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Home > Vol 53, No 4 (2009) > Colati

[Better, Faster, Stronger: Integrating Archives Processing and Technical Services](#)

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Abstract

The University of Denver's Penrose Library implemented a consolidated cataloging and archives processing unit for all materials, taking advantage of the structure, workflow design, and staff resources that were already in place for library-wide materials processing: acquisitions, cataloging, binding, and stacks maintenance. The objective of Penrose Library's integrated approach was to efficiently create metadata that allow searches based on subject relevance rather than on collection provenance. The library streamlined archives processing by integrating digital content creation and management into the materials processing workflow. The result is a flexible, sustainable, and scalable model for archives processing that utilizes existing staff by enhancing and extending the skills of both experienced monographs catalogers and archivists.

The focus of library technical services is moving away from activities such as processing and binding print journals and print government documents and upgrading copy cataloging records. These shifts are accelerating the channeling of technical services resources toward giving higher priority to providing access to unique materials, including content that increasingly appears in digital form. At the same time, libraries that include special collections are faced with the challenge of improving workflow while describing unique content at a sufficiently high level of granularity to meet demands to provide greater digital access to their collections. In a world of shrinking budgets and reduced staffing, these challenges are an opportunity to integrate archives processing into technical services while making a library-wide commitment to special collections. Concurrently rethinking the approach to managing and creating access to unique collections makes it possible to create a streamlined and sustainable process that combines the item-first culture of monographic cataloging with the context-forming culture of archival processing, resulting in a hybrid approach to archival cataloging. The higher levels of description, collection, and series are performed by professional archivists or highly trained staff members, but many people touch the collection at different stages of processing. This approach stresses both productivity and an item-centric view of archival material and allows the user to discover primary resource content in a deep, flexible way driven by user-centered (versus archivist-centered) means of providing intellectual access to information.

With the growth of the digital environment and the potential for greater online access to archival materials, archives' potential user base has expanded beyond the serious or expert researcher, who is familiar with archival organization, access tools such as finding aids, and even archival terminology.¹ Archival processing must meet the needs of an increasingly diverse community of users by providing access to primary resources without requiring the user to navigate through the top-down organizational collection structure to find primary resources or to physically go to the repository to interact with the individual primary resources. These imperatives must be met by being more efficient and production-oriented without sacrificing quality or professional standards, which add value for both the experienced and the novice user.

This paper describes an initiative at the University of Denver's Penrose Library that consolidated cataloging and archives processing units for all materials, taking advantage of new technologies and the structure, workflow design, and staff resources that were already in place for library-wide materials processing—that is, acquisitions, cataloging, binding, and stacks maintenance. The purpose of this consolidation was to streamline archives and create a model for archives processing that uses existing staff and increases the capacity to process these unique materials.

Literature Review

Typical archival processing focuses on collections and descriptions that follow a general to specific (or top-down) model, which has influenced the top-down structure of archival format standards, including Encoded Archival Description (EAD), Machine-Readable Cataloging (MARC), Archives and Manuscript Control (AMC), and content standards, including Rules for Archival Description (RAD), *Describing Archives: A Content Standard (DACS)*, and *Archives Personal Papers and Manuscripts (APPM)*.² General collection information is provided through a carefully crafted "scope and content" note that provides background context, with even more detail added at a series level.

Much of the recent literature addressing the processing of archival materials describes traditional approaches to processing, resulting in the creation of provenance-based access tools. One of the more frequently cited is Greene and Meissner's "More Product, Less Process: Revamping Traditional Archival Processing."³ The authors emphasized productivity-driven physical processing and minimal, higher-level (collection and series) description as alternatives to traditional artisan approaches to processing archival materials. Greene and Meissner reviewed literature on this topic and surveyed existing professional practices, concluding with a call for archivists to rethink how they do their work in order to process more, avoid creating additional backlogs, and improve user access to collection-level information. This model also was explored in Hackbart-Dean and De Catanzaro's "The Strongest Link: The Management and Processing of Archival Collections" and other recent articles such as Weideman's "Accessioning as Processing" and Gorzalski's "Minimal Processing: Its Context and Influence in the

Archival Community."⁴ These articles emphasize curator assessment of the collection to assign processing levels for arrangement and description. The authors maintain that not all collections need to be processed at the item level.

