	0.13%	0.04%	0.49%	0.17%	1.11%	3.17%	1.88%	0.01%	7.52%
Social Sciences	0.18%	0.04%	0.12%	0.37%	0.70%	0.04%	0.26%	0.20%	1.50%	5.01%	1.41%	0.01%	9.85%
Technology	0.02%	0.02%	0.05%	0.18%	0.05%	0.01%	0.11%	0.07%	0.85%	3.21%	0.88%	0.00%	5.44%
"World History and History of Europe, Asia, Africa, Australia, New Zealand, etc."	0.24%	0.07%	0.05%	0.84%	0.04%	0.23%	1.08%	0.35%	1.37%	1.69%	2.67%	0.01%	8.65%
N/A	0.10%	0.06%	0.07%	0.25%	0.47%	0.07%	1.40%	0.17%	0.76%	6.34%	2.15%	0.05%	11.89%
Total	1.15%	0.54%	1.09%	4.16%	5.48%	0.98%	5.81%	2.18%	12.62%	43.64%	22.18%	0.17%	100.00%

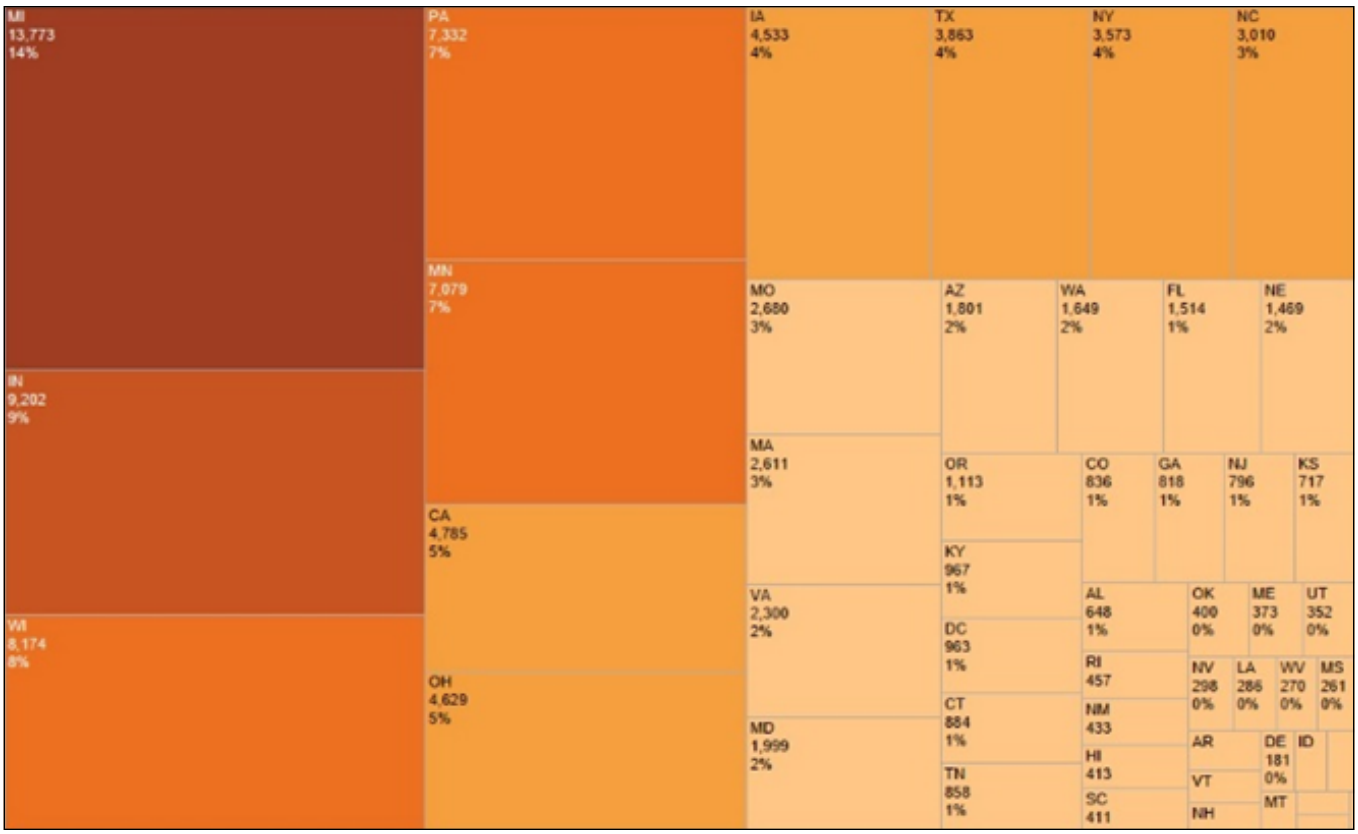

Figure 1. ILL Lending by US State

that emphasizes or values particular subjects may therefore produce greater quantities of published material on those subjects than institutions in other geographic areas with different values.

When removing country of imprint and considering the popularity of different subjects based on English versus non-English materials for all materials lent to countries other than the United States, it is interesting to note which materials experience greater demand in vernacular languages. Regarding raw numbers from the dataset of lent materials, the subjects in which non-English materials circulated more than English materials were: (1) Language and literature; (2) World history and history of Europe, Asia, Africa, Australia, New Zealand, etc.; (3) Philosophy, psychology, religion; (4) Fine arts; (5) Music and books on music; (6) History of the Americas; (7) Political science; and (8) General works. For all other categories, English-language materials were the most popular. This may reflect the languages that currently dominate particular fields such as the STEM (science, technology, engineering, and math) disciplines, or it may reflect the relative scarcity of resources from particular regions combined with the tendency among the humanistic disciplines to draw upon a broader array of source materials.

Local Circulation versus Lending

In comparing the local demand for an individual title to the demand for a title from borrowing institutions, the authors compared local circulation statistics to ILL statistics and further analyzed the results by examining the number of OCLC holdings. The data demonstrates that the demand for materials via ILL mirrors the demand for those same titles in local circulation. Interestingly, the two categories that circulate the most both locally and via ILL are the most and least frequently held items. More rarely held materials, for which only one to ten copies are available in OCLC, account for 15.6 percent of ILL transactions and 16.8 percent of local circulation. The most commonly held materials, with ninety-one or more copies available in OCLC, account for about 42 percent of both ILL and local circulation.

This result can be interpreted in various ways. First, it demonstrates that long-tail collections do meet service needs at institutions across the nation. The caveat is the difficultly in knowing whether there are situations in which rarely held materials are rendered inaccessible locally while they are being lent to an outside institution, or external scholars who are unable to borrow the materials because

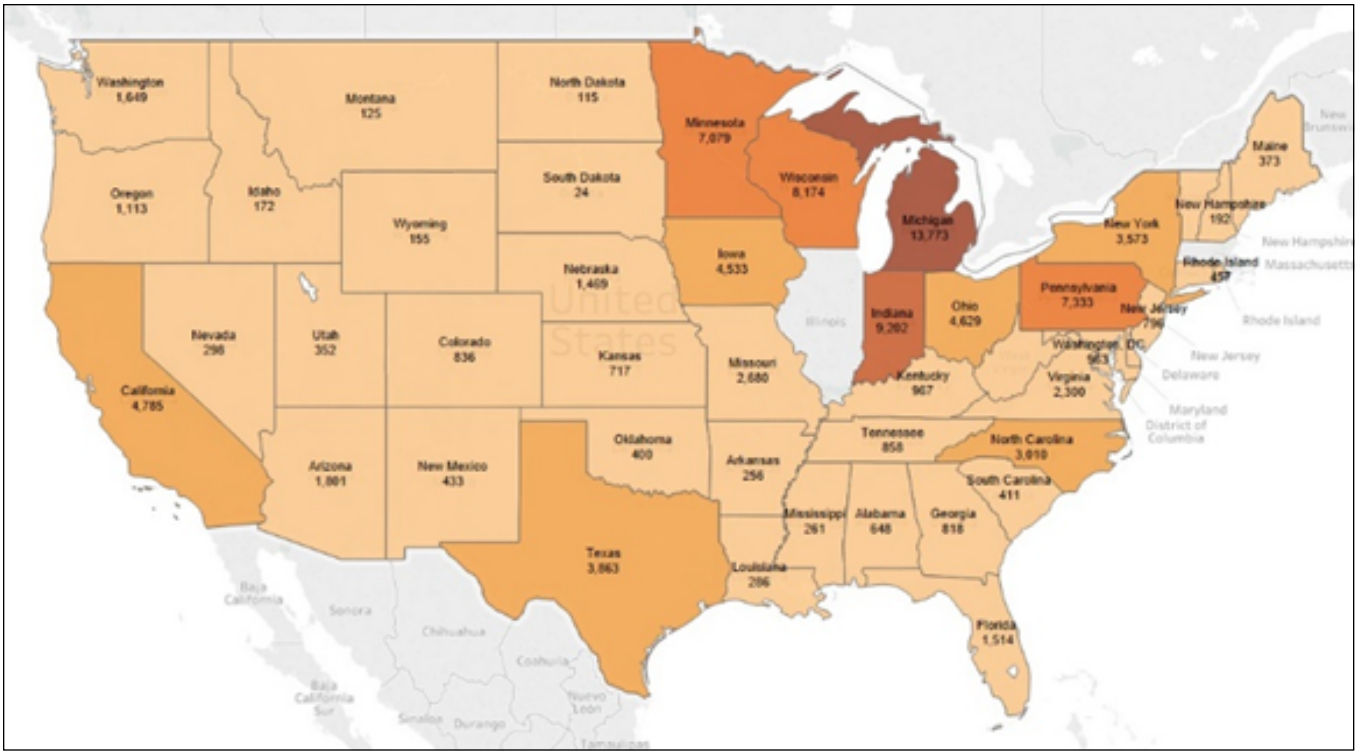

Figure 2. ILL Lending Map United States

Figure 3. ILL Lending and Imprint Country

they are being used locally. It seems unlikely that this would be the case, but a future study that investigates denied ILL requests for area studies materials might be meaningful.

Second, it shows that while collaborative collecting is valuable, justification remains for multiple copies of the most popular publications to be held by collaborating institutions as these are the most in demand for *both* ILL and local use. It is likely that when materials reach a certain threshold of popularity, ILL helps meet the demand when local copies are checked out or otherwise unavailable for circulation.

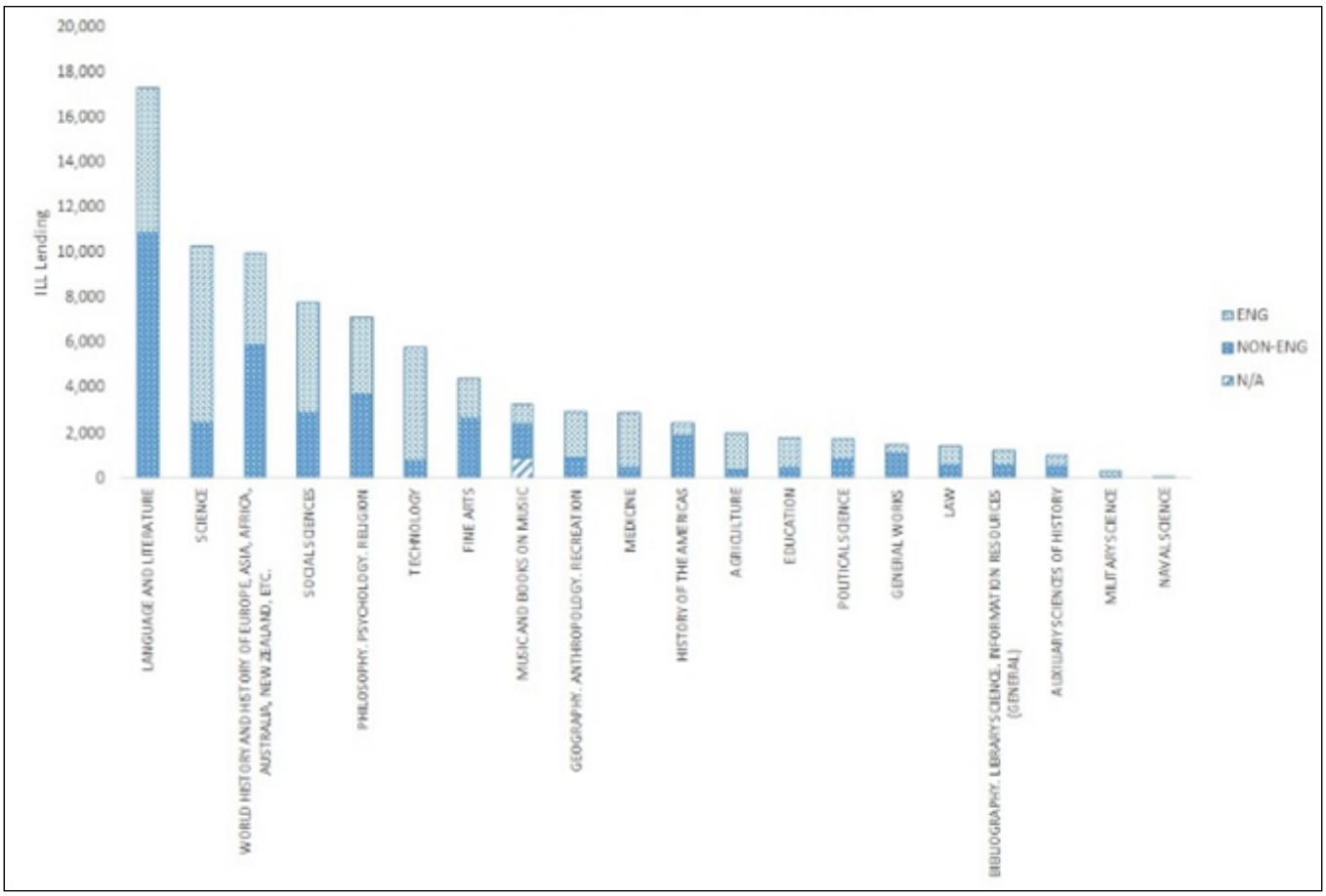

Figure 4. ILL Lending by LC Subject and Language

It is the middle range between the most rarely held and most commonly held materials that might prove to be the best place to seek opportunities for collaboration. These items experience the least demand both locally and externally. These observations provide further confirmation of the results of two papers cited in this study—O'Neill and Gammon and Wiley et al. A further analysis of which publishers, subjects, or languages tend to occupy these middle categories, particularly those items with between fifty-one and ninety OCLC holdings, might allow for targeted collaboration within regional consortia, as limiting further acquisitions in categories with combined factors of low demand and high relative-acquisition rates could lead to more effective resource use.

