Notes on Operations

Strength in Numbers

Building a Consortial Cooperative Cataloging Partnership

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In April 2014, eight institutions from the Big Ten Academic Alliance began a one-year pilot study to track costs, workflows, challenges, and opportunities associated with sharing cataloging expertise for languages and resource formats needed across the participating libraries. Data was collected on the levels of staff performing the work (student, staff assistant, librarian), shipping costs, scanning costs, and cataloging costs. In many cases, the overall cataloging costs incurred by participating institutions were less than costs currently associated with options for vended outsourcing. The cost findings were particularly encouraging for textual materials (monographs and serials), which continue to form the bulk of collections. This paper outlines the pilot's major findings and describes the subsequent implementation of a robust multi-institutional partnership program for sharing cataloging expertise across the consortium.

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The initial pilot study would not have been possible without contributions from all the representatives from each participating institution (Paige Andrew, John Attig, Michael Cohen, Christopher Cronin, Christine DeZelar-Tiedman, Magda El-Sherbini, Mary Laskowski, Ellen Mueller, Randy Roeder, Beth Snyder, Patricia Williams, Jamie Woods), plus the many catalogers and support staff across the Big Ten libraries who provided metadata for resources included in the study. The authors would also like to thank the representatives from all the institutions that subsequently joined the initial phase of the long-term cooperative cataloging partnership that emerged from that pilot study.

The Heads of Cataloging Committee within the Big Ten Academic Alliance (BTAA), known as the Committee on Institutional Cooperation (CIC) until July 2016, was established in 2012 by the Big Ten Directors of Technical Services Committee. The group holds regular conference calls throughout the year, and meets in person at the American Library Association (ALA) Midwinter Meeting and the ALA Annual Conference. Agendas and discussion topics focus on general trends in managing cataloging and metadata operations, the impact of BTAA initiatives on technical services, and the provision of metadata support for BTAA collection development programs. The group also provides a venue for colleagues to share management experiences and to solicit advice from colleagues. Staffing levels and related issues, such as succession planning, shifting institutional priorities, library and departmental reorganizations, and general attrition in the ranks of professional catalogers with deep language expertise, have been frequent discussion themes for the group.

At the BTAA Heads of Cataloging Committee meeting during the 2013 ALA Annual Conference in Chicago, the realization that many individual libraries can no longer hire professional staff in all the languages and areas in which they collect led the group to explore what might be required to share original cataloging expertise for languages and formats that, for a variety of reasons, cannot be done in-house. The group was motivated to study the feasibility of shared cataloging for a number of additional compelling reasons. The BTAA has traditionally engaged in and increasingly emphasizes cooperative collection development activities. Similarly, the consortium has devoted considerable efforts and resources to creating a shared print repository, and to its partnership in the HathiTrust Digital Library.[1]

The move away from exclusively owned local collections to shared, borrowable, cross-institutional collections provides a new and expanded opportunity for

technical and metadata services. Incorporating cooperative cataloging is a natural extension of this cooperative "collective collection" movement. Accurate and reliable metadata enables discoverability and access to resources throughout the resource sharing ecosystem. A shared cataloging project had the potential to position the BTAA libraries' cataloging and technical services operations as active and integral partners in these evolving collection development, management, discovery, and access activities.

Following the Chicago meeting, eight BTAA libraries initiated a process to inventory language needs and original cataloging language expertise. This analysis led to a pilot study to identify the challenges and potential opportunities associated with sharing cataloging expertise and providing a data-driven evidence-base to assess whether and how cooperative cataloging among the consortium's institutions could be realistic and attainable. The following institutions participated in the pilot:

- University of Chicago
- University of Illinois at Urbana-Champaign
- University of Iowa
- University of Michigan
- University of Minnesota
- Ohio State University
- Penn State University
- University of Wisconsin-Madison

The planning phase for the pilot occurred between October 2013 and March 2014. While the initial inventory process provided a broad landscape of the language needs and expertise across institutions, there were no one-to-one matches wherein two institutions could simply swap cataloging for each other in an equal fashion. To ensure an equitable distribution of labor, plus the collection of enough data to fully represent all eight institutions, the group devised a quota system. Most institutions were comfortable cataloging in the range of approximately 100–120 titles for other institutions during the pilot; an assessment librarian at a participating institution was consulted and confirmed that this volume of production would provide sufficient data on costs to assess opportunities for establishing ongoing partnerships.

The pilot went into production in April 2014 and ran for twelve months. To better understand the overall costs of sharing this work across the institutions, the pilot group tracked shipping expenditures for each title cataloged, the levels of staff performing specific aspects of the work, and the staff time attributed to shipping, scanning, searching for copy, and performing the cataloging. Staff time and levels were then converted to overall compensation costs (inclusive of both salary/wage and benefits, where applicable).

During the pilot, a total of 768 titles were cataloged at an average cost of $25.81 per title (not including shipping or scanning) across all languages and formats included in the study. These cost findings supported the feasibility of a cross-institutional cooperative program. In May 2016, the BTAA Library Directors accepted the participants' unanimous recommendation to form the BTAA Cooperative Cataloging Partnership, resulting in the development and implementation of a robust program wherein the twelve participating institutions formally agreed to an initial contribution of approximately ten hours of cataloging time per month, per institution.