Prom, one of the developers of Archon, an open-source archival management system, stated that until the early twenty-first century, robust, standards-based, integrated library system (ILS)-equivalent archival collections management databases with batch processing functionality were not widely implemented in the cultural heritage community.⁵ Landis also noted that most archives focus instead on providing access to (and teaching how to use) the traditional access tool, a top-down finding aid.⁶ User studies of information-seeking behavior in archives indicate that the user is even less inclined to wade through boxes to locate the specific item being sought and may find it difficult to understand the complex and hierarchical nature of archival arrangement and description.⁷

Schaffner, in a recent OCLC report, reviewed these and many other user studies of information-seeking behavior in archives and noted that "studies show that users often do not want to search for collections by provenance, for example, as important as this principle is for archival collections."⁸ Schaffner also noted that "librarians and archivists need to manage archival collections by provenance, but also must describe what is in the collections for their users."⁹

The articles described above share the same approach—improving the efficient processing of archival materials by archivists. The initiative at the Penrose Library differs in that it involves a collaborative and consolidated approach involving both an archives unit and technical services.

Monographic Cataloging Compared to Archival Descriptive Practices

Archival description traditionally takes a top-down approach through the creation of collection-level finding aids. Monographic cataloging takes the opposite (or bottom-up) approach, focusing on the discrete item in hand and associating it with subject-related objects through access points by creating cataloging records that appear in union catalogs, such as OCLC's WorldCat and the local ILS. While book cataloging does not normally involve analyzing the contents and serials cataloging does not attempt this at all, researchers rely on other sources to locate the content within these items. For serials in particular, researchers use supplemental resources available to drill into the journal article. Those resources do not exist for archival materials. Catalog records usually follow the MARC format standard and *Anglo-American Cataloguing Rules*, 2nd ed., revised (*AACR2R*).¹⁰ The library user can decide how to associate the record with other entities, usually by following the subject discovery access points provided by the cataloger. With the evolution of the union catalog and widely available catalog records for published materials, technical services' functions have evolved from specialized original cataloging to copy cataloging that is primarily performed by highly trained—but non-MLS—catalogers. As this shift has occurred, professional librarians in technical services have been freed to focus more on original cataloging of unique materials and other functions within the library. The tradition of item-level bibliographic control in the technical services world, combined with a downturn in technical services functions, has uniquely placed catalogers to step into key roles in digital library projects and descriptive standards development.¹¹

Background

The University of Denver was founded in 1859 and enrolls ten thousand students. Penrose Library is the central library, with holdings of more than four million volumes. Special Collections and Archives (SCA) is a unit of Penrose Library that holds the University Archives and eighteen thousand linear feet of manuscript collections, which include the Beck Archives of Colorado Jewish History and the Carson Briefly Dance Library. Prior to 2008, the SCA processed collections in a separate space in the Penrose Library building. In 1997, paper finding aids began to be replaced by online finding aids. By 2005, the library was participating in an Institute of Museum and Library Services (IMLS) grant to create EAD finding aids to contribute to the Rocky Mountain Online Archive (<http://rmoa.unm.edu>). While this approach resulted in increased access to collection information, creating stand-alone EAD finding aids was both inefficient and labor intensive. Meanwhile, as print monographs switched to digital format, the Technical Services unit was channeling cataloger expertise to other areas, such as creating XML files and metadata services for local applications.

Penrose Library utilizes a matrix structure to facilitate day-to-day production and delivery of user services while maximizing opportunities for staff input to program development and execution. All supervisory functions, production, and service delivery occur through a traditional management hierarchy with the library dean as head and library functions organized in a series of units, each with a specific area of responsibility (e.g., technical services, acquisitions, access services, and so on). This traditional management system was augmented in 1997 by a team structure that is designed to address issues involving multiple units, improve lateral communication, and facilitate broader participation in program development and decision making. Both professional librarians and paraprofessionals participate in the functional teams. In addition, the library created two groups, the Archives Policy Group (APG) and the Catalog Management Group (CMG) to deal with cross-cutting issues. These groups also function as teams. The APG was created after the integration of the Archives Processing Unit (APU) into Technical Services, while the CMG was created in 1997 to handle ILS issues. The functional teams and groups have an independent line of communication to the dean through the Policy Council, on which the dean sits along with all the team facilitators.

The library's team structure opened the way for effective collaboration between the teams involved with the archival processing initiative. In addition, current administrators in Penrose Library have a history of supporting and focusing on the importance of online access to cultural heritage materials. The combination of administrative support and a team structure that facilitates communication between related units smoothed the transition considerably.

