Building a Large Scale Digitization Program at the Archives of American Art

UNC Chapel Hill March 12, 2009

Moving from Projects to a Program: The Sustainability of Large-Scale Digitization of Manuscript Collections Symposium

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Overview of Presentation

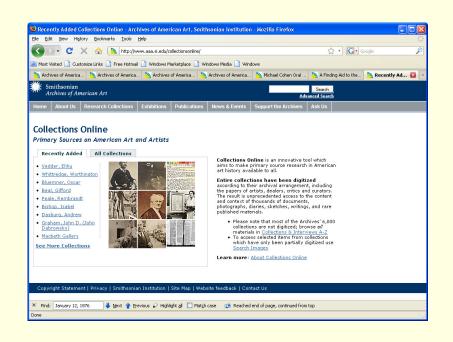
- Introduction to Collections Online
- Background on the Archives' approach to large-scale digitization
- Building the technical infrastructure
- Implementing and sustaining large scale digitization as part of the archival workflow
- Questions and discussion

About the Archives of American Art

- Founded in 1954 in Detroit
- Original goal to locate and microfilm primary resources on American art; not to collect and preserve originals
- Immediately offered donations of papers
- Became part of the Smithsonian in 1970
- AAA currently holds approx. 6,000 collections
 - 15,000 linear ft; 2,000 oral history interviews
- http://www.aaa.si.edu

Collections Online: Large Scale Digitization at the Archives of American Art

http://www.aaa.si.edu/collectionsonline



- Entire collection vs. selected items
- As of March 2009,
 67 collections; 450
 linear ft.; 600,000
 digital files
- Built upon fundamental archival approaches

Fully Digitized Collection Homepage



Collections Online: Basic Approach

- All descriptive metadata derived from the EAD finding aid
- Access to the digitized documents is through folder level access instead of item level access.
- Box and folder listing forms the file structure for the scanning technician to save the digital files, as well as the primary descriptive metadata for discovery of the digital files.
- In house Digital Collections Database's Finding Aid Table contains the XML data; dynamically driven web presentation + image viewer
- Internal web based workflow support

Terra Foundation For American Art Digitization Grant

2005 – Archives of American Art was the first grantee of the Terra Foundation for American Art. Terra's mission:

To help create a worldwide community for American art presentation, research, and interpretation, the foundation is dedicated to facilitating partnerships and communication and to increasing accessibility to needed scholarly resources.

http://www.terraamericanart.org

Terra Grant Proposal

Requested funding to:

- Replace microfilming
- Support team of processing archivists, digital imaging technicians, programmer/web developer
- Purchase scanning equipment
- Digitize and provide access to 106 significant collections
- Total digitized: approx. 1,000 linear feet (150 linear ft. digitized from microfilm)
- http://aaa.si.edu/collections/terra_collections_list.cfm #list

Terra Digitization Grant = Processing Grant

- Collection level digitization requires collections be fully processed and EAD finding aid prior to digitization
- Very few finding aids until early -1990s (used microfilm labels and catalog cards as main source of description and in lieu of finding aids)
- Full retrospective MARC cataloging 1985-1988; laid the collection level foundation for implementing finding aids

Microfilm: The Prequel



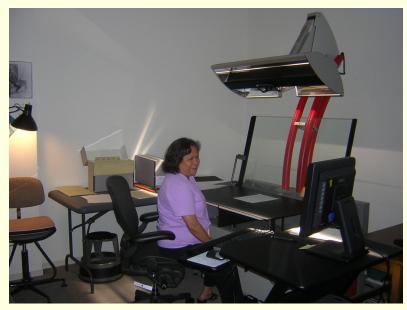
- In-house microfilm operation
- Microfilmed for access
- Opened network of regional centers and adapted traditional interlibrary loan
- Gained understanding of production; able to microfilm approximately 30% of holdings