Literature Review

Cataloging backlogs and increasing workloads in the face of reduced resources and limited expertise in various areas have troubled the technical services community in academic libraries for many years. The potential solution of cooperative cataloging has also been proposed for many years, and in differing forms. A 1967 research paper submitted to the Catalogue Working Party of the Libraries and Computers Group by Burnett discussed the problems and prospects of "centralized" cataloging, positing that the problem "is determined by one of the assumptions which have been made about it, namely that as one malady—however widespread—is individual it can only be resolved by the individual institutions affected. For so long as we each consider our own crisis alone and do not look to that of the library community for so long will the problem remain insoluble."[2]

While the idea of working collaboratively across groups and institutions to share the expertise and cost of performing cataloging functions is not new, the current environment in academic libraries, and technical services in particular, is ripe for an increased focus on collaborative services. As Kaufman, former dean at the University of Illinois at Urbana-Champaign writes:

> Although cooperation and collaboration are far from new concepts in academic librarianship, never before has the imperative to cooperate and collaborate been so clear or so urgent. With the insufficiency that derives from declining resources, plunging buying power, and the enormous pressure to do more and more and more—more content, more services, more technology, more new ways of doing more new things—comes the imperative to create new types of collaborations.[3]

There is no shortage of literature on the topic of cooperative and collaborative projects, though it is difficult to point to examples of long-standing success, or to cost analyses of cataloging cooperation specifically. As Schuitema noted in an overview of the history of cooperative cataloging,

> Cooperative cataloging activities have been in existence for more than one hundred years. During that time, cooperative cataloging practices and structure have evolved in accordance with changing values, technologies, and institutional needs. However, the road has not always been smooth and the future of cooperative cataloging has often been questioned.[4]

In "Cooperative Cataloging: A Vision for the Future," Thomas and Younger emphasized that "there is no doubt in the library community that this situation can and must be reversed nor is there any debate concerning the importance of cooperative cataloging in addressing the problem. The challenge that lies before us is to find and eliminate obstacles that impede cooperation in cataloging."[5]

The "Study of the North American MARC Records Marketplace," contracted by the Library of Congress (LC) in 2009, draws a number of significant conclusions that are pertinent to this pilot: cataloging backlogs are growing in many areas, including English-language materials; even with retirements and other market factors there is enough capacity in North America to meet cataloging needs; and that cooperative cataloging is effective but not yet fully realized.[6] The study concluded the following about overall capacity:

> There is adequate cataloging capacity in North America to meet the collective need: This finding surprised us, especially given the aging of the profession and imminent retirements. However, a conservative interpretation of survey data strongly suggests that there are more than enough catalogers to handle everything. In the academic market alone, for instance, the survey indicates that more than eight thousand original catalogers are employed. If each original cataloger produced on average one record per work day (or two hundred per year) that would indicate capacity for 1.6 million original records annually. Unfortunately, that capacity is not well distributed, disciplined, or coordinated, despite decades of experience with cooperative cataloging.[7]

As Neal noted, "Cooperation is part of the professional DNA of research libraries. From the conditions of knowledge scarcity over the centuries to the oppression of information and data overabundance in today's and tomorrow's library context, cooperation has been and will be a constant for services, success, and survival."[8] Neal continued: "By working together, we can generate effective and broadly embraced measures of user satisfaction, market penetration, success, impact, and cost effectiveness."[9] One of the goals of the BTAA pilot was to test new models of collaboration that will hopefully lead to sustainable services. El-Sherbini, one of the pilot participants, authored a paper titled "Sharing Cataloging Expertise: Options for Libraries to Share Their Skilled Catalogers with Other Libraries," outlining a model similar to that tested by the BTAA group, wherein each institution identifies the specific strengths of its collection, and possibly corresponding strength in staffing, and uses those strengths to avoid duplication of effort and leverage existing expertise.[10]

There was a great deal of interest in the last few years in a cooperative effort between Columbia University Libraries and Cornell University Library known as the 2CUL project. Originally conceived as an integration between both libraries' technical services units, 2CUL has now redefined itself as an initiative, not an integration. The 2CUL project, viewed at this stage, is similar in many ways to the BTAA Cooperative Cataloging Pilot. One of the key points in 2CUL's action plan is to "focus on more discrete, promising collaborative projects and alliances, and determine the relative value of such collaboration on the basis of four driving factors that originally fueled the 2CUL project: quality, productivity, improvement, and innovation."[11]

There are not only opportunities but also challenges inherent in participating in cooperative, interinstitutional projects. A particular challenge with cooperative cataloging is differences in cataloging conventions and various integrated library systems. Shieh, Summers, and Day noted that "libraries choosing to download cooperatively created or edited records must take responsibility for assessing and manipulating record quality in light of current standards, local policy, and user requirements."[12] One of the major challenges facing 2CUL, among others, has been the differing cultures of the home institutions. As noted by Horton and Abrams, and referred to by Harcourt and LeBlanc, "Never, ever, underestimate culture. Culture trumps everything. You must align with cultural values. If you attack them, you make them stronger and change won't happen. The people inside the organization own the culture, not the organization. They have all the power, and if you forget that, you will fail."[13] In this instance, however, the established history of strong collaboration between BTAA institutions is in the project's favor. Though no two institutions are ever truly alike, BTAA institutions share many key cultural factors that may facilitate ongoing cooperation in ways that are either more challenging or not possible at all with unfamiliar partners.

Methodology

Scope and Scale of the Pilot Study

The group planned a twelve-month cooperative cataloging pilot project in which each library agreed to (1) catalog approximately 100–120 titles sent to them from other participating institutions and (2) have approximately 100–120

titles from their own collections cataloged by other participating institutions. Cataloging more than this maximum threshold of 120 was at the discretion of each institution. This distribution averaged out to approximately ten to twelve titles per month for each of the cataloging libraries, which accommodated the work capacity that each institution felt it could absorb, while still providing enough opportunity to collect meaningful data for assessing costs associated with sharing cataloging across institutions.

The pilot was initially conceived to be limited to non-English language textual monographs and serials. However, as planning for the pilot developed, cartographic materials and DVDs were also included to measure the impact of shared cross-institutional cataloging for a broader range of resource formats and media. Although the stated goal was to provide original cataloging for exchanged materials, the group acknowledged that some cataloging shipments might contain titles with copy already available in OCLC WorldCat, particularly given the inherent lack of language expertise at owning institutions to identify matching records for some languages. In such cases, there was mutual agreement that the cataloging institution would accept the materials for processing and catalog them as copy.

Standards and Cataloging Framework

The group agreed to use a consistent set of cataloging standards for the duration of the pilot with the expectation that the standards would provide a minimum benchmark for quality, for content of the metadata, and assist in standardizing data collected for the assessment. Decisions were made regarding which descriptive standard to use, minimum level of cataloging fullness, subject analysis and classification, and expectations for the language expertise of staff contributing to the project.