In spring 2008, the University of Denver's Penrose Library created a consolidated cataloging and archives unit to process all materials. This approach was intended to take advantage of the strong, existing technical services structure and workflow design and to utilize staff resources already in place to create and manage metadata and materials processing, including acquisitions, cataloging, binding, and stacks maintenance, regardless of the type of material. The APU consisted of one professional librarian and one part-time paraprofessional with five student workers and four hourly staff members. The Technical Services unit consisted of two professional librarians, 6.5 FTE catalogers, and 1.5 FTE End Processing staff members with three student workers. With the integration, one professional librarian, 4.5 FTE catalogers, 0.5 FTE End Processing staff, and two student workers participate in the archives projects.

Penrose Library's hybrid approach seeks to make access at a very granular level possible for little additional time and less effort than is required for higher-level (collection and series) description. The traditional model for archival arrangement and description largely fails to acknowledge both the necessity for minimal item-level control over digital objects in the digital repository environment and the potential for productivity tools and consistent descriptive standards to enable the

standardized description of content below the series level. Just as collection development selectors approve monographic materials to be cataloged, Special Collections and Archives curators, as well as the University Records manager, make decisions on processing priorities. Not all items in each archival collection are cataloged at the item level, and the curators work with the processors to decide what is cataloged and digitized. This decision process varies by collection and the research value of the collection.

Advancing the New Approach

The implementation of the consolidated cataloging and archives processing units at Penrose Library was the result of more than a year of discussion, planning, and staff training. The goal was to streamline all processing, especially archives processing, and integrate the management of unique digital content and standards-based record creation into the materials-processing workflow. Both the technical services area and library administration were committed to creating a flexible, sustainable, and scalable model for processing the library's unique materials to promote the awareness and use of these valuable collections. Before this could be accomplished, the library had to reconcile two seemingly opposing cultures.

Descriptive Policies and Practices Manual

To facilitate the interdisciplinary training and to ensure that professional standards were being maintained, the archives staff worked with an archival metadata consultant to produce the *Descriptive Policies and Practices Manual (DPPM)*.¹² This manual provided a much-needed local content standard based on existing national and international content standards and best practices for cataloging unique materials, such as *AACR2R* and *DACS* as well as format standards like EAD, MARC, Dublin Core (DC), and Metadata Object Description Schema (MODS).¹³

The *DPPM* identifies the desired data elements for each level of archival description: collection, series, container or folder, and item. Definition, format guidelines, best practices and standards, and local examples are included for each element. Crosswalks to existing metadata standards' equivalent fields are also included. Definitions for each element were transcribed from the Society of American Archivists' (SAA) *A Glossary of Archival and Records Terminology*; *Describing Archives: A Content Standard*; the *Encoded Archival Description Tag Library*, version 2002; or were defined locally.¹⁴ Locally defined elements were noted as such.

Each data element described in the manual was categorized as either mandatory or optional. Mandatory fields had to contain the appropriate information or a locally defined default statement and could not be left blank. Optional elements were left to the processor or archivist to determine whether the use of the element was appropriate and to provide the information. The work that went into defining the necessary descriptive elements and mapping them to existing format standards, such as EAD, MARC, DC, and MODS, would prove to be integral to the success of the first implementation of SCA's item-level descriptive cataloging and online access to digitized collection materials in PEAK Digital, the library's digital repository.

Implementing a Collection Management System

While the *DPPM* was being written, plans were made to select a new standards-based archival collection management system. SCA needed a system that would serve both as a collections management system and as a vehicle to output metadata. The system needed to be able to map to MODS, EAD, DC, MARC, and potentially other metadata standards. It needed to be scalable, standards-based, and interoperable. The SCA chose Re:discovery Proficio, a standards-based system that would serve as a management tool for both print and digital formats and as the metadata provider for a public access tool. Each of the data elements described in the *DPPM* corresponded directly with a field in a Re:discovery record, depending on the applicable level of description.

The *DPPM* provided standards for field use so that productivity tools inherent in database management systems could be used to minimize data entry time. These tools made it possible to copy and clone records as well as set up templates so that fields with homogeneous metadata (subject access terms, physical characteristics, etc.) could be automatically populated, much in the same way that records in an ILS can be generated. These tools facilitated the kind of efficiency required to make the item-level cataloging of unique materials a reality. This is the case because, especially in lower levels of description, individual records within any particular collection or series are almost entirely homogeneous in many respects and can be batch-generated.