50+ Years of Microfilming Supports Large-Scale Digitization

Microfilming with Zeutschel microfilm camera 2002

Scanning with Zeutschel 10000Al Scanner 2005

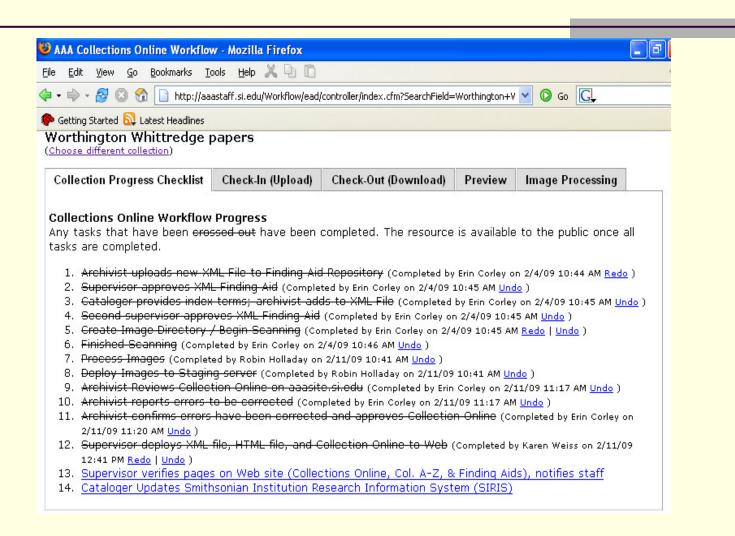




Collection Digitization Workflow

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A A	В	С	D	Е	F	G	Н		
1 Pearmain, Robert	3	0.4	0.4	Y	6		Jayna		
2 Peto, John F.	3	1.6	1.3	Y	4	3	Erin		
3 Pippin, Horace	2	0.2	0.2	Y	2	2	Eric		
14 Pollock, Jackson	1	7	7	Y	2	4	Erin		
95 Porter, Fairfield	1	11.6	8.2	Y	2	2	Megan		
6 Powers, Hiram	4	12.2	11.8	Y	5		Erin		
7 Rand, John Goffe	3	0.2	0.2	Y	4		Jayna		
08 Refreiger, Anton	3	40		Y	4				
9 Rehn (Frank) Galleries		21.8	21.8	Y*	2		NA		
10 Reinhardt, Ad	2	4	3.8	Y	6		Erin		
11 Richards, William Trost	1	5	1.8	N			Erin		
12 Roberts, Mary Fanton	2	3.6	3.8	Y*	2	2	Erin		
13 Rosenak, Chuck	3	17.4	17.4	N			Stephanie		
14 Rossiter, Thomas	2	0.2	0.2	Y	2		Erin		
15 Rush, Olive	1	6.2	5.7	Y	1	1	Megan		
16 Lemoine, Jean re: Morgan Russell	2	0.2	0.1	Y	2	3	Eric		
17 Saarinen, Aline and Eero	2	13.5	13.5	Y	3	2	Jennifer		
18 Sage, Kay	2	0.4	0.4	Y	2	2	Erin		
19 Sargent, John Singer	2	0.2	0.2	Y	2		Erin		
20 Schmidt, Katherine	2	0.2	0.2	Y	3	3	Erin		
21 Seitz, William	3	30		N					
22 Shahn, Ben	5	24.3		Y	6		Stephanie		
23 Sheeler, Charles	3	5	5.2	N			Jenny		
24 Smithson, Robert	5	90		N			_		
25 Soyer, Moses	3	4	3.8	Y	4		Erin		
26 Soyer, Raphael	3	4	3.9	Y	3		Erin		
27 Sternberg, Harry	3	4	3.2	И			Erin		
28 Stillman, James	2	0.2	0.2	N	3		Stephanie		
29 Storrs, John	3	22		N			Erin		
30 Tanner, Henry Ossawa	2	2.4	2.3	Y	2	2	Erin		
31 Taylor, Prentiss		18.4	20.4	Y*	2		NA		
32 Thayer, Abbott Handerson	2	5.5	4.9	Y	3	3	Erin		
33 Vedder, Elihu	1	8.7	9	Y*	2		Jennifer		
34 Vonnoh, Bessie Potter	2	0.8	0.8	Y	2	2	Erin		
35 VoseCalleries ▼ ▶ ▶ Collections / YearlySchedule	│ ⊿ ∕ ProcessingWorkf	27	 tats / WeeklyScan	, N	4				