Descriptive Standards

Both the Anglo-American Cataloging Rules, 2nd ed. (AACR2) and Resource Description and Access (RDA) were accepted as valid descriptive cataloging standards. When the pilot began in April 2014, some libraries were routinely cataloging in RDA while others were not. The group recognized the possibility that pre-RDA copy records might be identified for use by the cataloging library and should be considered useable as long as they met the minimum requirements for cataloging fullness.

Level of Cataloging Fullness

The Program for Cooperative Cataloging's BIBCO Standard Record (PCC BSR) was selected as the "floor," or minimum content requirement, for bibliographic records contributed to the pilot. Records created for the project, in either RDA or AACR2, were to follow their respective BSR maps (either the PCC RDA BSR or the AACR2 BSR, appropriate to the format of the resource being cataloged).[14] Although the pilot used the BSR as the common standard, participants would not code records as PCC (i.e., with a "042 pcc") unless they were a BIBCO library and optionally chose to create or enhance a BIBCO-compliant record. Five of the participating libraries are BIBCO libraries (University of Chicago, University of Minnesota, Ohio State University, Penn State University, and University of Wisconsin-Madison).

Libraries would not be expected to exceed compliance with the core metadata guidelines established by the PCC BSR. There was a unanimous decision to not prescribe specific options in RDA, nor inflict local preferences beyond the established core. All participating institutions acknowledged that they would normally accept these levels of records "as is" in regular production, and would also do so for the pilot. If copy was found, the cataloging institution would enhance it as necessary to meet the appropriate PCC BSR standard.

Resources in non-Roman scripts that are supported by OCLC Connexion were cataloged according to the "PCC Guidelines for Creating Bibliographic Records in Multiple Character Sets."[15] Inclusion of vernacular scripts was required, as defined in the PCC guidelines, and was strongly encouraged for access points whenever possible. Participants agreed that access to these resources by vernacular script is critically important to the communities using these resources even if the ILSs employed by some institutions might not fully support this functionality.

Authorized access points within bibliographic records were created following NACO standards. However, the creation or modification of NACO authority records was not required for the pilot, unless the library was optionally contributing a BIBCO-coded record.

Subject Analysis and Classification

A minimum of one subject access point was required for all records, except for literary works. The cataloging library was responsible for supplying one form of classification for each title cataloged, according to the scheme with which they were most familiar, either Library of Congress Classification (LCC) or Dewey Decimal Classification (DDC). The owning library was responsible for making any alterations necessary for local classification purposes, like converting to a different classification scheme or shelflisting.

Defining "Original Cataloging Expertise"

Since the primary purpose of the pilot project was to catalog non-English language materials, the group set a

high priority on utilizing catalogers with specific language expertise and committed to cataloging only those languages for which genuine expertise (not just "getting by") could be claimed. While the concern about expertise was partly driven by a desire to ensure high-quality metadata, it was also borne out of trying to reflect how member libraries actively vet and test potential vended solutions for cataloging resources in non-English languages. However, coming to mutual agreement on what was meant by "expertise" proved challenging.

The group initially considered applying a scale of "reading knowledge," "fluency," and "native speaker/reader" to the catalogers contributing to the pilot, but was divided on whether this was useful given its subjective nature. Without a method to test language proficiencies across participants, the group ultimately decided to rely upon mutual trust in the self-assessment of individual catalogers and their managers. The group as a whole agreed on some simple overarching criteria: for participants to contribute metadata to the pilot, they needed enough fluency with a given language to create PCC BSR-compliant bibliographic records, create valid authorized access points, provide adequate subject analysis and classification, and be able to provide vernacular scripts when applicable.

Processing Logistics and Technological Considerations

Sharing Records and Setting Holdings

Since all participants were OCLC members, OCLC Connexion was chosen as the common tool for sharing records created for the pilot. Cataloging libraries used their own authorizations to create or update records in Connexion, and removed their institutional holdings from records that they created originally. Upon completion of cataloging, owning libraries were responsible for setting their holdings in OCLC, making any additional locally-required changes to the records, and importing the records into their local systems.

Cataloging from Physical Pieces or Scans

The group recognized both pros and cons associated with using the physical piece or scans for cataloging. Not surprisingly, most catalogers reported a preference for working with the resource in hand. However, four institutions in the study (University of Chicago, Ohio State University, Penn State University, University of Wisconsin-Madison) contribute to LC's Electronic Cataloging in Publication (ECIP) program, and have integrated cataloging operations that are often based on only parts of the resource, provided electronically, and that result in the production of a full, original BIBCO-level record.

Very little data currently exists to compare the costs of cataloging using scans versus piece in hand. With only anecdotal evidence for costs, preparation and shipping time, and ease of cataloging, the group decided to make a point to send both physical items and scans to test the feasibility of both methods for sharing resources. Cataloging institutions tracked what parts of the scanned resources were used to perform descriptive cataloging, subject analysis, and classification: cover, title page, verso of title page, colophon, table of contents, preface, and/or introduction. Scans were certainly preferred in cases where the materials were either too fragile, large, or valuable to ship.

Shipping and Receiving

The group devised best practices for shipping and receiving to ensure that materials were kept in the best condition possible and were accounted for on both ends of the process. These best practices included instructions for creating mailing labels, packing lists, and flags for materials, plus tips on packing boxes, insuring shipments, and communicating with exchanging libraries about any shipping issues that arose during the course of the pilot.

Assessment Survey Tool and Metrics

Based on the pilot's established standards, the group developed a list of metrics to assess various aspects of the project (see table 1). With this data, the group hoped to identify trends in costs and time commitment to determine whether cooperative cataloging is a viable solution for addressing some portion of the cataloging needs across BTAA institutions. From the outset, the pilot group recognized that because calculations of time were kept manually by participants and not automated, the data for individual titles should be read as close approximations, not precise timings. What carried the most meaning for the purpose of the study were the times and resulting costs accrued at the aggregate BTAA level, not at the specific title level.