Long-Tail Collections

A total of 73,194 items, or 88.5 percent of all ILL monograph lending during the study period, were lent once during the five-year time period included in the data set. This single loan includes the ILL transaction for both US and foreign imprints. The University of Illinois lent 7,327 monographs twice via ILL, accounting for 8.9 percent of lending. Adding monographs lent via ILL three times during a five-year period brings the total percentage to over 99 percent, meaning that materials lent via ILL four or more times over a five-year period accounted for less than 1 percent (<1 percent) of overall ILL lending. In table 6, the authors included only monographs as the aforementioned problems with journal volume information created misleading results about the relative importance of single volumes. However, less than 1 percent of the monographic volumes requested via ILL were circulated more than three times during a five-year period.

Filtering out US imprints scarcely changes the results. Of 46,612 monographs with non-US imprints, the university lent 41,506 monographs once, accounting for 89 percent of the total number of non-US imprint monographs lent via ILL. A total of 3,978, or 8.5 percent of the total, were lent twice.

When the data is further limited to titles held by five or fewer institutions, 5,040 items were lent just once, 552

Table 5. ILL Lending and Local Circulation by the Number of OCLC Holdings

Number of OCLC Holdings	Title Count	ILL Lending	% of Total ILL Lending	Local Circulation	% of Total Local Circulation
1-10	20,195	25,697	15.6%	39,994	16.8%
11-20	11,489	15,689	9.5%	23,312	9.8%
21-30	8,549	12,933	7.9%	18,900	7.9%
31-40	6,366	10,028	6.1%	13,991	5.9%
41-50	4,896	8,132	4.9%	11,195	4.7%
51-60	3,965	7,110	4.3%	9,327	3.9%
61-70	3,345	5,589	3.4%	7,848	3.3%
71-80	2,844	5,016	3.1%	6,672	2.8%
81-90	2,419	4,091	2.5%	5,874	2.5%
91-100+	41,030	69,283	42.1%	99,507	41.8%
N/A	751	880	0.5%	1,536	0.6%
Total	105,849	164,448	100.0%	238,156	100.0%

items lent twice, and 99 items lent three times over a five-year period. While the raw numbers of items lent via ILL changes depending on which filters are applied, the proportions remain strikingly close. More importantly, since the vast majority of monographs are lent via ILL once, this indicates that competing external demands for use of a single item are minimal. The evidence further substantiates this claim when juxtaposing the ILL statistics of a particular item against the local circulation for that same item. As demonstrated in table 6, those monographs lent via ILL *and* locally circulated up to twelve times account for 99.1 percent of the total ILL monograph lending in this sample set, meaning that most of the volumes lent in this sample set appear to be sufficient to serve both local needs and the ILL borrowing demands placed upon them.

Conclusion

As research libraries make the transition from being collection-centric to increasingly service-centric organizations, a recurring challenge that remains is determining how institutions meet the needs of their local community. For many years, institutional leadership recognized the impossibility of collecting everything and the fact that fulfilling local needs often required accepting a level of dependency upon partner institutions. In this environment, institutions constructed cooperative collection development schemes, shared reference models, and brick-and-mortar facilities to house and service lower-use collections. Yet, research libraries continue to face resistance from their local communities and, in some cases their own personnel, to adopting models that shift from locally held collections and toward an increased reliance upon the holdings of others.

The roots of these concerns vary from institutional mission and historical pride in local collections to concerns about access and efficient delivery of materials to concerns about the potential impact on research services that remain tied to serving local scholarly communities and institutional objectives, both of which may shift over time. However, the fact remains that locally held collections often serve populations at a distance, and local populations often benefit from collections held by other institutions.

This paper examines the lending use data of a particular set of collections over a five-year period. It attempts to determine whether arguments that categories of library material could serve broader communities and that more systematic cooperative collecting activities could result in a collection sufficient to serve a broader community is true. If truth remains in these arguments, it also stands to reason that this paper implicitly argues that deeper cooperative collection development activities that avoid unnecessary redundancy could free resources, allowing specialists to collect more deeply and institutions to better fulfill our collective service missions.

The greatest obstacle faced in implementing these models is that they challenge some established norms. Yet challenges to established norms that were met with concern in recent memory are increasingly viewed as challenges to our institutions to realize their potential. For example, the idea of digitizing the corpus of any one research library was as much fantasy fifteen years ago as the belief that the digitized corpus would reside in one digital repository or that users could create their own virtual collections within that repository. The motivation

Table 6. ILL Lending and Local Circulation

	Local Circulation												
ILL Lending	0	1	2	3	4	5	6	7	8	9	10	12	Total
1	126 (0.3%)	13,579 (29.1%)	17,940 (38.5%)	9,579 (20.6%)	1 (0.0%)	46 (0.1%)	89 (0.2%)	91 (0.2%)	49 (0.1%)	6 (0.0%)			41,506 (89.0%)
2		1,116 (2.4%)	1,818 (3.9%)	923 (2.0%)	67 (0.1%)	5 (0.0%)	35 (0.1%)	7 (0.0%)	6 (0.0%)	1 (0.0%)			3,978 (8.5%)
3		193 (0.4%)	326 (0.7%)	171 (0.4%)	17 (0.0%)		20 (0.0%)	3 (0.0%)	1 (0.0%)	1 (0.0%)			732 (1.6%)
4		47 (0.1%)	103 (0.2%)	40 (0.1%)	8 (0.0%)		15 (0.0%)			3 (0.0%)		2 (0.0%)	218 (0.5%)
5		20 (0.0%)	36 (0.1%)	16 (0.0%)	7 (0.0%)		3 (0.0%)			1 (0.0%)	1 (0.0%)		84 (0.2%)
6		12 (0.0%)	13 (0.0%)	8 (0.0%)	2 (0.0%)		1 (0.0%)		1 (0.0%)	1 (0.0%)			38 (0.1%)
7		4 (0.0%)	10 (0.0%)	3 (0.0%)	1 (0.0%)					1 (0.0%)			19 (0.0%)
8		4 (0.0%)	3 (0.0%)	4 (0.0%)	1 (0.0%)		2 (0.0%)			1 (0.0%)			15 (0.0%)
9			1 (0.0%)	4 (0.0%)	1 (0.0%)								6 (0.0%)
10				3 (0.0%)									3 (0.0%)
11				1 (0.0%)								1 (0.0%)	2 (0.0%)
12		1 (0.0%)		2 (0.0%)									3 (0.0%)
13			1 (0.0%)										1 (0.0%)
14		1 (0.0%)											1 (0.0%)
15													0 (0.0%)
16			1 (0.0%)				1 (0.0%)						2 (0.0%)
17			1 (0.0%)										1 (0.0%)
18		1 (0.0%)											1 (0.0%)
19			1 (0.0%)										1 (0.0%)
20			1 (0.0%)										1 (0.0%)
Total	126 (0.3%)	14,978 (32.1%)	20,255 (43.5%)	10,754 (23.1%)	105 (0.2%)	51 (0.1%)	166 (0.4%)	101 (0.2%)	57 (0.1%)	15 (0.0%)	1 (0.0%)	3 (0.0%)	46,612 (100.0%)

for libraries to collaborate—and achieve—by developing economies of scale is mounting.

As the data included in this study illustrates, the potential exists for collections of low-use materials to serve broad scholarly communities through resource sharing. However, looking at them as part of a broad network that serves scholarship could lead to far-reaching collection management and development decisions in which overlapping holdings are limited to the most used materials, and resources currently used to acquire those that might be classified as "moderately widely held" would be used instead to extend the long tail of acquisitions. This would further both our

collective service mission and our mission to preserve our own heritage.

Extending the argument, could consortia establish hubs that would acquire, provide access, and preserve materials that are collectively purchased and legally held on behalf of their members? If yes, could collection development for such a hub be coordinated enough among the members to avoid unnecessary redundancy and effectively provide on-demand delivery to users throughout the network? As demonstrated by the coordinated efforts already explored by other groups of institutions, such a model is not beyond our reach and would have significant implications for individual institutions, regarding the nature of prospective collection development, the management of existing collections, and the ability of participating members to collect resources in a more systematic manner.

This study and the efforts undertaken by consortia thus far raise many questions that require further research. A study that examined the lending and borrowing patterns across a consortia of major academic research institutions could confirm whether those items identified by this study as being potential areas for establishing cooperative collecting arrangements are also viable areas for collaboration at other institutions. While all the borrowing in this study was accomplished with established lending models, the development of effective discovery-to-delivery methods will open further research possibilities. There are also policy implications of cooperative arrangements that need further examination. How do we meaningfully define differences in collaborative collecting policies for items held within "general collections" versus those collected as artifacts? If we collect fewer items in the middle tier of current holdings, does that substantively change the relative populations of "general" and "special" collections? Although alluded to earlier in this paper, the other significant research area requiring further exploration is how the collective collection serves as a preservation tool. What are the impacts of such models on our long-standing notions of institutional and collective stewardship?

As questions of deduplication against a collective holding are considered, what will constitute "true" duplication across the collective collection? There are many opportunities for libraries to work collaboratively to accomplish tasks that they could not accomplish individually and many opportunities for them to achieve efficiencies. During times of economic pressure, it is even more important for libraries to assume a pragmatic view towards innovative collaborative models of collection management. The recent successes of HathiTrust, the BioDiversity Heritage Library, the Digital Public Library of America, and mass digitization efforts argue for this approach. While all may not endure, the impact of these initiatives upon our communities is significant. The impact of long-standing programs, such as that inherent in CRL's cooperative collection development and preservation operations, further emphasizes that cooperative work can affect positive change on the community.

Perhaps the area that has longest frustrated the academic library community in terms of meeting local needs through cooperative effort has been prospective cooperative collection development. Opportunities exist, and the data in this paper and others support assertions that collections can support broad communities of scholars, that there is room for institutions to rethink collection development activities to identify resources that could support deeper collection development in targeted areas, and that research libraries can achieve efficiencies by collecting "at scale."

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Notes on Operations

A Case Study of ETD Metadata Remediation at the University of Houston Libraries

Santi Thompson, Xiping Liu, Albert Duran, and Anne M. Washington

This paper provides a case study on remediating electronic theses and dissertations (ETD) metadata at the University of Houston Libraries. The authors provide an overview of the team's efforts to revise existing ETD metadata in its institutional repository as part of their commitment to aligning ETD records with the Texas Digital Library Descriptive Metadata Guidelines for Electronic Theses and Dissertations, Version 2.0 (TDL guidelines, version 2). The paper reviews the existing literature on metadata quality and ETD metadata practices, noting how their case study adds one of the first documented cases of ETD metadata remediation. The metadata upgrade process is described, with close attention to the tools and workflows developed to complete the remediation. The authors conclude the paper with a discussion of lessons learned, the project's limitations, future plans, and the emerging needs of metadata remediation work.