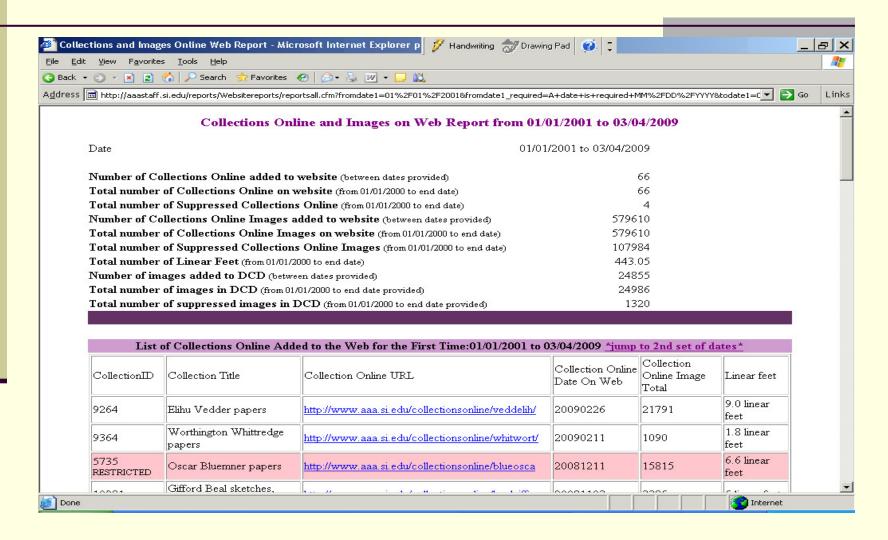
Workflow web interface



Automated Workflows

- Initial uploading of the archivists' XML EAD finding aid into finding aid repository; subsequent check-in and check-out
- Creation of an internal Collection Online "stub" site for the collection
- Generation of the directory structure (based on the EAD XML container listing) for the digital imaging technician to use when scanning
- Batch processing of the TIFF files to create three jpg derivatives and watermarking
- Linking a representative image to each series description for a visually appealing presentation
- Linking of the digital files to the appropriate folder titles
- Generation of a pdf finding aid accessible from the collection site
- Deployment to the final presentation on the web
- Versioning support

Reporting Capabilities



Web 2.0 Enhancements

- Comments
- Volunteers for transcribing letters
- Links to related Smithsonian collections
- Links to related exhibitions, lectures, events

Website presentation

- New awareness of importance of website presentation and interface design
- New Webmaster position
- Constantly analyzing use and feedback
- Implemented usability techniques and conducted usability studies

Feedback and improvements

- Replaced search engine
- More intuitive, user-friendly design
- Image Viewer improved
- Printing option installed
- New stylesheet for non-digitized collections

Next Steps

- Better integrate digital and non-digital collections information
- Integrate fully digitized collections with itemlevel /selected images and other resources
- Utilize EAD for subject, date, and controlled name access
- Integrate digitized audio/video
- Transcriptions
- Explore open-source platform

Building Blocks – Beginning Principles

- The focus was on access to collections (which differentiates our approach from archival management systems)
- The information would reside in a database, and that would drive the display, as opposed to using a stylesheet transformation
- All the data would come from the EAD XML document

Building - Technical Overview

- All programming based on Adobe ColdFusion (with some Java programming)
- All data is stored in a MS SQL Server database – the same database used to store our existing collection and digitization information
- The application is built using an objectoriented approach that organizes the structure of the system based on function (i.e. EAD ingestion, PDF creation, image processing, deployment, etc)

Building – Early Stages

- Simple proof-of-concept in Fall of 2005 that could import portions of a finding aid into a database
- No interface for uploading XML documents
- Lacked support for true complexity or unusual encodings
- Didn't address embedded images
- Served the purpose to prove it could be built in-house

Building – EAD Uploading

- Each EAD XML file is passed through a parser that transforms the XML EAD data into an EAD *Document Object*
- Each portion of the EAD object is transformed into its "real world" equivalent (i.e. descriptive information, series, container listing, etc)
- Most of the descriptive data for the finding aid gets stored in the Finding Aid table, series information is stored in a Series table, container listing information is stored in the Container table