Cataloging staff added information on the basis of the unique nature of the object in hand. The resulting record has both unique information about that object and contextualizing information that make sorting and grouping this item by numerous attributes possible. The addition of basic, controlled subject-access terms (descriptors) to each item-level record, each of which is presented individually within the digital repository with proper attribution as to collection and series, frees the record from the constraints of being discoverable only within the context of its collection.

Rather than being an access or discovery system in itself, the collections management system is a source of data for other systems. For that reason, the system had to have the ability to export content in multiple formats. The *DPPM* provided the standard for content description and provided the basis for developing export template mapping. Beginning with the database fields, which, although based on MARC and MODS, were schema agnostic, the management system allowed staff to output data in several metadata schemas and formats, including MARC, MARC Extensible Markup Language (MARCXML), MODS, Metadata and Encoding Transmission Standard (METS), DC, and Resource Description Framework (RDF).¹⁵

Further, Technical Services cataloging staff configured the MARC mapping so that collection-level records could be exported to MARC-based systems. This effort was especially important because it helped cataloging staff learn about the back end of the software and allowed the special collections staff to become familiar with library metadata approaches. Since the original MARC mapping, additional metadata maps have been created, including METS, MODS, DC, EAD, and Text Encoding Initiative (TEIP4).¹⁶ These maps are used to export data to various access systems as needed.

Archival Training Program

Training was essential to combining the units and merging workflows. Archival processing is an organic process that is dependent on continuing discussion between everyone who has a stake in the outcome. Therefore all staff involved in archival processing were trained in the basics of contemporary archival theory and practice. Experience suggests that a better product would result from all staff understanding how the work they did fit into the larger picture, even if the staff person was not directly involved in all stages of processing. The archival training program set up by the Archives and Technical Services librarians included both theoretical and practical aspects of the archival profession. A series of two-hour training sessions was offered to all staff who would be involved in archival processing. The program was an opportunity to develop new skill sets while building on standard archival skills and to promote team building.

Physical Environment

The reorganization of library resources to improve workflow in the Special Collections Unit was an enterprise-wide integration of the needs of special collections into the greater resources of the library. The APU was created by separating the archives processing staff from archives reference services staff and transferring responsibility for archival processing to the Technical Services Unit. Other staff reassignments followed on the basis of a library-wide assessment of changing workflows and needs. Organizational changes were not limited to the Archives and Technical Services units. As workflows and procedures shifted, Stacks Maintenance staff members managed the Special Collections and Archives shelves. Physical space for archives processing was created in the Technical Services area. The area occupies 34,665 square feet; approximately 14,598 square feet (approximately 42 percent) were converted for use by the APU. Several modifications to the physical space were made to accommodate this unit's special needs. Security practices were reviewed and determined to be adequate to properly protect the library's collections during processing.

Staffing and Workflow

Workload responsibilities and priorities within the Technical Services Unit were modified to support archives processing. Inventory and database maintenance projects schedules were extended to provide more time. The item-level cataloging of archives materials in the collection management system was added to the responsibilities of three catalogers. Catalogers are also responsible for assigning subject headings to collection-level records.

Both the Monographs and Serials units were already cataloging special collections books and serials, and that work was integrated into the new structure. Student workers from the Technical Services Unit, who label books and process government documents for remote storage, were assigned basic tasks for archives processing. End Processing staff members were assigned three hours per week to assist Special Collections in various lower-level tasks, such as box building. In addition, an experienced catalog technician, working with the head of Technical Services, was assigned to work on the back-end configuration of the collections management system to align it to meet the standards for MARC and export through MODS. Four catalogers now spend at least some portion of their time processing archival materials. One spends a minimum of twenty hours per week on some phase of archival cataloging (e.g., authority work or importing spreadsheet data). Three other catalogers spend three to four hours per week on item-level processing.

The team structure has proved especially beneficial in maintaining communication across the newly reorganized units, necessary because the culture of archival processing changed from a one person-one collection relationship to a many people-one collection relationship. The higher, intellectual levels of description, collection, and series are still performed by either professional archivists or highly trained staff members under the supervision of trained archivists, but many people touch the collection at different stages of work. Student processors and hourly workers are assigned lower-level tasks as needed. All stages of processing are highly important and contribute to the quality of the description of archival collections, and that concept always is conveyed to all staff.