Over the last two decades, institutions have increasingly accepted electronic theses and dissertations (ETDs) as part of a student's graduation requirements. Not surprisingly, the proliferation of these documents have prompted libraries and other stakeholder groups to confront policy and workflow issues addressing the curation of digital objects from acquisition to preservation, including submission protocols, document embargo options, and promoting access. In the process of confronting these issues, librarians and information professionals have developed common and best practices regarding how ETDs are described, often focusing on the benefits and limitations of certain metadata schema, the number of types of metadata fields necessary to adequately describe a work, and the challenges incurred through accepting author-generated metadata.

While building on the previous work of ETD metadata research, this paper provides a case study for another aspect of ETD description: metadata remediation. For the purposes of this paper, the authors define metadata remediation as the process of evaluating previously generated metadata, either user- or library-created, and refining it based on shifting institutional practices and updated metadata standards. While the literature has a growing body of work dedicated to metadata creation and quality review, it lacks documented cases of ETD metadata remediation. As a result, there are few examples of shared lessons to consider when undertaking a remediation project or common approaches to begin drafting best practices.

The authors will begin by providing an overview of the University of Houston (UH) Libraries' efforts to revise existing ETD metadata in its institutional repository as part of their commitment to align ETD records with the TDL guidelines, version 2.[1] After a brief background and history of UH's ETD program, the authors review the existing literature on metadata quality and ETD metadata practices, noting how their case study adds an additional documented case of metadata remediation. They then describe their metadata upgrade process, with close attention to the tools and workflows developed to complete

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the remediation. The paper concludes with a discussion of lessons learned, project limitations, future plans, and the emerging needs of metadata remediation work. While this use case is especially suited for smaller collections (approximately one thousand records), the workflow takes advantage of commonly known tools and simple steps, making it accessible and extensible for other use cases.

Overview of UH's ETD Program

UH is a Carnegie-designated tier 1, doctoral granting research university with over 40,000 enrolled students, 2,500 faculty members, and nearly 200 graduate degree programs. In 2009, the Faculty Senate's Graduate and Professional Studies Committee approved a new policy requiring all graduate programs producing a thesis or dissertation to migrate to electronic format by summer 2014. UH colleges, the UH Graduate School, and UH Libraries devised a submission and approval process to implement this policy. Decentralized in nature, the UH ETD Program was designed to be distributed across colleges, the graduate school, and the libraries. Primary roles and responsibilities for colleges include making policies regarding content, structure, and deadlines; providing instruction and consultation to students on policies and document structure; and approving submitted documents based on localized policies and guidelines. The UH Graduate School enforces system-wide policies, including embargo requests and submission deadlines; compiles current lists of active departments and programs; and distributes submissions to appropriate colleges as part of the approval workflow. UH Libraries maintains the ETD submission software (Vireo); trains personnel at colleges and students to use the software; and releases documents to the institutional repository once embargoes expire. This shared approach has allowed stakeholders to accumulate over 3,200 ETDs to date.

The Libraries collaborate with the Texas Digital Library (TDL), a consortium of Texas higher education institutions focused on providing digital collections infrastructure, to administer two platforms to facilitate the ETD workflow process: Vireo and DSpace. Developed in 2009 by TDL and Texas A&M University with funding from the Institute of Museum and Library Services, Vireo is an open source software dedicated to managing the submission, approval, and publication of ETDs. The software provides an online submission module that collects user-supplied metadata and PDF versions of a student's thesis or dissertation. Upon submission, the Vireo platform tracks documents throughout the approval process, including verifications from the student's committee chair, from the college, and from the Libraries. After documents are fully vetted through all appropriate groups, they are released to UH's DSpace institutional repository. The metadata includes elements from both the Dublin Core Metadata Initiative terms namespace and custom elements outlined in the TDL guidelines, version 2. DSpace leverages the embedded optical character recognition text to make ETDs full-text searchable and freely available for search, download, and reuse.

Literature Review

The professional literature has been engaged with issues of metadata quality, metadata assessment, and the specific challenges of ETD metadata management for over two decades. The authors highlight some of the intersecting topics that informed their metadata remediation project and situate this case study in the larger practice of long-term metadata management.

Metadata quality has been explored by a number of researchers. In their influential paper, Bruce and Hillman acknowledge that what makes "good metadata" is often difficult to articulate and depends on its context.[2] They outline seven dimensions of metadata quality that can be applied generally to all metadata: completeness (chosen element set describes resources completely and elements are populated as fully as possible); accuracy (values are both factual and free of typographical errors); provenance (availability of contextual information about metadata creation and modification); conformance to expectations (elements and values fulfill target users' needs); logical consistency and coherence (standard element definition and input within and across collections); timeliness (metadata is up-to-date); and accessibility (open and available technologically and intellectually).[3] Tani, Candela, and Castelli surveyed the research on metadata quality frameworks and assessment techniques.[4] They summarize that "defining 'what metadata quality is'" is a very challenging task. It can be affirmed that no consensus has been reached on this concept until now, apart from the shared understanding that the difficulties in defining it come from its intrinsic characteristic of being a multidimensional and context-specific concept."[5]

Literature from the information profession also specifically addresses the management of ETD metadata quality. These conversations frequently address the challenges and opportunities that accompany the metadata creation process. In their case study of the metadata remediation process for the Illinois Digital Environment for Access to Learning and Scholarship (IDEALS), the University of Illinois at Urbana-Champaign's institutional repository, which includes ETDs, Stein, Applegate, and Robbins note that "Despite the existence of the Metadata Policy and Best Practices documentation, a variety of errors have been introduced into the IDEALS repository metadata via the

user-submission workflow and batch ingests of materials."[6] Researchers have identified metadata fields that are more likely to include errors and present long-term challenges for ETD management. Waugh et al., Lubas, and Chapman et al. have all addressed the challenges of managing controlled vocabularies in ETD collections.[7] Waugh et al. discuss the frequency with which metadata creators use various ways to express names in the repository, with each variation being ingested into the repository. These variations have implications for the discoverability of ETDs, as a user must know to search or browse for all instances of a name to obtain the desired documents. Waugh et al. also note that names play an important role in other ETD administrative functions, such as citation analysis and copyright and licensing management.[8] Chapman et al. state that the problem with names is compounded by the limited number of solutions available to institutions. They state that the

> Use of the Library of Congress Name Authority File is problematic because many authors in institutional repositories have no entry, as they tend to be authors of journal articles and conference papers, not books or monographs. Use of the campus-level directory can aid in some cases, but often faculty leave or publish under a name different from their directory name leaving gaps in its usefulness for authority control. There exists no standard to uniquely identify authors.[9]

Despite the identified limitations, Lubas discusses how the consistency of user-generated names improves when depositors are given controlled lists from which to choose.[10] Finally, Potvin and Thompson outline the challenges of managing a growing set of date metadata elements for ETDs.[11] They write that differing "philosophies about the role of metadata, viewed either as primarily descriptive or as a distinct component in the lifecycle management of electronic documents" have informed how dates are captured and expressed in metadata records.[12] Competing philosophies, in conjunction with repository software development, have caused date metadata to differ widely from prescribed ETD metadata standards (including the Networked Digital Library of Theses and Dissertations ETD-MS v1.1: An Interoperability Metadata Standard for Electronic Theses and Dissertations).[13]

Metadata quality is important, but its context-dependent nature makes it costly to assess. Some researchers have experimented with methods for automating metadata assessment. Nichols et al. compared two automated institutional repository metadata analysis tools: the Metadata Analysis Tool (MAT) from the University of Waikato and the Kiwi Research Information Service (KRIS) from the National Library of New Zealand. Both tools harvest metadata using the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) and help metadata librarians analyze this data, pinpointing specific metadata errors and generating summary statistics.[14] Goovaerts and Leinders conducted a study on a random sample of OAI-PMH MODS metadata from the OceanDocs aggregated ocean research repository to statistically evaluate metadata quality.[15] In both cases, the statistical analyses were a useful tool for identifying errors and areas for improvement; however, context and thoughtful interpretation of statistical assessment results is required. Radio underscores the importance of closely analyzing statistical data used for metadata auditing purposes. Illustrating this, he notes the phenomenon of "data absence," which acknowledges that a metadata field devoid of a value is not, by default, inaccurate or incomplete.[16] Further complicating the metadata auditing process, Radio notes that "data absence" is just one "critical factor" that impacts "the interpretation of a metadata statement" during metadata auditing.[17] Consequently, automated assessment is best used when augmented by human intervention. Depending on the scale of the repository, manual assessment processes may be feasible. For example, Westbrook et al. used a random sampling method to audit metadata in the UH Digital Library according to Bruce and Hillman's quality framework summarized above.[18]

Statistical and other metadata analyses provide insights into data quality, which may inform metadata remediation efforts. At the UH Libraries, results from their metadata quality audit informed manual and automated remediation efforts to align digital collection metadata across collections.[19] As part of an effort to migrate to a new digital asset management system, Neatrour et al. performed limited metadata assessment and remediation and plan to pursue additional assessment and enhancement after the migration is complete.[20] Improving metadata is a time-consuming process that has implications for staffing resources and expertise. Moulaison Sandy and Dykas stress that the improvement of metadata quality can be increased by "adequate and appropriate staffing of the repository."[21] In other cases, it is not possible or desirable to dedicate resources to this work. Chapman, Reynolds, and Shreeves discuss the decision to forgo metadata remediation for the University of Illinois at Urbana-Champaign's (UIUC) institutional repository at that time because "it was not clear what the staffing implications were likely to be for the cataloging unit and due to chronic staffing shortages" and "there was a general feeling that because of the nature of the institutional repository, access to resources would principally occur through search engines and full text indexing."[22] Additionally, they note that a poor repository user interface, which fails to take advantage of batch processes, creates an extra burden on staff. Still, there are clear benefits of expanding resources for ETD metadata creation and remediation. McCutcheon

argues for the need to enhance ETD bibliographic records through mediation tasks, including "making sure that special characters are represented properly, doing name authority work, and subject analysis."[23] According to the author, this work will optimize the discoverability of ETDs, making them more widely available to those using library catalogs.[24] Since Chapman, Reynolds, and Shreeves' 2009 publication, UIUC has expanded staffing in Metadata Services, enabling them to undertake a metadata remediation project.[25]

Despite the growing literature on the benefits and limitations of metadata remediation, there are few case studies detailing the experiences of metadata review. In their paper on ETD metadata and quality control, Steele and Sump-Crethar note that "The issue of quality control is a topic worthy of an entire study. Our survey only asked about the importance and whether quality control was done."[26] They suggest that "Future research could examine further how quality control is done."[27] Focused on ETD metadata analysis and remediation, the authors' paper contributes one such case study, furthering the profession's understanding of metadata quality control processes.

Method

The Libraries initiated the ETD remediation process largely due to the release of TDL's revised ETD metadata standard.[28] The standard, initially developed in 2008 to assist with the aggregation of TDL members' ETDs through a statewide repository, articulates required and optional metadata elements needed to describe ETDs and make them accessible and discoverable via the web. While the first version of the standard addressed a wide array of metadata issues, the shifting nature of ETD submission software, coupled with emerging metadata areas popularized since the creation of the 2008 standard, including increased attention on author name disambiguation and explicit rights statements, prompted a revision to the standard.[29]

The revised standard included several changes that prompted UH Libraries to modify current practices and workflows. While the 2008 standard "centered around the Metadata Object Descriptive Standard (MODS) application profiles, with guidelines including flat, key-value paired Dublin Core (DC) and a thesis schema (known collectively as 'TDL DC') only for crosswalking to meet the Networked Digital Library of Theses and Dissertations (NDLTD) ETD-MS exchange standard," the 2015 revised standard is based on qualified DC, which more closely aligns with TDL members' current practices.[30]

The transition from MODS to a Qualified DC application profile required changes to certain metadata elements. For example, DC terminology like "Date" and "Format" replaced the MODS-related terms "Origin Information" and "Physical Description," respectively; values in some metadata fields were also better suited to other fields, including the transfer of URLs from "Location (URL)" to the "Identifier" element; and the removal of redundant fields, including values in "Record Information" since this information is automatically generated by DSpace and placed in administrative metadata fields (such as <dc.date.accessioned> and <dc.description.provenance>).[31] Beyond the shift from MODS to Qualified DC, additional changes promoted new and emerging aspects of ETD administration, such as rights metadata, author identifiers (ORCID), and description information, plus encoding guidelines to improve the discoverability of metadata in aggregated search platforms (e.g., Google Scholar's Highwire Press tags). Not all of the recommendation set out in TDL guidelines, version 2, were implemented by the project team; the following sections detail the specific issues that the authors addressed.

A team consisting of members of the Metadata Unit and the Head of Digital Research Services was formed in July 2015 to initiate the ETD metadata remediation project. Their charge was to develop a strategy focusing on reviewing the current state of the UH IR metadata, noting any deficiencies, and implementing a workflow to address any problems discovered while incorporating the latest best practices and adhering the recently developed TDL guidelines. The following sections detail the discrepancies the authors identified, the strategies and tools used to correct them, and the procedures followed.