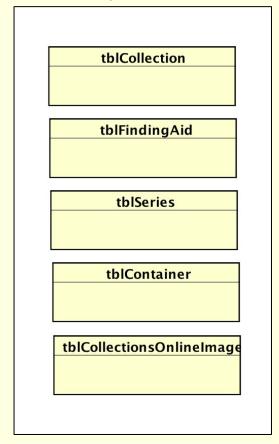
Building – Database Before CO

Digitization as a curatorial/cataloging process (selected images given full descriptive images)

tblCollection
tblltem
tblDigitalResource

Building – Database After CO

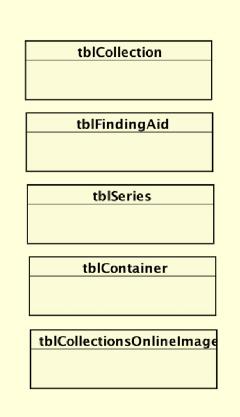
Digitization as an archival process (all images with description only at the container level)



Building - More Database (I)

EAD/Finding Aid

- Designed the database around the archival information, not the EAD encoding
- Needed a lot of discussion to clarify archival terms
- Learned a lot about EAD

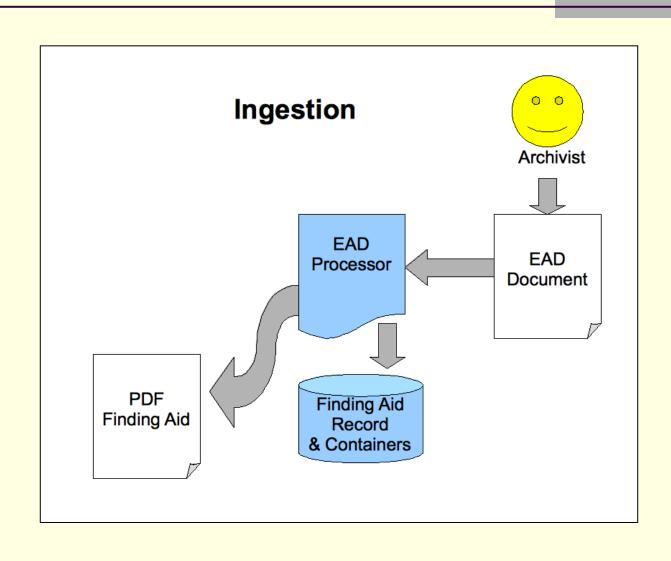


Building - More Database (II)

Images

- Struggled to figure out how to incorporate links to images in the EAD using <dao>, <daogrp>, etc.
- Decided instead to associate images based on container / folder heading data
- Ended up being a very flexible system for image association

Building – EAD "Engine"



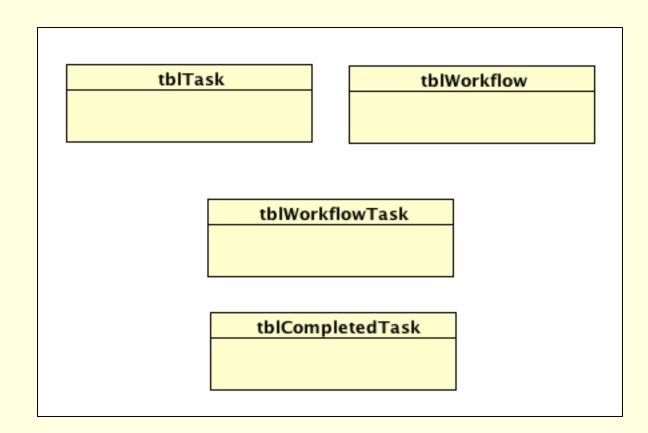
Building – Rethinking Workflows (I)

- The initial interface (Summer 2006) for the system was a simple upload form the programmer had to manually perform all the steps to get the Collection Online publicly available
- Over time, we added preview options, versioning, and finally full web deployment capabilities
- In 2008, we made some significant changes to the system, that turned the EAD tool into a comprehensive web "workflow"

Building – Rethinking Workflows (II)

- Workflow system creates a "checklist" to show the current status of a finding aid
- Users can do, undo, and redo actions
- Records who did what and when
- Checklist items can trigger events, like deployment
- Checklist items can also trigger notifications, e.g. letting a supervisor know that a finding aid is available for review

Building – Workflows in the Database



Building –Workflows for Digitization (I)