Handling Legacy Collections

Processing backlogs exist in most archival collections, and the local situation—with a significant backlog of legacy collections having little or no processing—was no different. Since one goal of the APU is to gain complete physical control over all collection materials, these materials were integrated into the workflow in multiple ways. One approach to dealing with some of these legacy collections has been to use scanning requests from users as processing opportunities. Another approach is to gain basic physical control over boxes and use that information to inform processing decisions.

For example, the university's extensive historical photograph collection has a high demand for reproduction requests, yet relatively few of the images have been scanned, and they lack subject access beyond the particular folder in which they reside (buildings, sports, etc.). Under the new workflow, a photograph requested for scanning is first sent to the APU. The staff enters the photograph into the collections management system and is given the next number in the numerical sequence for that collection. The photograph then has an identification number that can be used as the file name when the photograph is scanned. The photograph is then sent to the Digital Production Services Unit for scanning following the scanning standards set up for archival materials.

Early in the process, the APG decided to implement standard subject access points within the collections management system to organize and describe photographs and other images. In this way photographs can be cataloged in the order that scanning requests are presented. Because the access point is a subject term rather than an intellectual series, when this record is exported to an access system a user is not required to look in the artificial Buildings series to locate images of university buildings. Instead, an access system will aggregate all cataloged images with the term "buildings," regardless of their place within a physical arrangement scheme.

In addition to being more flexible in terms of workflow, the addition of multiple subject access terms to each image enables the user to find an image that may not have "buildings" as its primary subject matter or content. A subject heading may denote the presence of a university building in the image, thus providing the user with the ability to retrieve more useful resources and to recontextualize the object depending on his or her needs. This access to the photograph does not require the user to understand where that particular record resided in a largely arbitrary organization. In this way, processing workflow is not only more efficient, it also supports more flexible discovery for the user.

Not all collections are as homogenous and easy to process as the photograph collection. Many collections, especially personal papers, contain random boxes of material that have little or no intrinsic order. Since these materials were already part of the collection, they could not be accessioned again, yet needed to be accounted for and managed prior to processing.

A separate database, called the Unprocessed Materials Database (UMDB), was set up in the collections management system to handle accessioned but unprocessed material. The UMDB allows the APU to gain physical and basic intellectual control over newly accessioned material and create a preliminary collection inventory. Once an accession is complete, the processor creates a collection-level record in the UMDB with the accession number used as the collection number and a brief descriptive title that mirrors the origin of the material. These are the only two fields that are filled at this level.

The processor creates a record for each box or container record under the collection record in the UMDB, and numbers all boxes consecutively, without regard to intellectual order. Processors are instructed to take no more than two minutes to look in the box or container and come up with a few words about its contents. If conservation or preservation issues are present, they are noted in the description field. The processor then adds a barcode to the box or container and scans the barcode into the barcode field. Accessioned boxes are stored in barcode order in the unprocessed materials area. This preliminary inventory is later used to create a processing plan. When a box is taken for processing, its box record is cancelled in the UMDB. When all boxes have been processed, the collection record is cancelled from the UMDB. This process allows for basic

descriptive access and physical control over all special collections materials, processed and unprocessed, while not taking an inordinate amount of time.

Metadata Creation and Management

Processing on demand and the unprocessed materials database solve two specific challenges facing the APU, but they do not address the issue of providing highly granular access to large groups of items. Creating metadata for thousands of unique collection objects in a manuscript or archival collection has long been considered cost-prohibitive. In the pre-automated environment this was usually the case, and item-level cataloging was reserved for only the most valuable collections. Changing user behaviors and demand for item-level access in the digital environment continued to indicate that developing some means of automated, mass metadata creation that could satisfy user demand for highly granular access was imperative.

Archival and manuscript collections arrangement and descriptive cataloging have always been highly labor-intensive, frequently involving extensive physical arrangement (though not generally description) down to the item level.¹⁷ The archival community has made progress in emphasizing production and throughput, establishing format and content standards for archival description, such as EAD and DACS, and in using collections management software options and online content delivery systems. Still, the professional archival community's focus has remained on the collection as the primary unit of description and access. This pattern persists despite evidence that users of archives are confused by both archival terminology and the ways that metadata about primary resources is made available.¹⁸

The library's solution to this dilemma was to use the power of database tools to mass create metadata for groups of homogenous content (e.g., items in an archival series that would allow access systems to aggregate these items into contextualizing groups). The implementation of an item-level archival cataloging content standard (the *DPPM*) required some in-house adjustment, since neither *AACR2rev* nor *DACS* specifically focuses on the cataloging of item-level unpublished content. Rather than try to choose one schema that could meet all possible needs, the item-level field content in the collections management system was created according to a flexible local content standard that could be mapped to multiple metadata schemas. In this way the APU was strategically placed to support multiple metadata consumers. Understanding metadata normalization and crosswalks also allowed the unit to play a major role in the development of a batch ingest process for item-level records into the consortial digital repository supported by the Colorado Alliance of Research Libraries (www.coalliance.org).