Discrepancies

After exporting metadata from DSpace, an informal analysis of the CSV data in Microsoft Excel revealed the following issues, providing the foundation for the remediation (see table 1).

Strategies and Tools

Following the previous success with the UH Libraries metadata upgrade project, the authors adopted similar approaches for communication, documentation, and remediation to conduct the ETD metadata upgrade project.[32] The section below provides an overview of the strategies and tools used.

Communication

Communication is an integral part of the process. Since this was a complex project spanning a significant amount of time, the authors needed a means to communicate and collaborate internally. Basecamp, a project management

Table 1. Issues Found and Remediation Strategy

Issue	Notes	Example	Remediation Strategy
Duplicate Metadata Fields	Various metadata fields have similar information spread across duplicate columns in the exported CSV file.	dc.contributor.advisor dc.contributor.advisor[] dc.contributor.advisor[*]	Verify that the appropriate information was captured in the column with the correct field label (as outlined in the TDL guidelines). Metadata values need to be moved to one column so the duplicate columns could be removed.
Incorrect URLs in dc.identifier.uri field	Many records contained a faulty hyperlink that cluttered the user interface/display and confused our users.	Incorrect URL: http://hdl.handle.net/10657/ETD-UH-2010-05-34 Corrected URL: http://hdl.handle.net/10657/423	Review the entries in the dc.identifier.uri field and remove the incorrect url entries.
Inconsistent spellings for advisor and committee member names	The previous submission process allowed students to fill in free text fields with little or no moderation resulting in inconsistencies in spellings for advisor and committee member names.	Standardized form of name: Chou, Diana, S. Non-standardized form of name: Chou, Diana	Review the names and make sure each person has only one preferred form for their name.
Varying department and degree discipline names	To attract students to their constantly evolving fields of academic study, department, and discipline names are reevaluated and changed to reflect the latest trends and best practices. This resulted in inconsistencies in department and degree names across the ETD collection.	Legacy name: Educational Leadership and Cultural Studies Current name: Educational Leadership and Policy Studies	Confirm the correct form of names by conducting research and contacting college and department representatives.
Extra word "abstract" in the dc.description.abstract field for some ETD records	In this field we noticed the words "Abstract Abstract" and other formatting issues. This was likely a result of users cutting and pasting large amounts of text from their thesis into the submission form.	Correct Abstract: "In this study . . ." Incorrect Abstract: "Abstract. In this study . . ."	Delete the duplicate word "abstract."
Dates in various formats	Multiple date fields existed in our item records with many containing dates in various formats.	dc.date.created 2008-08 dc.date.issued 3/24/2010 dc.date.submitted 08-Aug	Update to current TDL standard.

platform, was selected to assign tasks, document and track decisions, and record meeting minutes. Additionally, communication with college and department stakeholders was necessary to complete their goal. Communicating regularly with a point of contact that has the institutional knowledge to answer questions about historical department and degree names allowed the team to address questionable data more effectively. The authors kept close contact with colleges and departments through email to communicate information externally.

Documentation

It was imperative to capture the remediation process to enable new team members to replicate the workflow necessary to continue this project. PMwiki, an open source wiki publishing platform, was used to document workflow processes, collect responses from personnel in colleges and departments, and archive project information. Team members frequently used both screenshots and step-by-step descriptions to ensure that the instructions are easy to understand and usable for future reference.

Remediation

Remediation entailed making the necessary metadata edits and corrections to align content in the IR with the newly updated TDL guidelines, version 2.[33] Microsoft Access and OpenRefine were chosen since the authors were familiar with these tools and could use them to automate portions of the workflow, reducing repetitive tasks and human error. Microsoft Access queries are useful to perform complex

functions such as consolidating values from multiple columns or cells. OpenRefine was a great asset to standardize author, advisor, department, and college names with the facet, filter, and cluster functions.

ETD Metadata Workflow

Based on the issues identified during the export analysis (outlined in table 1), the authors initiated the remediation workflow. Metadata for the then 900+ ETDs was exported from the DSpace repository as a CSV file and opened in OpenOffice, which retains any special character encoding found in the metadata.[34] It was then saved as a Microsoft Excel .xls file and imported into Access for remediation work.

Remove Duplicate Columns

In the exported CSV file, duplicate columns were found that represented a single metadata element. For example, three columns contained values for the thesis advisor: dccontributoradvisor, dccontributoradvisor1, and dccontributoradvisor2 (see figure 1).[35]

Before the authors could perform remediation work, they first consolidated the values across duplicate columns into a single column. An update query (see figure 2) was used to copy the values from one column to another (see figure 3).

A simple "copy and paste" command should accomplish the task; however, using the update query minimizes human errors. After the values were in one column, that data was ready to be edited.

Remove Incorrect URLs from dc.identifier.uri Field

The authors also identified broken URLs in the dc.identifier.uri field (see figure 4). Because the correct URLs are all of the same character length, they were able to use Access's "right" function to retain the correct URLs in the column while removing the incorrect URLs. This function allowed them to retain the *x* number of characters from the right, in this case the thirty-one characters (which is the length of the correct urls) from the right.

Figure 5 shows the update query to complete the task. Figure 6 shows the query result.

Name Standardization

The authors identified inconsistent forms of names throughout the dc.contributor.advisor and dc.contributor.committeemember columns. To ensure one preferred form of name for each person, the authors imported the columns that contain advisor and committee member names with the record ID and collection ID into OpenRefine for name standardization (see figure 7).

DSpace Export 09-01-15

id	collection	dccontributoradvisor	dccontributoradvisor1	dccontributoradvisor2
3	10657/2			
10	10657/2			
22	10657/2			Phillips, Scott
24	10657/2	Lee, Rebecca E.		
157	10657/2		Arbona, Consuelo	
159	10657/2		Arbona, Consuelo	
160	10657/2		Coleman, Nicole	
161	10657/2		Chow, Diana	
162	10657/2		Ryan, Michael	
165	10657/2		Yamasaki, Jill	
167	10657/2		Schwartz, Jonathan	
168	10657/2		Mountain, Lee	
169	10657/2		Armsworth, Mary	
170	10657/2		Arbona, Consuelo	
171	10657/2		Olson, Beth	
172	10657/2		Jowett, Garth	
173	10657/2		Ryan, Michael	
174	10657/2		Vardeman-Winter, Jennifer	
175	10657/2		Busch, Steven D.	
176	10657/2		MacNeil, Angus J.	
177	10657/2		Craig, Cheryl J.	
178	10657/2		White, Cameron	
179	10657/2		Vardeman-Winter, Jennifer	

Figure 1. Exported xls file in Microsoft Access with duplicate columns

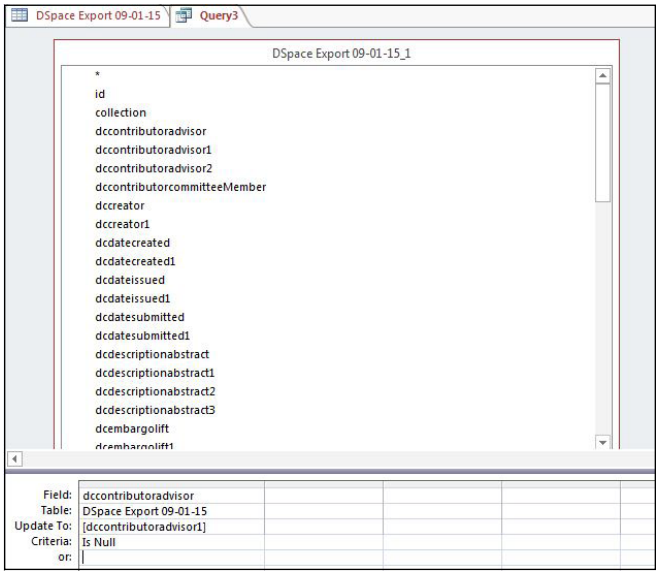
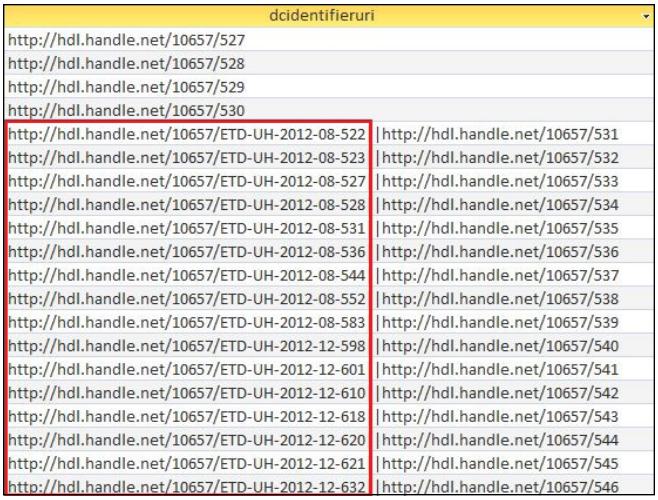


Figure 2. Update query in Access

DSpace Export 09-01-15

id	collection	dccontributoradvisor	dccontributoradvisor1	dccontributoradvisor2
3	10657/2			
10	10657/2			
22	10657/2			
24	10657/2	Lee, Rebecca E.		
157	10657/2		Arbona, Consuelo	
159	10657/2		Arbona, Consuelo	
160	10657/2		Coleman, Nicole	
161	10657/2		Chow, Diana	
162	10657/2		Ryan, Michael	
165	10657/2		Yamasaki, Jill	
167	10657/2		Schwartz, Jonathan	
168	10657/2		Mountain, Lee	
169	10657/2		Armsworth, Mary	
170	10657/2		Arbona, Consuelo	
171	10657/2		Olson, Beth	
172	10657/2		Jowett, Garth	
173	10657/2		Ryan, Michael	
174	10657/2		Vardeman-Winter, Jennifer	
175	10657/2		Busch, Steven D.	
176	10657/2		MacNeil, Angus J.	
177	10657/2		Craig, Cheryl J.	
178	10657/2		White, Cameron	
179	10657/2		Vardeman-Winter, Jennifer	

Figure 3. Results of update query shown in figure 2



dcidentifieruri	
http://hdl.handle.net/10657/527	
http://hdl.handle.net/10657/528	
http://hdl.handle.net/10657/529	
http://hdl.handle.net/10657/530	
http://hdl.handle.net/10657/ETD-UH-2012-08-522	http://hdl.handle.net/10657/531
http://hdl.handle.net/10657/ETD-UH-2012-08-523	http://hdl.handle.net/10657/532
http://hdl.handle.net/10657/ETD-UH-2012-08-527	http://hdl.handle.net/10657/533
http://hdl.handle.net/10657/ETD-UH-2012-08-528	http://hdl.handle.net/10657/534
http://hdl.handle.net/10657/ETD-UH-2012-08-531	http://hdl.handle.net/10657/535
http://hdl.handle.net/10657/ETD-UH-2012-08-536	http://hdl.handle.net/10657/536
http://hdl.handle.net/10657/ETD-UH-2012-08-544	http://hdl.handle.net/10657/537
http://hdl.handle.net/10657/ETD-UH-2012-08-552	http://hdl.handle.net/10657/538
http://hdl.handle.net/10657/ETD-UH-2012-08-583	http://hdl.handle.net/10657/539
http://hdl.handle.net/10657/ETD-UH-2012-12-598	http://hdl.handle.net/10657/540
http://hdl.handle.net/10657/ETD-UH-2012-12-601	http://hdl.handle.net/10657/541
http://hdl.handle.net/10657/ETD-UH-2012-12-610	http://hdl.handle.net/10657/542
http://hdl.handle.net/10657/ETD-UH-2012-12-618	http://hdl.handle.net/10657/543
http://hdl.handle.net/10657/ETD-UH-2012-12-620	http://hdl.handle.net/10657/544
http://hdl.handle.net/10657/ETD-UH-2012-12-621	http://hdl.handle.net/10657/545
http://hdl.handle.net/10657/ETD-UH-2012-12-632	http://hdl.handle.net/10657/546