Participants iteratively refined these metrics over the course of several planning meetings and testing. The survey tool used to record the data was configured to accommodate differences in workflows and organizational structures across institutions, and was designed to allow for the capture of free text comments.

Google Forms were chosen because of their flexibility and zero cost. These versatile forms allow for multiple collaborators, varied question structures, optional or required questions, question modifications at any time, results to be gathered in a single location, and an unlimited number of

Table 1. Time and Cost Metrics Gathered by the Owning and Cataloging Institutions

Element	Questions
Searching for copy	Institution name
	Total time spent searching for a bibliographic record
	Was copy found?
	Staff rank/level
Cataloging	Staff rank/level
	Total time spent cataloging
	Format of the resource cataloged
	Language of the resource cataloged
	Cataloging code used (AACR2 or RDA)
	Encoding level
	Was resource cataloged using piece in hand or scans?
	If scans, what content from the resource was used to perform the subject analysis?
	If scans, did cataloger need to request more information about the resource from the owning institution in order to complete the cataloging?
	If more information was requested, describe the nature of the request, including the amount of time spent.
	Were paired fields added to the record?
	Were paired fields added via macro?
	If paired fields were added via macro, were the macros local or macros in Connexion?
	Were additional manual edits made to the macro-created paired field?
Physical processing (mailing)—owning institution	Total time spent on mailing (routing, packing, unpacking upon return from cataloging institution)
	Postage costs
	Staff rank/level
Physical processing (mailing)—cataloging institution	Total time spent on mailing (unpacking, routing, packing to ship back to owning institution)
	Postage costs
	Staff rank/level
Scanning—owning institution	Total time spent on scanning
	Staff rank/level

form submissions from any participant with a link. Setting up Google Forms is free, and requires only that the author has a Google account. Those entering data into the form do not need to have a Google account.

For each of the survey forms created, the group opted to require answers to all questions to ensure data was captured for each area under review; skip logic was employed to enable users to move quickly through sections of a form not applicable to their work. Questions were ordered based on a generalized cataloging process. Once a form was completed and submitted, data from that form was automatically tabulated in a corresponding Google spreadsheet, with the form's questions functioning as the column headers. Once the forms were developed, tested, and approved by the group, each participating institution was notified by email with links to the final forms. Institutions could share the link within their organization as deemed necessary by their workflows.

Metrics for Calculating Time and Resulting Costs

Processing costs were calculated by multiplying time spent performing a task by the compensation costs (salary/wage plus benefits, if applicable) of the participants engaged in the task. Understanding that compensation data is sensitive, data was anonymized by participating institutions before they shared it with the pilot group. The names of staff were not identified on the surveys, ensuring that compensation information could only be associated with the broad categories of staff levels at each institution (either professional, support, or student), and not with specific individuals.

Grouping at staff level/rank required each institution to submit an average of the salaries or hourly wages for all staff participating in the study at the level of professional, support, and student. To get a holistic sense of costs, institutions

also provided the percentage of benefits additionally applied to each staff level. Interestingly, benefits at some institutions are paid from the library's budget, and benifits at some other institutions are paid by the university. Because institutional membership in the BTAA is guided at the university level, not the library level, the group included benefits costs for all participating institutions, regardless of whether benefits are paid directly by the library or the university.

Differing workflows across institutions required data harmonization for some metrics. For instance, some institutions had discrete workflows and varying staff lines for searching for copy that were distinct from performing cataloging. In the study, these institutions separated their time calculations for searching and cataloging. Institutions that search for copy in a single cataloging workflow stream included searching as a part of their overall cataloging time. For the purpose of calculating uniform costs associated with just cataloging (i.e., not including shipping or scanning costs), the group merged all searching and cataloging times into a single figure to calculate a single unified cataloging cost.

Participants were instructed to record their time to the minute for shipping, scanning, and cataloging. However, when calculating costs, it became problematic to reduce compensation rates to a factor of a minute. In consultation with an assessment librarian from one of the participating institutions, a decision was made to round the submitted time spent on activities to the nearest quarter hour, according to table 2, to relate time spent to wages/salaries.

It should be noted that rounding the times had implications for relating some categories of costs. For instance, one might normally expect that the total cataloging costs for the project as a whole would equal the combined costs of copy and original, or cataloging using AACR2 and RDA, or that the combined costs of cataloging via scans or piece in hand, or the combined costs for cataloging Roman and non-Roman materials. However, the rounding introduced slight, though not statistically significant, variances in totals because of how items were distributed among the various data points. For example, one Slovak serial was cataloged with copy in fewer than seven minutes, resulting in the total time for that piece, according to table 2, to be recorded as zero minutes.

Table 2. Adjusting Actual Time Spent (in minutes) to the Time to be Reported

Time Spent (in Minutes)	Time Reported (in Minutes)
0:00	0:00
0:01–0:07	0:00
0:08–0:14	0:15
0:15	0:15
0:16–0:22	0:15
0:23–0:29	0:30
0:30	0:30
0:31–0:37	0:30
0:38–0:44	0:45
0:45	0:45
0:46–0:52	0:45
0:53–0:59	1:00
1:00	1:00

Table 3. Distribution of Copy vs. Original Cataloging, by Resource Type/Format

Resource Type/ Format	Copy Cataloging	Original Cataloging
Monographs	250	383
Serials	1	1
DVDs	6	30
CDs	1	0
Maps	45	51
Total	303	465

Cataloging Cost Analyses

Cataloging Costs

During the pilot, a total of 768 titles were cataloged (see table 3), with an average cost per title of $25.81. These costs do not include the cost of shipping or scanning, which were reported separately. The distribution of copy versus original cataloging was unexpectedly high on the side of copy, attributable largely to either the owning institutions' inability to identify appropriate copy for some languages, or (especially for newer imprints) copy becoming available in the period between shipping and cataloging. Data for serials and CDs cataloged are included in the overall data analysis and in table 3; however, the pilot group determined that there was limited statistical significance for them and did not break them out for further assessment due to the low numbers of titles cataloged in those formats.