The next major decision that affected metadata was that the item records would not use pre-coordinated Library of Congress Subject Headings (LCSH) but would instead employ individual LCSH terms as descriptors. This decision was made because most Web-based access tools are not designed to handle subdivided headings, preferring to use subject descriptors instead. The use of this widely implemented source of authority records still allows for the aggregation of like records within consortial content delivery systems and aggregators like the University of Michigan's OAlster (www.oalster.org). This has the added benefit of not requiring either the processors of these records or the end-user to understand the pre-coordinated structure of LCSH.

The University of Denver Athletics Project: The New Structure in Action

Much of the impetus for the changes described in this paper came when Penrose Library received substantial funding from the University of Denver Athletics Department to process and digitize athletics records collected over many years (media guides, game programs, statistics, etc.), as well as photographs, negatives, and videos. This project acted as the laboratory where the theories that nonarchivists could process archival collections and mass item-level processing was possible were tested. The broad range of materials in the collection helped determine that the new process was sustainable and scalable.

As described earlier, the *DPPM* provided standards for field use so that productivity tools inherent in database management systems could be used to minimize data entry time. These tools made it possible to copy records and set up templates so that fields with homogeneous metadata (subject access terms, physical characteristics, etc.) could be automatically populated, much in the same way that records in an ILS can be generated. These tools facilitated the kind of efficiency required to make the item-level cataloging of unique materials a reality. This is the case because, especially in lower levels of description, individual records within any particular collection or series are almost entirely homogeneous and can be mass generated. This mass-generated metadata is then available for multiple uses. While generating metadata for unique materials in this manner was technically and procedurally possible, the question was whether or not this metadata is useful.

The first use of the metadata was for ingesting both the metadata and related primary content object (in this case, a scanned image) into the digital repository. The ingest process required metadata export from the collections management system into MODS and DC, which was packaged in a METS wrapper for transmission. The descriptive guidelines for item-level still image materials were revisited to ensure that all locally mandated elements in the *DPPM*, as well as the repository-mandated metadata elements that were based on the *Digital Library Federation/Aquifer Guidelines for Creating Shareable MODS Records*, were included in each record.¹⁹ For example, the "Title" element was listed as mandatory, so the processor was required to enter data into this field. However, because the majority (approximately 90 percent) of the photographs have no formal title, the metadata and materials processing librarian worked with the archives processing librarian to define guidelines for creating supplied titles on the basis of both *DACS* and *AACR2rev* as well as Parker's *Graphic Materials: Rules for Describing Original Items and Historical Collections* and the *Chicago Manual of Style*.²⁰ The *SAA Glossary* was also referenced when clarification on field definitions was necessary.

As processors worked with the photographs, they developed a number of techniques to accurately date University of Denver athletics photographs. These techniques proved to be applicable in some cases to cataloging other university photographs. Processors could date photographs on the basis of the type of uniform worn, padding worn, styles of haircuts, or in which building the game was played. Scores could be gleaned from photographs and video that included the scoreboards with the final score. While this level of detailed research at the item level may seem excessive, it was considered an investment in the knowledge base of the system. As the body of processed content grew, a critical mass of data became embedded in the database so that it became self-referencing. It became increasingly less necessary to refer to external sources for the validation of many information points, since those questions had already been answered in earlier records. As work progressed, the processors became faster and more accurate with the descriptions and formulations of titles and spent less time doing external research.

Cataloging programs for football and hockey games was another area that benefited from this collaborative effort. These materials were closer to the type of materials with which monograph catalogers work on a day-to-day basis, and the catalogers played an important part in setting up and customizing templates to facilitate the batch processing of these

records. The item-level perspective that the catalogers brought to these programs resulted in richly detailed records that, without their expertise, would not have been nearly as robust or consistent.