Figure 4. Broken URLs in the dc.identifier.uri field

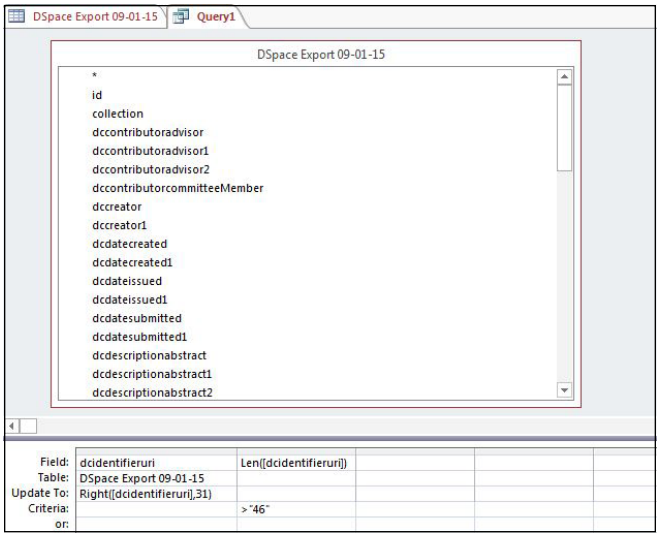
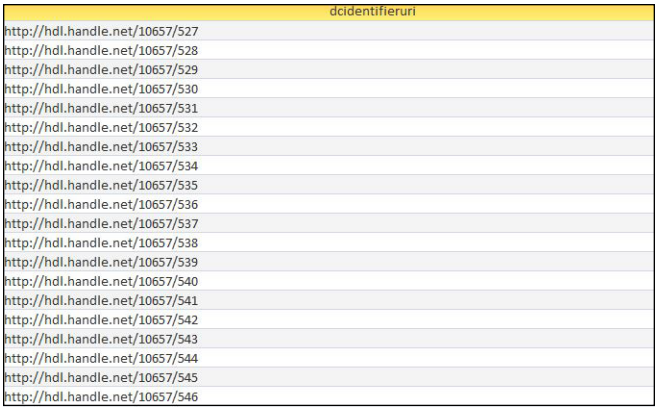


Figure 5. Update query to remove broken URLs



dcidentifieruri
http://hdl.handle.net/10657/527
http://hdl.handle.net/10657/528
http://hdl.handle.net/10657/529
http://hdl.handle.net/10657/530
http://hdl.handle.net/10657/531
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http://hdl.handle.net/10657/542
http://hdl.handle.net/10657/543
http://hdl.handle.net/10657/544
http://hdl.handle.net/10657/545
http://hdl.handle.net/10657/546

Figure 6. Query results from figure 5

All	id	collection	dccontributoradvisor	dccontributorcommitteeMember
1.	3	10657/2	Bond, Richard A.	Bond, Richard A.||Knoll, Brian J.||Pedemonte, Carlos H.||Cahill, Gregory M.||Moore, Robert H.
2.	10	10657/2	Chow, Diana	Chow, Diana||Bates, Theodore R.||Hu, Ming||Liang, Dong||Tam, Vincent H.
3.	22	10657/2	Phillips, Scott	
4.	24	10657/2	Lee, Rebecca E.	Layne, Charles S.||O'Connor, Daniel P.||Rifai, Hanadi
5.	157	10657/2	Arbona, Consuelo	Burridge, Andrea||Gaa, John||Backus, Margot
6.	159	10657/2	Arbona, Consuelo	Day, Susan X.||Armsworth, Mary||Olvera, Norma
7.	160	10657/2	Coleman, Nicole M.	Arbona, Consuelo||Mc Pherson, Robert||Watson, Margaret
8.	161	10657/2	Chow, Diana	Yeung, Jim||Bond, Richard||Liang, Dong||Giovanella, Bappino
9.	162	10657/2	Ryan, Michael	Vardeman, Jennifer||Lewis, Dontee
10.	165	10657/2	Yamasaki, Jill	Haun, Martha||Addison Otey, Penny
11.	167	10657/2	Schwartz, Jonathan	Arbona, Consuelo||Wiesner, Margit||Olvera, Norma
12.	168	10657/2	Mountain, Lee	Abrahamson, Richard||Craig, Cheryl||Horn, Catherine
13.	169	10657/2	Armsworth, Mary	Greer, Gary||Gaa, John||Dao, Tam||Andrews, Nicole
14.	170	10657/2	Arbona, Consuelo	Watson, Margaret||Coleman, Nicole||Armsworth, Mary
15.	171	10657/2	Olson, Beth	Haun, Martha||Verheyen, Claremarie
16.	172	10657/2	Jowett, Garth	Houk, Keith R.||Reed, John

Figure 7. Imported names in OpenRefine

Figure 8. "Split multi-valued cells" command

They next divided committee member names into separate rows using the "split multi-valued cells" command (see figure 8).

The authors consolidated all advisor and committee member names into one column to standardize names from a single list by using the "transpose cells across columns into rows" command (see figures 9 and 10).

This function also enabled the authors to track the field from which a value originated and store this location in an additional column, "Original Column." Tracking allowed them to return the standardized names to their original fields after name cleaning was complete. Figure 11 shows the result of using the "transpose cells across columns into rows" command: all advisor and committee member names are in one column, allowing the authors to use "facet and cluster" commands to standardize the names (see figures 12 and 13).

After name standardization was locally completed, the authors reconciled this list with the Library of Congress Name Authority File (LCNAF) and updated any existing names in OpenRefine to reflect LCNAF values.

Following reconciliation, the authors separated the advisor and committee member names back into two columns and imported them into Access. They first used the "text filter" command in OpenRefine to display only advisor names (see figure 14).

Next they used the "Add column based on this column" command to create a new column, dccontributoradvisor, for the advisor values (see figures 15 and 16). The authors

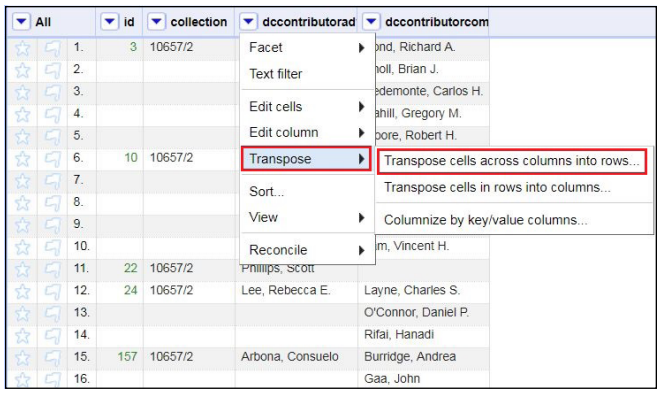


Figure 9. "Transpose cells across columns into rows" command

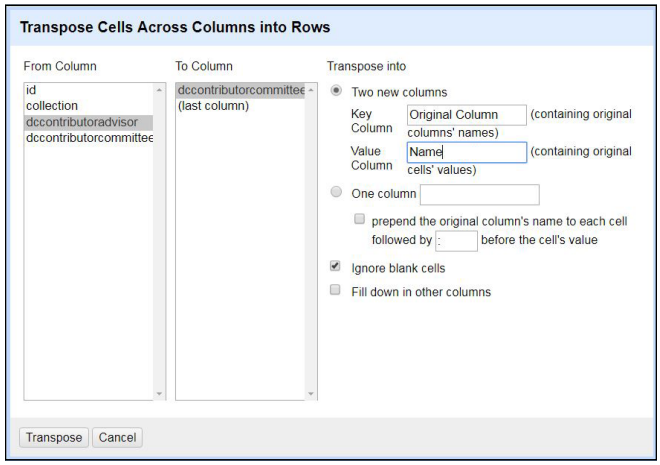


Figure 10. Adjust settings to "transpose cells across columns into rows"

applied the same steps to pull committee member names into a new column. The text filter was removed to view the results (see figure 17). After there were two new columns for dccontributoradvisor and dccontributorcommitteemember, the authors deleted the previous two columns created just for name standardization. To import the standardized name back into Access, they placed multiple name values into a single cell using the "join multi-valued cells" command (see figures 18 and 19). The authors deleted any remaining empty rows by filtering for blank cells and removing them from the table. The final table was then ready to be imported back to Access (see figure 20).

Using OpenRefine, the authors exported the file as an Excel spreadsheet and imported it into Access as a new table. Since each record has a unique ID, they used Access's "join table" function to combine the new table with the existing one, shown in figure 21. The authors then deleted the columns containing the original advisor and committee member names, concluding the name cleanup process.

All	id	collection	Original Column	Name
1.	3	10657/2	dccontributoradvisor	Bond, Richard A.
2.			dccontributorcommitteeMember	Bond, Richard A.
3.			dccontributorcommitteeMember	Knoll, Brian J.
4.			dccontributorcommitteeMember	Pedemonte, Carlos H.
5.			dccontributorcommitteeMember	Cahill, Gregory M.
6.			dccontributorcommitteeMember	Moore, Robert H.
7.	10	10657/2	dccontributoradvisor	Chow, Diana
8.			dccontributorcommitteeMember	Chow, Diana
9.			dccontributorcommitteeMember	Bates, Theodore R.
10.			dccontributorcommitteeMember	Hu, Ming
11.			dccontributorcommitteeMember	Liang, Dong
12.			dccontributorcommitteeMember	Tam, Vincent H.
13.	22	10657/2	dccontributoradvisor	Phillips, Scott
14.	24	10657/2	dccontributoradvisor	Lee, Rebecca E.
15.			dccontributorcommitteeMember	Layne, Charles S.
16.			dccontributorcommitteeMember	O'Connor, Daniel P.
17.			dccontributorcommitteeMember	Rifai, Hanadi
18.	157	10657/2	dccontributoradvisor	Arbona, Consuelo
19.			dccontributorcommitteeMember	Burridge, Andrea
20.			dccontributorcommitteeMember	Gaa, John

Figure 11. Result of the "transpose cells across columns into rows" command

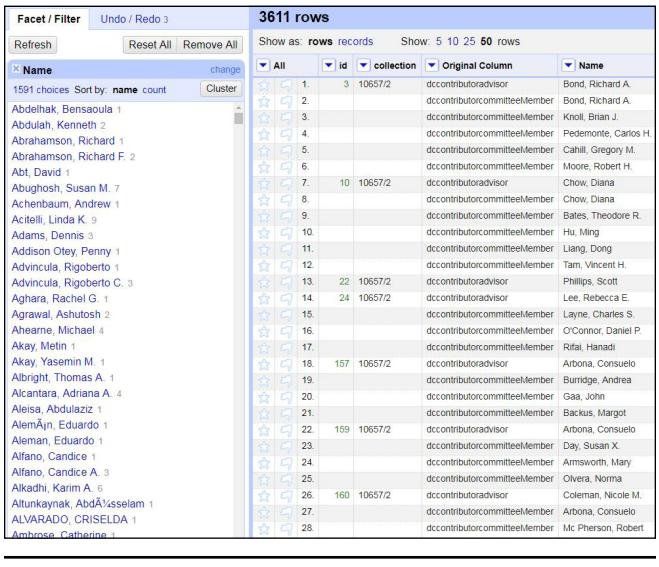


Figure 12. "Facet" command in OpenRefine

Additional Standardization Tasks

The authors filtered for all records in which the value in the Abstract field began with "Abstract" (see figure 22) and manually deleted this word. Access's "sort" function was used to sort the department and discipline names and confirmed the accuracy of these names with respective colleges and departments.

In compliance with the new TDL guidelines, version 2, the authors deleted the original dcdateissued column that contained the dates in YYYY-MM-DD format. Using

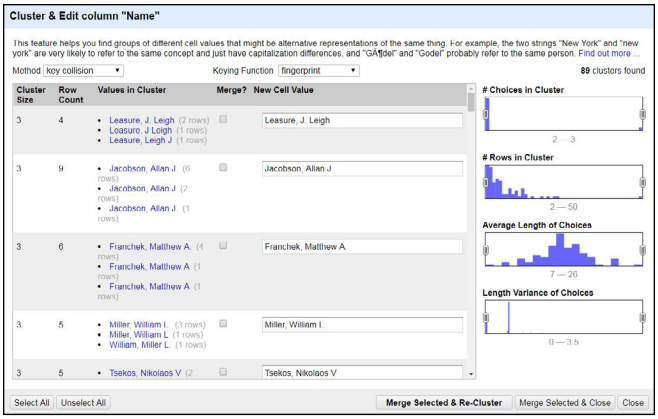


Figure 13. "Cluster & Edit" command in OpenRefine

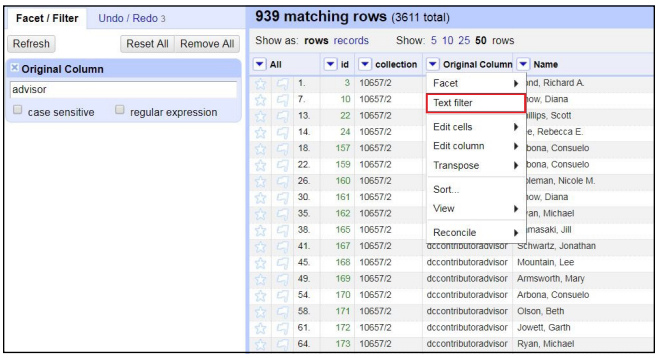


Figure 14. "Text filter" command

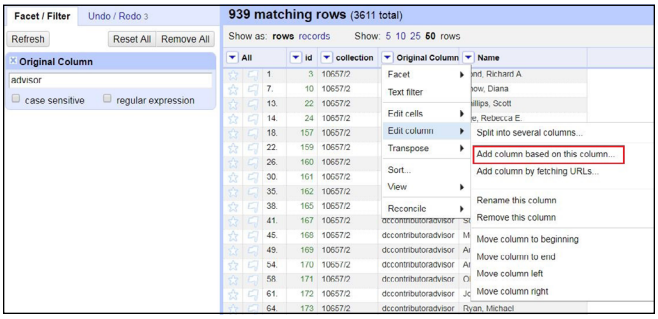
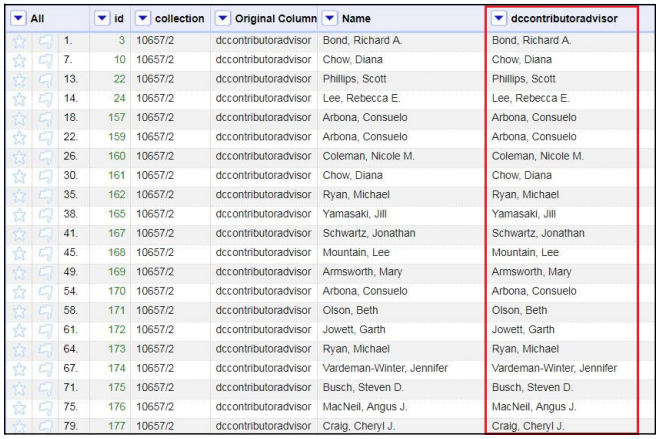