The average cost for copy cataloging of monographs (see table 4) was low at $9.45 per title, with a range of $2.93 to $43.01 per title.

At $18.87 per title, the average cost for the original cataloging of monographs (see table 5) was also low, relative to known vended cataloging costs. The cost ranged from $7.11 to $57.50 per title.

Some of the participating institutions had an immediate need for cataloging Japanese and Korean DVDs, and included these resources in the pilot. Thirty-six DVDs

Table 4. Costs for Copy Cataloging of Monographs, by Language

Language of Monograph	No. of Institutions Cataloging this Language	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Arabic	1	18	68.87	3.83
Bengali	1	1	21.77	21.77
Danish	1	5	132.41	26.48
Estonian	1	12	242.75	20.23
Finnish	1	2	38.80	19.40
Hebrew	1	10	75.00	7.50
Hindi	1	2	48.98	24.49
Hungarian	1	51	149.38	2.93
Icelandic	1	1	43.01	43.01
Japanese	1	94	824.57	8.77
Korean	1	21	184.21	8.77
Latvian	2	3	28.15	9.38
Lithuanian	1	3	18.96	6.32
Norwegian	1	5	144.22	28.84
Polish	2	6	34.71	5.79
Russian	2	7	47.14	6.73
Swedish	1	9	270.16	30.02
Total	N/A	250	2,361.29	9.45

were cataloged, and they incurred the highest per-title cost resources in the pilot. In general, DVDs for motion pictures require more added access points (writers, producers, actors, etc.), and therefore often require more Romanization and more engagement with authorities, all of which contribute to higher costs. It should also be noted that for these particular sets of Japanese and Korean DVDs, a team of catalogers with format and language expertise worked together to complete the cataloging to pilot standards, thus adding to costs. It is expected that more mainstream DVDs, or resources cataloged by staff with native or more fluent language expertise, would be more cost effective than this smaller sample size proved to demonstrate. Costs for both copy and original cataloging of DVDs are noted in table 6.

The only category of cartographic resource cataloged in the pilot was print maps. Overall, the cartographic resources experts in the group felt that the costs for maps cataloging (see tables 7 and 8) were relatively low, compared to known outsourcing options. A significant number of maps cataloged in the pilot consisted of multiple sheets within a single title, adding to higher per-title costs for providing adequate descriptive metadata. Multisheet maps are complex resources and necessarily required a higher investment of time. As with some DVDs, teams of catalogers with language expertise and expertise in cartographic resources worked together, increasing staff time, and therefore costs.

The average cost for copy cataloging of maps (see table 7) was $51.52, with a range of $16.18–$76.80.

The average cost for original cataloging of maps (see table 8) was $70.24, with a range of $28.77–$106.49.

The overall costs for cataloging resources in Roman versus non-Roman scripts (see table 9) were interesting, particularly when considered in the context of how the data was created. The average per-title cost of cataloging all Roman titles in the study was $19.56. For non-Roman materials, significant cost savings were realized when the cataloger chose to use macros to automatically add paired fields with the vernacular script into the record, rather than manually adding those fields—at a difference of nearly $26.50 per title on average.

These figures are particularly important for the purpose of comparing against vended cataloging options. Vended cataloging for resources in non-Roman scripts, with vernacular included in the metadata, were recently quoted to multiple participating institutions at a rate of as high as $45 per title for original cataloging. The potential for cost savings for these types of resources proved significant.

Cataloging using AACR2 or RDA (see table 10) was not meaningfully different in terms of cost, with only $1.16 difference in cost between the two:

Finally, cataloging with the piece in hand versus using scanned images (see table 11) did not result in a significant

Table 5. Costs for Original Cataloging of Monographs, by Language

Language of Monograph	No. of Institutions Cataloging this Language	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Arabic	1	34	275.47	8.10
Bengali	1	4	108.85	27.21
Czech	1	4	28.44	7.11
Danish	1	28	969.28	34.62
English	1	1	18.67	18.67
Estonian	1	29	746.92	25.76
Finnish	1	2	45.27	22.63
Georgian	1	11	336.11	30.56
Hebrew	1	10	112.50	11.25
Hindi	1	57	781.57	13.71
Hungarian	1	7	258.95	36.99
Japanese	1	7	122.81	17.54
Korean	1	4	70.18	17.54
Latvian	2	7	56.88	8.13
Lithuanian	1	3	37.92	12.64
Marathi	1	1	21.77	21.77
Norwegian	1	14	504.30	36.02
Polish	3	26	195.49	7.52
Russian	3	116	1,706.30	14.71
Slovak	1	1	0.00	0.00
Swedish	1	13	637.84	49.06
Tibetan	1	3	172.49	57.50
Ukrainian	1	1	9.48	9.48
Total	N/A	383	7,226.01	18.87

Table 6. Costs for Copy and Original Cataloging of DVDs, by Language

Language of DVD	No. of Institutions Cataloging this Language	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Copy Cataloging				
Japanese	1	1	36.54	36.54
Korean	2	5	507.05	101.41
Total	N/A		537.13	89.52
Original Cataloging				
Korean	2	30	3,411.05	113.70
Total	N/A	30	3,411.05	113.70

cost difference, and there is no evidence to suggest it resulted in a notable difference in the quality of the final metadata product. Owning institutions that chose to scan materials for cataloging were specifically asked to communicate any reduction in expected cataloging quality for scanned titles; no issues were reported. Cataloging with the piece in hand cost $1.90 more on average than cataloging using scanned images.