Next Steps

As the library gains control over more archival content at an increasingly granular level, providing researchers with a more robust discovery experience becomes possible. Penrose Library developed a discovery and access tool called FACTS (Faceting Archival Content Transmission System) that is based on direct access to item-level metadata and digital surrogates. Additionally, item-level records will be harvested and included in the results list in the library catalog's main discovery platform that combines results from not only the library catalog but external resources as well. While moving from the item to a more traditional finding aid or collection guide will be possible, the expectation is that researchers will use the item-centric search function more often than the finding aid for initial discovery and access. Item-based access makes it possible to incorporate archival material into modern discovery and access systems rather than segregating them in finding aid repositories. All of this is possible because the changes made to the library structure and workflow enables granular access to archival collections.

Lessons Learned

While the integrated approach to archives processing is working well at Penrose Library, the transition was not without problems. The process was one of trial and error, with some things working well while others had to be abandoned. This section will try to describe what worked well and what did not work as well so others may benefit from the successes and learn from the failures.

What Worked Well

- The increase in the number of staff performing item-level cataloging resulted in a significant increase in production.
- The quality of the metadata produced was enhanced because of the participation by experienced, trained catalogers. Catalogers are trained in a standards-based approach to metadata production, while archivists typically are not.
- The entire staff who worked on the project was energized by the opportunity to work on something interesting and different. This project extended their skill set beyond the norm.
- The formation of the Archives Policy Group established a regular channel of communication for the professional librarians that was extremely effective when curators and processors needed to be on the same track. The unit and team meetings also advanced the effort toward constant communication. The benefits extend beyond this project by providing an opportunity for staff to engage in library planning and policy development.
- The need to involve other units earlier in the process, most notably Stacks Maintenance and End Processing, was necessary to streamline workflow. These units were invaluable in contributing their expertise and their resources.
- One unanticipated benefit of integration was a noticeable improvement in morale for the catalogers and archival processors. Copy catalogers had an opportunity to perform original cataloging in the collections management system. The catalogers juggled archives with monographic cataloging and learned to fit this new form of cataloging into their everyday work. For the catalogers, varying their routine with new projects and learning new skills was seen as a professional benefit that is rewarded in performance reviews. Archival processors had assistance in producing item-level records at a level of detail that is rare in the archival world.

What Did Not Work As Well

- The collection management system selected was not able to handle authority records as expected. Without "see" and "see also" references, the processors needed to enter two forms of the same name in a record (e.g., the earlier name of a building and the later name).
- Because there was no funding for new positions, new technologies workflow processes had to be developed by temporary hourly staff. The use of temporary staff, usually graduate students, has proved somewhat problematic because of high rates of staff turnover, resulting in the loss of specialized technical skills. This loss meant an increase in training needs.
- A comprehensive staff training plan needs to be in place to develop broader skill sets for staff so that they understand multiple metadata standards. For example, MARC catalogers needed to understand MODS and needed to be able to catalog in MODS or DC. Likewise, staff members who were familiar with collections in an EAD-centric way needed more training so that they could be comfortable breaking collections apart, thus advancing to the goal of not limiting users by provenance.

Conclusions

Libraries and archives are immersed in the trend toward rapidly growing demand for services while facing stagnant or diminished resources. Success in this environment requires innovative management practices that maximize resources while focusing on the needs of current and prospective users. This paper described one approach to improving and extending services without adding staff or significantly increasing the overall operational budget.

The University of Denver's Penrose Library improved access to archival collections by creating a hybrid organization of staff drawn from the previously separate Technical Services and Archive Processing units. Partnering people from two disciplines, each with its own culture and practices, is a significant departure from the way typical library and archival organizations organize their resources. New processes and procedures have been put into place that will borrow from both areas. The result is expanded capabilities and improved access to information for users.

Penrose Library is now able to sustain the archives workflow while meeting the demands of users for a greater amount and more precisely described information about archival collections. Establishing the hybrid unit and implementing techniques of mass generation of metadata increased production. Between January 2008 and January 2009, nine staff members, none of whom worked full time on processing, created more than ten thousand item-level records. Now that the process is fully integrated, productivity levels are expected to increase dramatically.

The effect of the changes has been positive. The quality and quantity of information about the university's archival collections have been vastly improved for the user community. This improved quality and quantity has been accomplished with existing staff and resources. The response from users and other library staff has been universally positive. This reorganization is but one example of the evolution taking place as libraries struggle to keep up with rapidly changing demands for services and products.

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