Figure 15. "Add column based on this column" command

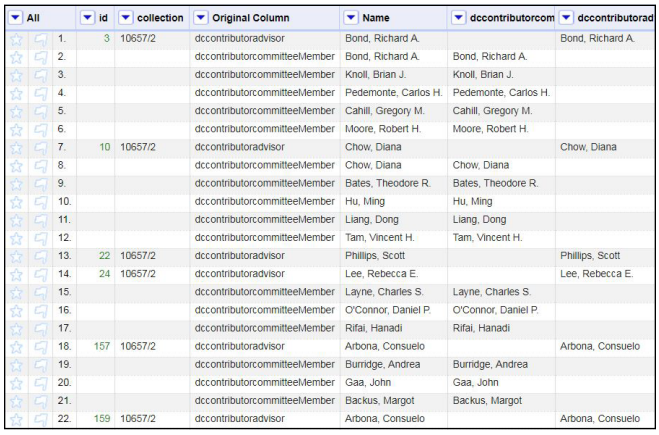
Access, they renamed and reformatted values in two other date columns: dcdateissued (YYYY-MM) and dcdatecreated (Month Year) (see figure 23).

When these tasks were complete, the authors exported the updated Access file to Excel, imported the file into OpenOffice (to retain special character encoding), and saved it as a CSV file. Finally, the CSV file was ingested into DSpace.



All	id	collection	Original Column	Name	dccontributoradvisor
1.	3	10657/2	dccontributoradvisor	Bond, Richard A.	Bond, Richard A.
7.	10	10657/2	dccontributoradvisor	Chow, Diana	Chow, Diana
13.	22	10657/2	dccontributoradvisor	Phillips, Scott	Phillips, Scott
14.	24	10657/2	dccontributoradvisor	Lee, Rebecca E.	Lee, Rebecca E.
18.	157	10657/2	dccontributoradvisor	Arbona, Consuelo	Arbona, Consuelo
22.	159	10657/2	dccontributoradvisor	Arbona, Consuelo	Arbona, Consuelo
26.	160	10657/2	dccontributoradvisor	Coleman, Nicole M.	Coleman, Nicole M.
30.	161	10657/2	dccontributoradvisor	Chow, Diana	Chow, Diana
35.	162	10657/2	dccontributoradvisor	Ryan, Michael	Ryan, Michael
38.	165	10657/2	dccontributoradvisor	Yamasaki, Jill	Yamasaki, Jill
41.	167	10657/2	dccontributoradvisor	Schwartz, Jonathan	Schwartz, Jonathan
45.	168	10657/2	dccontributoradvisor	Mountain, Lee	Mountain, Lee
49.	169	10657/2	dccontributoradvisor	Armsworth, Mary	Armsworth, Mary
54.	170	10657/2	dccontributoradvisor	Arbona, Consuelo	Arbona, Consuelo
58.	171	10657/2	dccontributoradvisor	Olson, Beth	Olson, Beth
61.	172	10657/2	dccontributoradvisor	Jowett, Garth	Jowett, Garth
64.	173	10657/2	dccontributoradvisor	Ryan, Michael	Ryan, Michael
67.	174	10657/2	dccontributoradvisor	Vardeman-Winter, Jennifer	Vardeman-Winter, Jennifer
71.	175	10657/2	dccontributoradvisor	Busch, Steven D.	Busch, Steven D.
75.	176	10657/2	dccontributoradvisor	MacNeil, Angus J.	MacNeil, Angus J.
79.	177	10657/2	dccontributoradvisor	Craig, Cheryl J.	Craig, Cheryl J.

Figure 16. Result of "Add column based on this column" command



All	id	collection	Original Column	Name	dccontributorcom	dccontributorad
1.	3	10657/2	dccontributoradvisor	Bond, Richard A.		Bond, Richard A.
2.			dccontributorcommitteeMember	Bond, Richard A.	Bond, Richard A.	
3.			dccontributorcommitteeMember	Knoll, Brian J.	Knoll, Brian J.	
4.			dccontributorcommitteeMember	Pedemonte, Carlos H.	Pedemonte, Carlos H.	
5.			dccontributorcommitteeMember	Cahill, Gregory M.	Cahill, Gregory M.	
6.			dccontributorcommitteeMember	Moore, Robert H.	Moore, Robert H.	
7.	10	10657/2	dccontributoradvisor	Chow, Diana		Chow, Diana
8.			dccontributorcommitteeMember	Chow, Diana	Chow, Diana	
9.			dccontributorcommitteeMember	Bates, Theodore R.	Bates, Theodore R.	
10.			dccontributorcommitteeMember	Hu, Ming	Hu, Ming	
11.			dccontributorcommitteeMember	Liang, Dong	Liang, Dong	
12.			dccontributorcommitteeMember	Tam, Vincent H.	Tam, Vincent H.	
13.	22	10657/2	dccontributoradvisor	Phillips, Scott		Phillips, Scott
14.	24	10657/2	dccontributoradvisor	Lee, Rebecca E.		Lee, Rebecca E.
15.			dccontributorcommitteeMember	Layne, Charles S.	Layne, Charles S.	
16.			dccontributorcommitteeMember	O'Connor, Daniel P.	O'Connor, Daniel P.	
17.			dccontributorcommitteeMember	Rifai, Hanadi	Rifai, Hanadi	
18.	157	10657/2	dccontributoradvisor	Arbona, Consuelo		Arbona, Consuelo
19.			dccontributorcommitteeMember	Burridge, Andrea	Burridge, Andrea	
20.			dccontributorcommitteeMember	Gaa, John	Gaa, John	
21.			dccontributorcommitteeMember	Backus, Margot	Backus, Margot	
22.	159	10657/2	dccontributoradvisor	Arbona, Consuelo		Arbona, Consuelo

Figure 17. Final result showing two newly created columns for standardized advisor and committee member names

Discussion

Throughout the year-long project, the authors encountered situations that required them to make local decisions about editing specific metadata fields. They investigated how to integrate external tools to reduce future errors in metadata creation and maintenance. In the following section, they outline lessons learned, the project's limitations, and the project's next steps.

Lessons Learned

While undertaking the ETD upgrade project, the authors determined which required and optional metadata fields from the TDL guidelines, version 2, to implement.[36] They elected to omit optional fields, such as dc.embargo dc.format.extent and dc.subject.lcsh.[37] Because of the complexities surrounding the optional dc.rights field, the authors elected to upgrade this field at a later date.[38] They

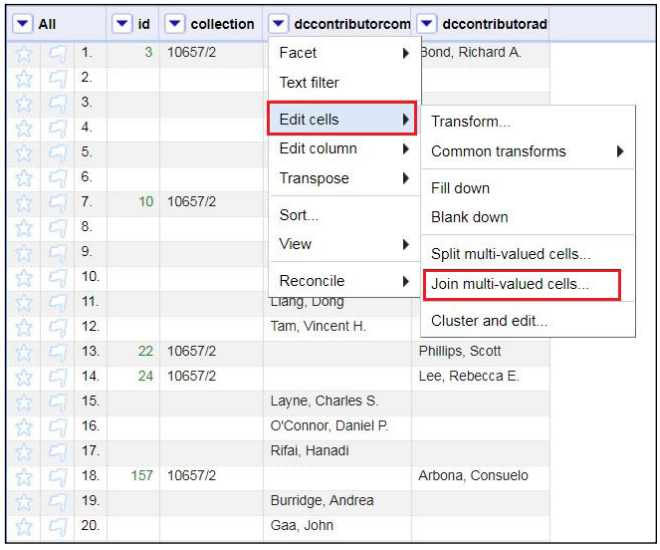


Figure 18. "Join multi-valued cells" command

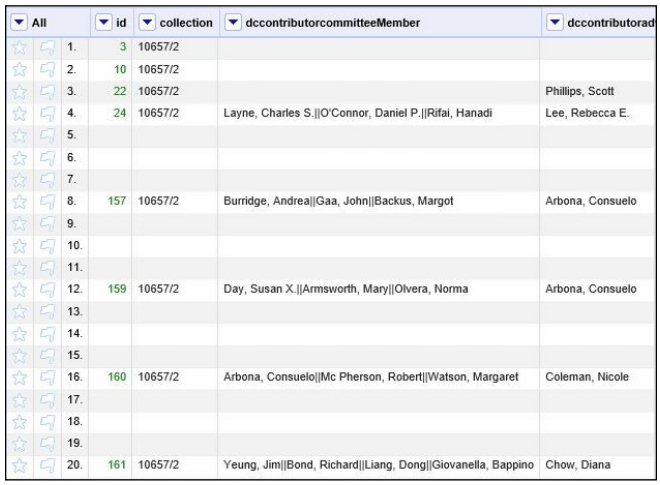


Figure 19. Result after deletion of original two columns for name standardization and use of "join multi-valued cells" command for dccontributorcommiteemember column

also placed emphasis on retaining fields that added value to staff or users. For example, dc.date.accessioned, which can be used by staff to determine whether records had been remediated in a previous batch, was retained. Dc.date.accessioned records the date the DSpace repository first receives the thesis; this value does not change after remediating and reloading the metadata.

The team also made decisions about the level of quality for metadata records. Adhering to Voltaire's maxim that "the best is the enemy of the good," they passed on opportunities to make perfect records to complete the project.[39] For example, some students submitted ETDs with values in all capital letters. These records were not changed because

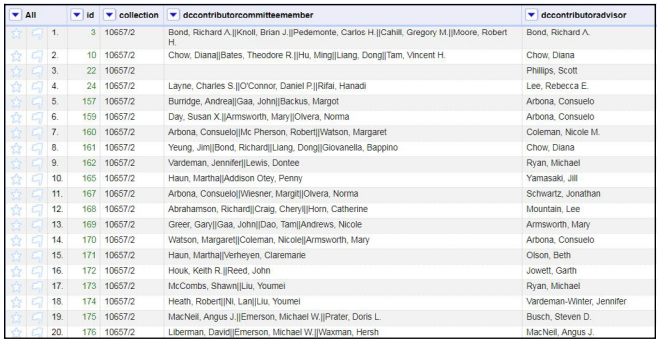


Figure 20. Final results

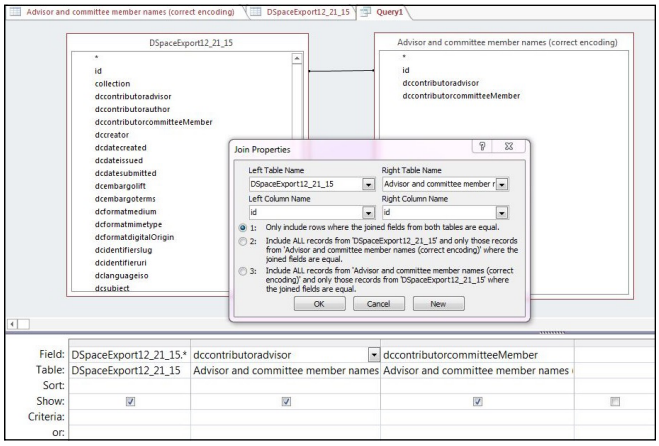


Figure 21. Configure settings—"join properties for join tables" function in Access

this formatting does not affect searching and standardizing case is not a priority.

During the re-ingest process, the authors discovered that DSpace required them to retain the same number of elements and element labels originally exported; otherwise DSpace would not recognize the edits.[40] They were limited to ingesting one hundred records at a time due to TDL's system configuration. The authors discovered that including the dc.description.abstract field in the re-ingest process caused errors, and manually edited this field after re-ingesting content.