Table 7. Costs for Copy Cataloging of Maps, by Language

Language of Map	No. of Institutions Cataloging this Language	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Arabic	1	5	265.32	53.06
Chinese	1	4	127.88	31.97
Japanese	2	18	1,382.37	76.80
Persian	1	1	21.58	21.58
Russian	1	13	469.13	36.09
Ukrainian	1	4	647.73	16.18
Total	N/A	45	2,318.22	51.52

Table 8. Costs for Original Cataloging of Maps, by Language

Language of Map	No. of Institutions Cataloging this Language	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Arabic	1	3	190.99	63.66
Bulgarian	1	1	28.77	28.77
Chinese	1	17	739.30	43.49
Japanese	1	21	2,236.20	106.49
Russian	1	9	494.71	54.97
Total	N/A	51	3,582.08	70.24

Table 9. Costs for Cataloging Roman vs. Non-Roman Titles

Script Enhancement	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Roman Titles	322	6,297.92	19.56
Non-Roman Titles	446	13,256.76	29.72
Paired fields added with macro	188	2,755.08	14.65
Paired fields added manually	258	10,605.38	41.11

Shipping Costs

Institutions were asked to track the actual costs for shipping materials and time spent packing, unpacking, and routing material throughout the library. Executing this in reality proved difficult given the variations in organizational structures associated with shipping processes between institutions, changes in the size and weight of packages received versus packages returned, and the ability for the shipping departments at some institutions to track this data reliably. The ultimate hope was that any future BTAA cooperative cataloging program would use the consortium's existing UBorrow Interlibrary Loan (ILL) infrastructure for shipping between institutions, so tracking these costs for the pilot was ultimately of lesser import. While no data currently exists for per-unit shipping costs in UBorrow, it is unlikely that using UBorrow for shipping would ever be more expensive than cataloging departments independently using postal or courier services to ship materials.

Shipping textual materials and media was relatively issue free. Shipping of maps, however, was sometimes problematic. Institutions experimented shipping maps flat and rolled in tubes, and in both cases, packages were damaged. ILL policies across BTAA institutions vary, and collective experience shipping large format, delicate materials through UBorrow or other forms of ILL may not be robust enough yet. Insurance and caution about shipping rare/valuable maps should be figured into future costs and considerations.

Scanning Costs

Three owning institutions experimented with scanning a small sample of their resources for cataloging (see table

Table 10. Costs for Cataloging using AACR2 vs. RDA

Cataloging Code Used	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
AACR2	84	2,052.50	24.43
RDA	684	17,502.09	25.59

Table 11. Costs for Cataloging using Piece in Hand or Scans

Piece in hand vs. scans	No. of Titles Cataloged	Total Cost for Pilot ($)	Average Cost per Title ($)
Cataloged with piece in hand	743	19,595.02	25.74
Cataloged from scan	26	619.93	23.84

Table 12. Staff Costs Associated with Scanning

No. of Volumes Scanned	No. of Images Created	Total Cost for Pilot ($)	Average Cost per Volume ($)	Average Cost per Image ($)
28	229	184.60	6.59	0.81

12). When the pilot group decided to explore scanning costs, it hoped to yield data that would show scanning as a viable alternative to shipping. However, the data showed that scanning costs exceeded shipping costs. This is likely due to higher paid staff (primarily librarians) preparing the volumes for scanning during the pilot itself. Scanning costs would decrease if students or support staff prepare scans as part of a longer-term partnership program.

Four institutions in the pilot cataloged material from scans, providing original metadata records for twenty-six titles (twenty-five monographs and one serial) in twenty-eight volumes, some of which were bound-withs. The resources were in non-Roman scripts (Russian and Georgian). None of the cataloging institutions needed to contact the owning institution for additional information, suggesting that the pilot's parameters for scanning provided enough context for the catalogers to provide full bibliographic description and at least minimal subject analysis.

Recommendations for Enabling a Sustainable Big Ten Cooperative Cataloging Partnership Program

Cataloging

One of the initial perceived benefits of assessing costs for cooperative cataloging was to attain a useful benchmark for libraries to compare overall cooperative cataloging options against pricing estimates they may receive for vended contract cataloging services for similar languages and resource formats. Because a single vendor may provide different quotes (usually confidentially) to different institutions, known vendor costs are not included in this paper.

Institutions participating in the pilot unanimously recommended that BTAA libraries develop programmatic mechanisms for sharing cataloging capacity and expertise for resources across the spectrum of resource types and formats. The demonstrated costs of cataloging textual monographs proved the most economical, and was significantly lower than known vended cataloging options available at the time. However, the group was of the uniform opinion that there would be value in sharing cataloging expertise even for those resource formats and types that proved more expensive. The costs that were assessed for maps and media, while higher than textual materials, were not prohibitive, and the $25.81 average cost for cataloging all resources and formats included in the study is certainly competitive.

Participants have also experienced scenarios where outsourcing vendors will not take on cataloging projects when a library cannot guarantee or meet a minimum number of titles in a given time period. In some cases, libraries are charged a fee for not sending a minimum number of materials for cataloging. Developing and institutionalizing cataloging partnerships across libraries would also help address metadata provision for smaller collections that would not otherwise qualify for vended outsourcing.

The pilot group discussed various models for supporting a long-term cooperative cataloging program. The obvious ideal would be one-to-one matches between institutions, wherein two institutions could catalog a certain number of titles per year for each other, creating an egalitarian relationship in terms of costs and volume of work and minimal project management overhead. However, among the eight participating pilot institutions, a one-to-one match between format/language needs and expertise was not possible at the time.

The group also explored using a credit or quota system, not unlike the model used in the pilot, wherein each

institution would commit to cataloging a certain number of titles per year and would be able to send out the same number for cataloging. While this worked well for the purpose of a limited and controlled study, the group was concerned that the overhead required to track credits over a longer term would not be effective, would not provide flexibility, and could potentially inhibit other institutions from joining the program mid-stream.

Yet another model considered was one of direct financial compensation for cataloging work performed. In such a model, each institution would function as an outsourcing agency or vendor for other BTAA institutions, following a devised pricing list for certain languages, scripts, and/or format types. The intent would not be revenue generation, but to recover costs. To enable such an effort, more time is needed to study the costs of nontextual materials. While this type of model is certainly not unprecedented, the pilot group did not think that the overhead for tracking expenditures, formally invoicing, and transferring of funds could be easily managed by institutions. It would also require identifying and securing dedicated funding lines in ways that in-kind relationships would not provide. Nor would such a model be in keeping with the building of cooperative partnerships.