- Information gathered from the EAD file describes the box / folder hierarchy for scanning
- This allows for automatically generating nested file structures for scanning
- Scanned images are copied onto Network Attached Storage (NAS) devices before processing



Building –Workflows for Digitization (II)

- Image converting, resizing, and watermarking is batch automated on a collection-wide level
- Database records for digital images are created at the same time the images are processed
- Mistakes happen the workflow supports refreshing metadata for images without processing, or rescanning only a portion of a collection without having to reprocess all of the images

Building – Design (I)

- Again, access was the main goal
- Wanted the site to be visually appealing, and wanted the images to be the stars of the show
- Processing staff very concerned about making sure the context is always clear
- Many in-depth meetings with processing staff and IT staff to get the design right

Building – Design (II): Image Viewer

- Use an "AJAX-style" image viewer, built inhouse
- Inspired by a vendor demo at the SAA conference in 2006
- Originally used for our Search Images interface
- When we migrated it to Collections Online, we used the metaphor of a file folder for browsing multiple images at once

Building – Some Lessons Learned

- Incremental change is best
- You can't anticipate every condition up front the EAD Engine has changed constantly throughout to accommodate variations in finding aids
- Tools should try to mimic the way people already do their work
- Open Source technologies probably would have been better in the long-term, but we worked with the skill-set and technology at hand

Implementation & Sustainability: What does digitization have to do with archival processing??



Rethink Existing Workflows

Challenges

- Greater expectations from users and demand for access to entire collections.
- Shrinking resources.
- How to integrate large scale digitization and still maintain existing services?

Solutions

- Analyze existing workflows.
- Similarities to new workflows? Any overlap? Any redundancies?
- Re-tool and re-purpose existing resources and workflows to fit new program area.

Re-purpose Existing Archival Methodologies

Much easier to re-purpose and enhance existing workflows, rather than invent new ones!

Integrate digitization workflows into archival workflows.

Processing Then



Processing Now

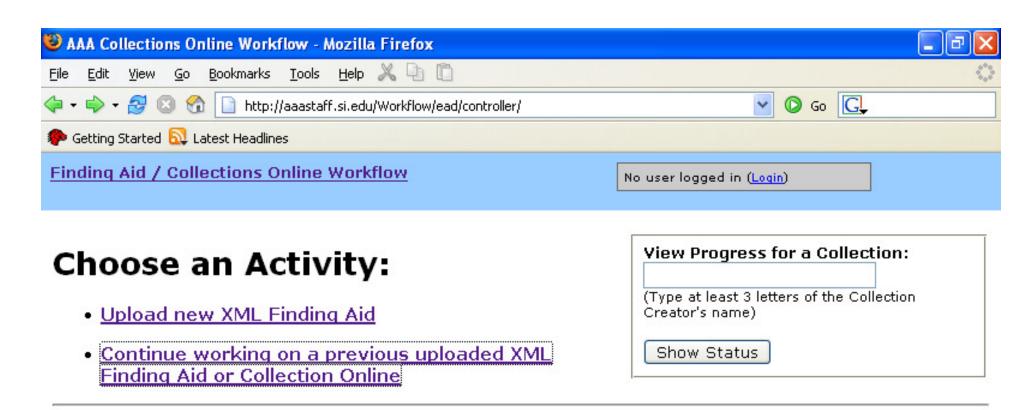


DIGITIZATION AS PROCESSING?

- Standard archival processing workflows of arrangement, description, and EAD encoding can become part of the digitization workflow.
- Rich, descriptive, and contextual metadata can be derived from the structured and tagged data found in EAD finding aids.
- Additional processing activities can also support digitization.