To capitalize on the process of name standardization for people, departments, and degree disciplines, the authors compiled a set of local controlled vocabularies: advisor and committee member names and department and degree names. Controlled vocabularies would reduce both the user-generated errors that occur when students are inputting information in the free text fields and the staff time needed to remediate future batches. The authors used the reconcile-CSV software to implement the local-controlled personal name vocabulary.[41] This tool is used in

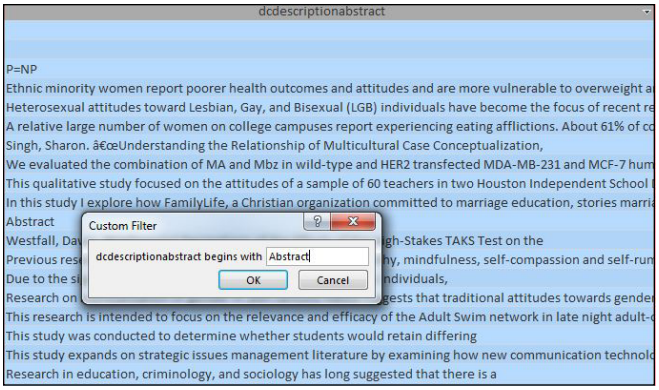


Figure 22. Using the "filter" function in Access to remove extra word "abstract" from the abstract field

dcdateissued	dcdatecreated
2008-08	August2018
2008-08	August2018
	May2018
2010-05	May2018
2010-08	August2018
2011-05	May2018
2010-08	August2018
2010-12	December2018
2010-12	December2018
2010-12	December2018
2010-08	August2018
2010-12	December2018
2010-12	December2018
2010-12	December2018
2010-12	December2018
2010-12	December2018

Figure 23. Result showing dcdateissued and dcdatecreated columns in Access

conjunction with OpenRefine and allows users to reconcile project data against data from a CSV file to authorize and standardize values. For the local department and discipline name vocabularies, the authors supplied a dropdown list of verified values in Vireo. Continual maintenance of their local-controlled vocabularies requires minimal resources, with the greatest demand from the capture of new values in each subsequent batch.

Another key lesson was the critical importance of communication between the metadata remediation team, the graduate school, and other university colleges and departments. The frequent changes of department names and degree discipline names created confusion and inconvenience during the remediation. An established communication channel with counterparts from various colleges and departments provided firsthand information and enabled the authors to track down past changes and save efforts for future cleanup work.

Limitations

This case study provides metadata practitioners with one strategy for remediation, but it is important to consider the type, scale, and peculiarities of a particular project before employing remediation strategies. The transformations the authors performed using Access and Open Refine worked well for the scale of their project. However, these processes may not be appropriate for institutions working on a larger scale project, for example ten thousand records or more. Other approaches, such as scripting, may work better in these instances. Stein, Applegate, and Robbins note their use of scripts for metadata remediation of works in the IDEALS repository.[42] This technique was more appropriate for their strategy to "[remediate] values of a particular metadata field across multiple collections and communities when they do not match specified IDEALS best practices."[43] This differs from the authors' strategy to remediate all values from all works of the ETD community. The authors' strategy would also be appropriate for those undertaking remediation efforts who lack experience creating or using scripts. Additionally, while Access is not ideal for larger batches, OpenRefine supports the review and revision of larger CSV files of twelve thousand to ninety thousand rows.[44]

Another limitation is that the authors used an externally hosted repository. Although these tools are open source, thus providing flexibility in terms of customization and extensibility, they are hosted by TDL and not locally, and the authors lack direct access to the source code and data to implement scripts and other automation to enable further efficiencies.

Conclusion

In this case study, the authors developed sustainable workflows to bring their ETDs into compliance with an updated metadata standard. After completing the remediation process for all ETDs added to the IR between 2011 and 2015, the authors reviewed and finalized the documentation created during the process to replicate the process for future batches. They use this remediation workflow for each new batch of approximately two hundred to three hundred ETDs ingested into the repository two to three times a year.

While the scale is smaller compared to some institutions, and the authors are using an externally hosted platform, they plan to explore automated options for remediating future ETD deposits. These efforts include developing scripts to automatically manipulate values in the DSpace export file and name reconciliation in OpenRefine using their locally developed linked data vocabulary manager.[45]

The authors' case study joins a growing body of metadata remediation projects, including previous work discussed in the literature review. Examining these isolated case studies will begin to yield critical comparisons across projects, including the motivations for metadata remediation, the scope and methods used to conduct audits and data cleaning, and the resources and expertise needed to successfully complete such initiatives. This cross-sectional analysis would benefit a growing professional interest in and need for metadata remediation guidelines and common practices.

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3. Ibid., 243–49.
4. Alice Tani, Leonardo Candela, and Donatella Castelli, "Dealing with Metadata Quality: The Legacy of Digital Library Efforts," *Information Processing & Management* 49, no. 6 (2013): 1194–205.
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6. Ayla Stein, Kelly J. Applegate, and Seth Robbins, "Achieving and Maintaining Metadata Quality: Toward a Sustainable Workflow for the IDEALS Institutional Repository," *Cataloging & Classification Quarterly* 55, nos. 7–8 (2017): 1–23, https://doi.org/10.1080/01639374.2017.1358786.
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8. Waugh, Tarver, and Phillips, 272–73.
9. Chapman, Reynolds, and Shreeves, "Repository Metadata," 311.
10. Lubas, "Defining Best Practices in Electronic Thesis and Dissertation Metadata," 260.
11. Sarah Potvin and Santi Thompson, "An Analysis of Evolving Metadata Influences, Standards, and Practices in Electronic Rheses and Dissertations," *Library Resources & Technical Services* 60, no. 2 (2016): 99–114.
12. Ibid., 100.
13. Potvin and Thompson, "An Analysis of Evolving Metadata Influences," 107–8; Networked Digital Library of Theses and Dissertations, "Metadata, ETD-MS v1.1: An Interoperability Metadata Standard for Electronic Theses and Dissertations," ed. Thom Hickey, Ana Pavani, and Hussein Suleman, accessed January 31, 2018, www.ndltd.org/standards/metadata.
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16. Erik Radio, "Semiotic Principles for Metadata Auditing and Evaluation," *Cataloging & Classification Quarterly* 54, no. 2 (2016): 117–35.
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19. R. Niccole Westbrook et al., detail the metadata quality audit project. Discussion of the metadata remediation efforts included in Andrew Weidner, Annie Wu, and Santi Thompson, "Automated Enhancement of Controlled Vocabularies: Upgrading Legacy Metadata in CONTENTdm," in *International Conference on Dublin Core and Metadata Applications*, 2014, 167–72, http://dcpapers.dublincore.org/pubs/article/view/3716/1939; Santi Thompson and Annie Wu, "Metadata overhaul: upgrading metadata in the University of Houston Digital Library," *Journal of Digital Media*

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24. Ibid., 65.
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26. Tom Steele and Nicole Sump-Crethar, "Metadata for Electronic Theses and Dissertations: A Survey of Institutional Repositories," *Journal of Library Metadata* 16, no. 1 (2016): 66, https://doi.org/10.1080/19386389.2016.1161462.
27. Ibid., 66.
28. Texas Digital Library, "Dictionary of Texas Digital Library Descriptive Metadata for Electronic Theses and Dissertations" Version 2.0, accessed January 31, 2018, https://tdl-ir.tdl.org/handle/2249.1/68437.
29. Texas Digital Library, "Report for Texas Digital Library Descriptive Metadata for Electronic Theses and Dissertations," Version 2.0, September 2015, 3–4, http://hdl.handle.net/2249.1/68437.
30. Ibid., 4.
31. Texas Digital Library, "Dictionary of Texas Digital Library Descriptive Metadata," accessed January 31, 2018.
32. Weidner, Wu, and Thompson, 167-172.
33. Texas Digital Library, "Dictionary of Texas Digital Library Descriptive Metadata," accessed January 31, 2018.
34. The authors elected not to use Microsoft Excel because it does not consistently support UTF-8 special character/diacritic encoding in CSV files.
35. Note that fields have been renamed due to name conventions in Access. The original field names for dccontributoradvisor1 and dccontributoradvisor2 are dccontributoradvisor[] and dccontributoradvisor[*]. The reader should also note that column names in Access do not represent multiple values in a metadata field. Multiple values in a single element are represented in a list separated by the "||" symbol.
36. Texas Digital Library, "Dictionary of Texas Digital Library Descriptive Metadata," accessed January 31, 2018.
37. The dc.embargo field provides information on metadata or files that have temporary access restrictions. The authors chose not to implement this field because their local practice for embargoed items was to not ingest them into the repository, eliminating the need for this field.; dc.format.extent frequently describes the number of physical pages in an ETD. Since this information (a) is not supplied by the depositor; and (b) is not used to facilitate browsing or discoverability, the authors saw no value including it; dc.subject.lcsh provides additional descriptions of the content using terms from the Library of Congress Subject Headings (LCSH). As the ETD remediation process proceeded, they added LCSH to their ETD records when found in the pre-existing catalog record with the assistance of a cataloging librarian. In retrospect, this was a significant commitment in terms of time and labor. It required both the cataloging librarian to assign LCSH for each ETD record and, afterwards, the metadata specialist to update the remediation file with the newly assigned LCSH. This additional work forced the team to question whether adding LCSH would significantly help user searches. After careful deliberation, the authors decided not to repeat the effort for future batches since DSpace offers full-text indexing functionality that should enable users to apply keyword searches and find what they need.
38. The dc.rights field provides information on the rights "held in and over the resource" ("Dictionary of TDL Guidelines," p. 15). Determining the values used to populate this field can be labor intensive. While most ETDs are copyrighted by the student, some contain materials that students have previously published prior to submitting their ETD for graduation. In these cases, additional work is needed to document the correct citation/attribution for the previously published works. The authors are currently establishing a workflow to articulate the rights status of all ETDs in the collection.
39. Voltaire, *La bégueule. Conte moral* (Geneve, 1772).
40. For example, the authors kept all the corrected advisor names in the dc.contributor.advisor column and left dc.contributor.advisor[], dc.contributor.advisor[*] empty.
41. http://okfnlabs.org/reconcile-csv/.
42. Stein, Applegate, and Robbins, "Achieving and Maintaining Metadata Quality," 9.
43. Ibid., 10.
44. Ibid., 11.
45. For more information on this linked data vocabulary manager, see Andrew Weidner et al., "Outside the Box: Building a Digital Asset Management Ecosystem for Preservation and Access," *Code4Lib Journal* 36 (2017), accessed January 31, 2018, http://journal.code4lib.org/articles/12342.

Book Reviews

Elyssa M. Gould

Reengineering the Library: Issues in Electronic Resources Management. Edited by George Stachokas, Chicago: ALA Editions, 2018. 320 p. $79.00 softcover (ISBN 978-0-8389-1621-6)

Over the last ten years electronic resources (e-resources) have exploded, becoming a larger and more substantial part of library collections. As Stachokas writes in the introduction, "Libraries are reengineering in terms of their professional skills, organizational structures, collections, systems, tools and assessment in order to provide users with a greater number and more types of electronic resources" (xi). This reengineering is vital as processes used for purchasing and preparing print and other physical materials for use are no longer adequate to handle the increased volume of e-resources acquired by libraries. *Reengineering the Library* is written for academic library practitioners, and there are several chapters that will be of particular interest to those new to the field of electronic resource management.

Stachokas brings together nineteen additional e-resource practitioners to describe the varied work required to manage e-resources. The majority of the fifteen chapters covers essential topics such as licensing, the e-resource lifecycle, working with vendors on cost, managing discovery services, troubleshooting, and collecting analytics for assessment. There are also chapters discussing communication between technical and public service departments, reorganizing departments, and training staff. While organization of the book could have been streamlined by dividing it into sections and keeping similar topics together, this should not be a deterrent to using the book as a reference source by reading chapters of interest.

For those new to the field of e-resource management, the second chapter by Moore, "'Oh, the Places You'll Go!' Managing Electronic Resources across the Institution," is an excellent introduction to the work of an e-resources professional. Moore clearly defines and describes the e-resource lifecycle, what to expect when working as an e-resource librarian or professional, and issues that are "beyond the life cycle" (25) but also need to be considered. They will also find chapter 3, "Managing Knowledge Bases and Electronic Resources Metadata," of interest. In this chapter, Guajardo discusses the different kinds of tools that may be needed to maintain a library's collection. He also gives a thorough explanation of why one e-resource management (ERM) tool may not fulfill all the needs for a library's collection throughout the e-resource lifecycle. Guajardo explains in some detail how the University of Houston established a combination of commercial, homegrown, and open source ERMs to meet their needs. He follows this with examples from other libraries and information on managing metadata in various circumstances.