Ultimately, the group recommended a model that is flexible over the long term, is customizable across institutions, does not require moving funds between institutions, and that prefers an honor system to tracking costs, credits, or quotas. The pilot group recommended that each participating institution identify a portion of FTE (i.e., time) that can be reasonably absorbed and formally committed to a shared cataloging program. This could be as simple as stating that "our library will commit a maximum of X hours per week of cataloging time for partners in the Big Ten Cooperative Cataloging Partnership."

A model for this type of cooperation already existed in the Institute of Museum and Library Services (IMLS)-funded Copyright Management Review System (CRMS) project spearheaded by the University of Michigan; a white paper published in 2013 about cost sharing describes the model.[16] In the CRMS project, nine BTAA institutions (Illinois, Indiana, Maryland, Michigan, Minnesota, Northwestern, Ohio State, Penn State, and Wisconsin) devoted a portion of their staff time weekly to copyright determination of digitized texts—regardless of who "owns" the copies that were digitized—so that HathiTrust can make more materials available in full-text. A similar approach to committing a certain amount of cataloging language or format expertise to making shared collections more discoverable would benefit the BTAA as a whole, and would negate a quid pro quo exchange of cataloging time. Rather than focusing collective efforts on mandating and pursuing equal labor across institutions, efforts would instead be focused on contributing whatever cataloging expertise and capacity each institution can reasonably absorb, and that is needed by other members of the cooperative.

For the chosen model to be effective, a shared collective mindset of long-term purpose is more important than a contract with strict guidelines. The model would need to accommodate fluctuations in staffing levels, available staffing across institutions at any given time, and would require effective and frequent communication across institutions. The BTAA Heads of Cataloging Committee is established, meets regularly, and could provide the forum for regular communication. Such a model requires maintaining an inventory of language needs and expertise for other participants to reference.

The pilot confirmed that, overall, the true cost to institutions (mostly staff time) is significantly less financially than contracting with vendors. The exchange of cataloging services in lieu of cash payments would not require separate budget lines. Staff time and capacity are real costs, and would need to be justified if staff time is provided to other institutions. One of the unsettled issues from the pilot was the extent to which management and administration at participating institutions are comfortable sharing and absorbing these costs without the guarantee of equitable labor across institutions. By offering such services, institutions may not necessarily receive equal services in return. But, there is power in numbers. The more institutions that participate in the program, the greater the capacity becomes overall, the greater the opportunities for sharing expertise and meeting needs, the higher the resulting cost savings will be, the more volume that can be absorbed across the cooperative, and the faster users will gain access to resources across the BTAA's shared ecosystem for collections.

Shipping

To reduce overall shipping costs (both the cost of mailing and the cost of having technical services staff manage shipping on their own), materials sent between owning and cataloging institutions should piggyback on the existing UBorrow ILL shipments between BTAA libraries. In January 2014, members of the pilot group met with the BTAA ILL Directors to discuss options for labeling and flagging shipments to indicate when materials are part of a cataloging partnership as opposed to ILL borrowing/lending operations. The ILL Directors group supported the notion of combining shipments to save overall costs. While the pilot study did not adequately assess shipping costs, it stands to reason that the economy of scale afforded by the existing BTAA ILL infrastructure would be less expensive on a per-title basis than sending through the post or by courier.

Scanning

Though the scanning sample was small, whether materials were shipped or scanned seems to have had little impact on either the costs of the cataloging itself or the quality of the metadata end-product. Ultimately, the pilot group believes that in future cooperative arrangements the decision to ship or scan resources should continue to be at the discretion of the owning institution and driven by local institutional goals, or by the value, rarity, or physical conditions of the resources. It may well be that piggy backing on the UBorrow ILL infrastructure for shipping resources between BTAA libraries will prove less costly per title than employing even student staff to scan materials. For libraries that experimented with both shipping and scanning, it was clear that, from the perspective of staff time, it was both easier and more time effective to pack a box for shipping than it was to scan materials and organize the resulting image files for transmission to the cataloging institution. The relative simplicity of shipping was even more apparent for resources in languages or scripts that were not familiar to the person doing the scanning in terms of their ability to quickly and accurately identify key parts of the resource warranting scanning.

Moving from Pilot to Program

The pilot group distributed its final report on the study and its recommendations for further collaboration for simultaneous review by several stakeholder groups in the BTAA: heads of cataloging, directors of technical services, ILL directors, collection development officers, and library directors. In May 2016, the Heads of Cataloging Committee presented the library directors with a proposed partnership agreement to expand the pilot into a formal program.

The library directors officially endorsed the terms of the agreement and the establishment of a long-term cooperative cataloging partnership across the BTAA, with an initial two-year phase commencing on July 1, 2016. Twelve of the fifteen BTAA member institutions made a commitment to join the initial phase of the partnership (University of Chicago, University of Illinois at Urbana-Champaign, Indiana University, University of Maryland, University of Michigan, Michigan State University, University of Minnesota, Northwestern University, Ohio State University, Penn State University, Rutgers University, and University of Wisconsin-Madison).

The formal partnership agreement provides the following operational expectations and principles:

- Duration: The partnership agreement is effective for a period of two years, from July 1, 2016 to June 30, 2018. Any proposal to extend the partnership beyond this initial two years, or to substantively alter the terms or provisions in the agreement, will be made to the BTAA library directors in advance.
- Flexibility: For such a partnership to be sustainable over the long term, structures will be employed that allow for variations in the number of institutions actively participating, the existence and availability of expertise as staffing changes, shifts in institutional priorities that may affect participation, and evolving collection development strategies and practices. Some of these variations will be planned, others could not be anticipated at the inception of the partnership. The partnership will be approached in ways that maximize institutional and collective capacities to meet needs over the long term.
- Coordination: The University of Chicago will continue its role as the coordinating institution for the partnership. The BTAA Heads of Cataloging Committee will collectively approach managing the partnership with an eye toward developing sustainable frameworks that require as little administrative overhead as possible.
- Communication: Partners will leverage the existing and regular communication mechanisms already in place within the BTAA Heads of Cataloging peer group. This communication includes regular monthly conference calls to discuss issues related to implementation and to reach a common understanding of expectations. Additionally, the group has established a shared Google Drive for cooperative document management, and the BTAA has established a document archive and a list address for those participating in the management of the partnership to communicate via email.
- Production expectations: The partnership will begin with each participating institution providing approximately ten hours per month in cataloging services for other partners. With twelve charter BTAA institutions participating, this will equate to approximately 1,440 hours of cataloging per year across the cooperative. Anything exceeding this operational "floor" expectation is negotiable between individual institutions.
- Standards: The partnership agreement outlines specific metadata standards that have been unanimously agreed upon by the participating partners. To reduce operational overhead, the partnership will employ existing international metadata standards managed by the PCC that are well-known to cataloging staff across participating libraries.
- Shipping: In cooperation with the BTAA ILL directors, partners will employ the existing UBorrow operations for shipping materials between owning and cataloging institutions to realize economies of scale afforded by this existing infrastructure.

- Costs: All cataloging costs will be in-kind costs; no monies will change hands between institutions. The only financial output associated with the partnership will be the purchase of dedicated flags to visually identify materials as they are shipped via UBorrow. Some institutions may choose to scan materials for cataloging, rather than ship them; the owning institution will absorb all costs related to scanning.
- Assessment: Initial assessment activities will focus on three main areas: (1) gathering production statistics efficiently; (2) monitoring that cataloging and ILL workflows are effective; and (3) ensuring long-term sustainability by understanding the ongoing project coordination and management needs for the partnership. The overarching assessment goal is to provide sufficient data for participating libraries to evaluate continued involvement and to aid additional libraries that may be considering joining the program in the future. Categories of data currently being gathered include names of owning and cataloging institutions, type of cataloging performed (copy or original), formats of resources cataloged, languages of resources cataloged, numbers of titles (not volumes) cataloged, and free-text comments.
- Reporting: The partnership group will regularly report to the BTAA technical services directors, ILL directors, and library directors on progress, at minimum issuing an annual report each of the two initial years of the partnership.

In July 2016, participating institutions refreshed the original pilot data on cataloging needs and available expertise to begin the initial phase of the partnership. Matches between institutions needing assistance in particular areas and institutions able to provide that assistance were made to get initial workflows started. As subsequent needs emerge, institutions make active calls (either via the electronic discussion list or on the group's monthly conference calls) to the entire group for cataloging assistance, and the group dynamically maintains a spreadsheet of needs over time. All twelve institutions are now actively cataloging materials across the cooperative. As expected, the expansion of the partnership to twelve institutions, from the original eight, has significantly increased the range of language expertise, cataloging capacity, and opportunities available to participants.

Opportunities for Further Collaboration

While the cooperative cataloging partnership will address some of the needs in cataloging across BTAA institutions, it does not solve all of the metadata management challenges or capacity needs faced by partner libraries. The existing and robust BTAA consortial purchasing program is one area that could benefit from the development of more coordinated technical services and metadata strategies. Library collections are also reflective of diverse areas of study, and there remains a wide range of languages and formats in which none of the BTAA institutions possess expertise, or if they do, they do not have the capacity to keep up with their own collection growth in those areas or to lend that expertise to other institutions. Areas being considered for further evaluation and collaboration include the following:

- Coordinated metadata management for consortial e-resources purchases: The BTAA has an active, robust, and long-standing program for negotiating consortial purchases for electronic resources. To date, each library has developed institution-specific means for initially acquiring the metadata for these purchases, and then managing and maintaining those metadata records over time as titles are added or removed from collections, packages have been altered, or access has changed in some way (e.g., URL changes). Several groups may explore opportunities to reduce the redundancy of this work across BTAA institutions, and provide sustainable models for coordinating the long-term metadata management implications of consortial purchasing.
- Cooperative vended cataloging: For some languages, institutions across the BTAA have experienced limited success in arranging for vended contract cataloging, either because vendors lack the expertise or the volume is too small from a single library for the vendor to cost effectively handle the materials. For the latter scenario, the BTAA Heads of Cataloging Committee plans to more closely examine pockets of collections that are not likely to be included in the Cooperative Cataloging Partnership, and explore opportunities for combining these collections into BTAA consortium-level contract cataloging agreements.
- Cooperative metadata purchasing: While BTAA consortial purchasing has focused on electronic resources, there is also overlap in print acquisitions across institutions. One potential area of exploration is the extent to which there is also overlap in metadata that multiple institutions are redundantly purchasing for collections in tangible formats. In some cases, even if there is metadata available for purchase, it may not be cost-effective for one institution to purchase on its own, but may become affordable if consortial purchasing is negotiated.

Conclusion

Developing long-term, sustainable strategies for ensuring cross-institutional cataloging capacity is not entirely about being able to save money. The ultimate goal is to provide access to library collections. Individually, an institution's cataloging strengths may not always match its collection strengths, staffing levels and expertise will inevitably fluctuate, and outsourcing or vended cataloging may not necessarily provide satisfactory solutions. The BTAA Cooperative Cataloging Partnership that evolved out of the pilot study is a strategic effort to supplement cataloging capacity across libraries without requiring additional dedicated budget lines, when possible. Beyond sharing in-kind costs, the added benefit of moving forward with a BTAA collaboration is that it builds on the existing trusted partnerships, communication, and collaborative spirit between member institutions. Incorporating cooperative cataloging is a natural extension of the "collective collection" movement currently being fostered across the BTAA, and lends a further option for ensuring timely discoverability and access to resources throughout the consortial resource sharing ecosystem. To quote Palfrey,

> We need radical collaboration in libraries, far beyond what happens today—not collaboration at the margins or collaboration as an afterthought. Librarians need to measure their success not as individual institutions, or people, but rather as collaborators working together to build a new ecosystem of information and meeting the needs of a rapidly changing group of users. This series of conceptual shifts will not come easily, nor will it be uncontroversial.[17]

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