The chapters on cost containment, assessing e-resources, and licensing should be of interest to a wider audience. The cost containment chapter provides an in-depth look at how the 2008 recession affected library budgets and how different libraries dealt with reduced budgets and the need to cut e-resources. The author includes a history of the "Big Deal" that was popular, along with some of the current thoughts on the relevancy of the "Big Deal" in today's library and a brief look at the current trend of patron- or demand-driven acquisition (PDA or DDA). While the information in this chapter is useful, it would have been improved with more examples and suggestions for negotiating and reducing costs beyond maintaining good relationships with e-resource vendors. The chapter on current trends in e-resource licensing gives an overview of areas covered by licenses that libraries can and should be negotiating to be included. This includes services that are of interest to users (data/text mining) to technical requirements (accessibility) to future-proofing purchased content (digital preservation). Duggan includes suggested language for each area from the "Liblicense Model License Agreement" and also suggests other sources of sample language. In his chapter on collecting analytics and using them to assess various packages, Timms goes beyond the very common cost-per-use statistic. He gives suggestions on other statistics that can be used in addition to the cost-per-use, such as cost-per-content unit and ratio statistics, and several examples on how cost-per-use can be misleading. In addition to collecting statistics and presenting them, Timms thoroughly discusses the different aspects that a library needs to consider in determining if an e-resource meets the needs of its users.

The many case studies discussing various e-resource management methods and tools will introduce readers to the different tools available. One case study details the customization of Idaho State University Library's adoption and customization of their instance of EBSCO Discovery Service (EDS), AZ list, and link resolver. The description of the migration and considerations involved in customizing

a discovery layer will be useful for anyone installing EDS. Those not using EDS will still glean useful ideas to check on with their vendor. This chapter and the other case studies covering ProQuest's Summon and Ex Libris's Primo, along with the chapter on the differences between ERMs and the next-generation integrated library management (ILM) software, will be of assistance to any library that is considering different set-ups for ERMs, migrating to an ILM, or considering a new discovery service.

In addition to the day-to-day work covered by many of the chapters in *Reengineering the Library*, there are several chapters that are broader in scope and would be useful for anyone managing an e-resources unit or department containing one or more e-resource professionals. Topics covered include the North America Serials Interest Group's (NASIG) "Core Competencies for Electronic Resources Librarians," reorganizing technical services and e-resources units, troubleshooting training for staff, and communication between technical and public services staff. NASIG's core competencies are referenced in several of the chapters and, for those unfamiliar with them, Sutton's chapter provides a good introduction that includes why the competencies are important and different ways that libraries are using them. The differences in purchasing e-resources have pushed libraries to reorganize their technical services units and the chapters included describe very different models and provide information on a variety of models that can be considered. The chapters on interdepartmental communication and troubleshooting training are both excellent case studies that have solutions that can be replicated in part or whole by other libraries facing the same challenges.

Overall, *Reengineering the Library* is timely in both subject and scope. The multitude of subjects covered does mean that despite a few chapters where more examples and ideas would have been appropriate, there is more than enough content that is useful. Even with the cost containment chapter where the suggestion was to maintain a good relationship with a library's vendors, the author included several strategies for keeping or creating a positive relationship. In fact, this title would be particularly valuable as part of a departmental reference collection as the wide variety of chapters have different audiences. One of this book's strengths is that it can be used by new or current practitioners, plus anyone managing a department that includes e-resources professionals. The disadvantage is that a single individual may not find that every chapter meets their needs. Finally, despite the minor issues of how the book is organized, it can easily be used as a reference book by reading just a chapter or two as needed.—*Lynn E. Gates (lgates@uccs.edu), University of Colorado Colorado Springs*

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Coding with XML for Efficiencies in Cataloging and Metadata. Timothy W. Cole, Myung-Ja K. Han, and Christine Schwartz. Chicago: ALA Editions, 2018. 195 p. $60.00 softcover (ISBN 978-0-8389-1653-7).

Written as a follow-up to an Association for Library Collections & Technical Services (ALCTS) pre-conference held during the 2015 American Library Association (ALA) Annual Conference, *Coding with XML for Efficiencies in Cataloging and Metadata* is an excellent introduction to the potential of Extensible Markup Language (XML) and related technologies in creating efficiencies in library cataloging and metadata work. As stated in the volume's introduction, this guide will be most useful to those with some familiarity with XML or Hypertext Markup Language (HTML). However, this is not a requirement as the first chapter introduces XML in a way that will bring most newcomers up to speed. Catalogers will likely benefit most from this volume given that the majority of examples involve MARC 21 bibliographic data. However, metadata managers more broadly will also find value here, particularly in sections on XML Schema Definition Language (XSD), Extensible Stylesheet Language for Transformation (XSLT), XPath, and XQuery. *Coding with XML* does not purport to be a comprehensive reference for all XML work in libraries, but more of "a tutorial on its subject" (3). This is certainly true—each section provides an approachable and thorough introduction to a particular technology rather than an exhaustive list of features. There is also a useful list of resources at the end of the book for readers who want more information and more in-depth examples.

The book is organized into twelve chapters that fall under four main subject areas: XML, XML schemas, XSLT, and XQuery. While a topic is occasionally mentioned before it is fully introduced, this is rare, and generally speaking, each new topic builds on information covered in previous sections making the entire volume flow together nicely. Chapters also stand well on their own, allowing more advanced XML users to read only the chapters in which they are most interested.

The book begins with an overview of XML's structure and features and illustrates each point with relevant examples from library metadata. By the end of the second chapter, readers will have a solid understanding of how XML looks and how metadata is encoded in the language. This sets up chapter 3, which provides a thorough explanation of the most commonly used XML standards in libraries: MARCXML, Dublin Core, and Metadata Object Description Schema (MODS). Additionally, this chapter provides a list of considerations when choosing a metadata standard for a project. This section would be incredibly helpful for someone faced with starting a digital collection project who lacks experience managing XML metadata.

Chapter 4, "XML Validation Using Schemas," introduces XML schemas and Document Type Definitions (DTD) and provides a relatively detailed overview of XSD, a popular schema definition language in libraries. Given that most metadata managers will likely encounter or use metadata standards defined by XML schemas, this chapter serves as an important introduction to understanding those schema and how they validate metadata records.

Chapters 5 through 7 cover XPath and XSLT. The examples used in these chapters are especially relevant to the work of metadata managers and cover instances of sharing metadata with a content aggregator (HathiTrust) and transforming MODS metadata into RDF, a linked data format. Even for metadata managers for whom linked data is a distant concern, Chapter 7's RDF and Semantic Web discussion is useful as it provides a real-world example of how legacy metadata formats may be transformed into linked data, something that is less common in library literature relative to the amount of theoretical discussion.

Finally, chapters 8 through 11 provide an overview of XQuery and example workflows using that technology. Other than a sudden shift from third- to first-person narration, these chapters again fit well with previous sections and build on the concepts introduced earlier in the book. Given that XQuery has so many capabilities, these chapters do a good job of selecting the subset of functions that will be most useful for working with library metadata. Numerous examples helpfully illustrate each concept. One small critique is that the authors could have done a better job of explicitly highlighting the areas where functionalities overlap between XSLT and XQuery. One example is that functions for working with strings are identical between the two technologies, but this feature was explained more thoroughly in the context of XQuery and only shown briefly in a single table in the context of XSLT.

Coding with XML for Efficiencies in Cataloging and Metadata is a useful introduction to XML and related technologies. For readers who prefer a more hands-on approach to learning, all examples of code used in the book are available from the authors' GitHub pages, making it easy to copy stylesheets and example metadata and follow along or experiment. Attempting to learn new technologies can often feel daunting and leave individuals unsure of where to start, but this book makes its topic approachable while also guiding readers to more in-depth resources that will expand on the concepts it introduces.—*Lisa Lorenzo (lorenzo7@msu.edu), Michigan State University Libraries, East Lansing, Michigan*

Licensing Electronic Resources in Academic Libraries: A Practical Handbook. Corey S. Halaychik and Blake Reagan. Cambridge, Mass.: Chandos Publishing, 2018. 200 p. $78.95 softcover (ISBN 978-0-08-102107-1).

The proliferation of electronic resources (e-resources) arguably brings several benefits to libraries, including instant, from-anywhere access for patrons and automated workflows for technical services that are potentially more efficient. However, it also brings new challenges. One of these challenges is licensing the many e-resources offered through the contemporary library. Halaychik and Reagan address this challenge in *Licensing Electronic Resources in Academic Libraries: A Practical Handbook.* This resource primarily covers three license-related topics in five chapters. Chapters 1 and 3 discuss the basics of licensing and licensing law. Chapters 2 and 4 address the licensing process through the full life cycle of licenses. The final chapter discusses negotiating licenses.

This book lists two specific objectives for its readers: that they will be able to "understand the contents of a license" and "successfully complete the licensing life cycle from start to finish" (back cover). Both are worthwhile objectives that are very relevant to the regular responsibilities of librarians who handle licensing. However, this particular resource is more successful at fulfilling the first objective. Based on this reader's page count, over one-third of the book consists of example licenses, both with and without explanatory comments. Other introductory content is provided to help the reader to better understand everything included in the licenses. While the organizational structure and writing style may prove challenging, most of the content needed to understand what makes up a license can be found within this book.

Because the scope of the second objective is so much larger, the reader may not be as likely to successfully complete every step in the licensing life cycle if this book is

the reader's sole resource. This resource offers detailed information about the negotiating process and some valuable information about potential workflows, but the level of advice offered for each step is somewhat inconsistent. For example, the book provides a seven-step process for opening locked Microsoft Word documents. However, in the two-paragraph section that discusses understanding and writing general contract language, the authors simply reference an outside source despite their assertion that "It would be difficult to over-emphasize the importance of good contract language" (95).

One of the strengths of this resource is the two coauthors. This particular book is written by both a librarian who manages licenses and a lawyer who works in procurement. Having a procurement officer as one of the authors offers a unique level of insight that is not currently available in the literature. Another strength is the example of an annotated mock license in all of its various iterations. Seeing all of the changes a complete license may undergo is not readily available in other books about this topic.

Related to that, however, is one of the least appealing aspects of this book: the repetitiveness of licensing examples and descriptions. The book presents mock license agreements immediately followed by the very same mock license agreements, but with added comments. Considering the length of some of the mock licenses, that space could have been better used to flesh out more details related to the processing of licenses.

Another potential issue is some of the authors' assumptions about licensing and library processes that do not necessarily reflect this reader's personal experience. An example of this concerns price quotes. The authors deliberately suggest requesting a license for review and negotiating non-business terms such as governing law, accessibility, etc., before requesting a price quote as "cost should be a secondary consideration in the negotiation process." In their own words, "while cost most certainly is a concern for most libraries, the authors prescribe to the belief that funding can always be identified for new purchases" (135). Unfortunately, this reader's experience, and perhaps the experience of other readers, does not necessarily align with the authors' beliefs.

Additionally, this reader found the editing to be subpar and jarring at times. There were several noticeable grammatical mistakes, and the organization of the content was not the most intuitive. For example, the seven-page chapter "Basics of Licensing Laws" is not adjacent to the related chapter "Basics of Library Licenses," but is sandwiched between "Library Process Improvement Considerations" and "License Layout and Lifecycle." However, despite its flaws, this book contains valuable content that could prove useful to its targeted audience as part of their collection of licensing-related resources.

The authors wrote this book with a specific audience in mind: new and currently practicing e-resources librarians who participate in the licensing process. This book is definitely appropriate for e-resources librarians who negotiate and manage licenses. The content is tailored to the challenges and issues that this type of librarian regularly faces and relevant licensing examples are provided. Additionally, while the title suggests the authors were specifically targeting academic librarians, it is not difficult to assume that much of the content could easily be applied to public and special librarians who serve the same function.

However, this book is not quite as successful at targeting both new and experienced readers. The organizational structure, writing style, lack of glossary, and inconsistent level of detail results in a resource that may not be the ideal introduction for new librarians who are just beginning to learn about licensing. Librarians new to licensing may be better served by *Licensing Digital Content: A Practical Guide for Librarians* as it includes a glossary, FAQs, "licensing tips" that summarize the key concepts, and a more intuitive organizational structure—at least for this reader.[1] Additionally, for librarians more experienced with licensing, some of the passages in the reviewed resource may seem unnecessary or redundant, and some desired details about contract law or implementing best practices may be lacking. For more experienced librarians, the *Librarian's Legal Companion for Licensing Information Resources and Services* may offer more comprehensive coverage as it includes 735 pages of detailed legal information and a licensing toolkit comprised of a glossary, deconstructed library licenses, sample key clauses, and over a hundred questions and answers for evaluating licenses.[2] That being said, Halaychik and Reagan's *Licensing Electronic Resources in Academic Libraries: A Practical Handbook* offers elements that should appeal to both new and experienced licensing librarians. Regardless of the librarian's level of experience, any reader should be able to take away something useful from this book.—*Mandi Smith (ms054@uark.edu), University of Arkansas*

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