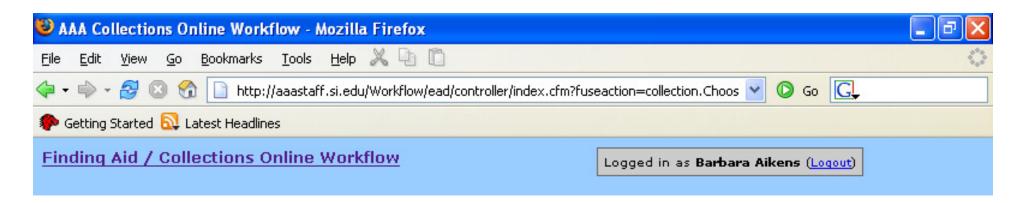
Sample XML Encoding for Collection to be Scanned

```
<c01 level="series">
<did><unitid>Series 1: </unitid><unittitle>Biographical Material, <unitdate>1928-1954, undated
   </unitdate></unittitle>
<physdesc>(Box 1; 8 folders)</physdesc></did>
<scopecontent>
Siographical Material includes various address lists and business cards kept by Calder, his
   passport, notes, a catalog with handwritten prices, and other writings. Also found are a French
   tax document and other ephemera.
</scopecontent>
<c02><did>
<container type="box">1</container>
<container type="folder">1</container>
<unittitle>Address Lists, <unitdate>undated</unitdate></unittitle>
<physdesc></physdesc>
</did></c02>
<c02><did>
<container type="box">1</container>
<container type="folder">2</container>
<unittitle>Annotated Catalog with Prices, <unitdate>1929</unitdate></unittitle>
<physdesc></physdesc>
</did></c02>
```



Process Images for Collections Online

SHOW DEBUGGING | HIDE DEBUGGING

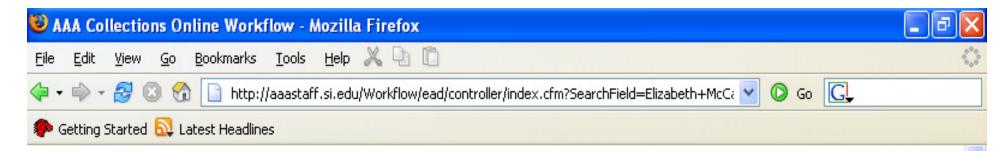


Choose Collection for Uploading a New XML Finding Aid



SHOW DEBUGGING | HIDE DEBUGGING





Elizabeth McCausland papers

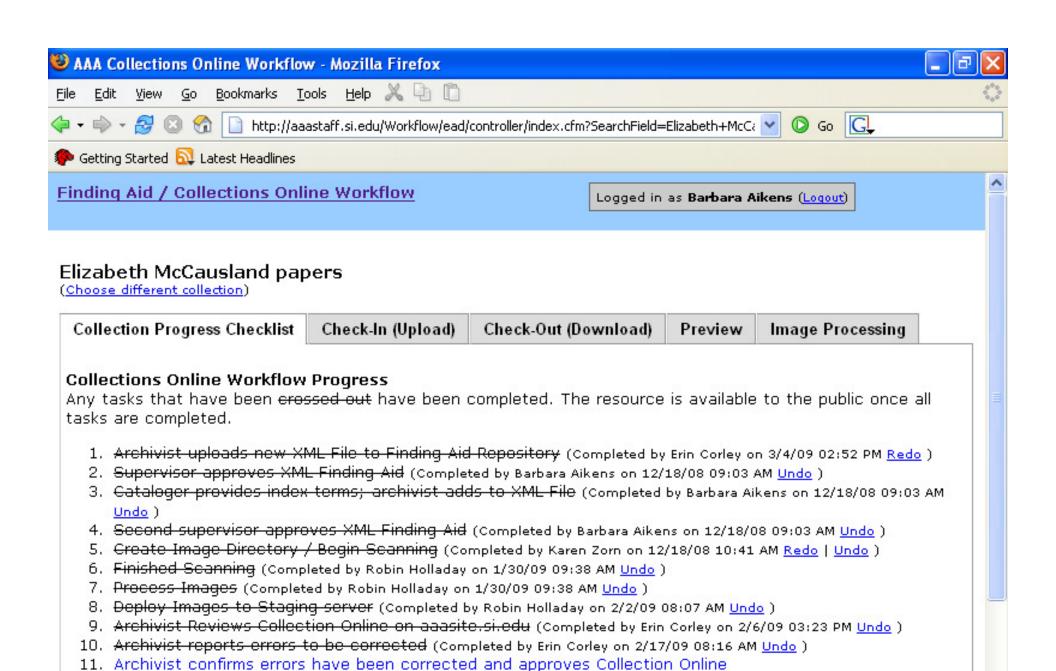
(Choose different collection)

Collection Progress Checklist Check-In (Upload) Check-Out (Download) Preview Image Processing

Collections Online Workflow Progress

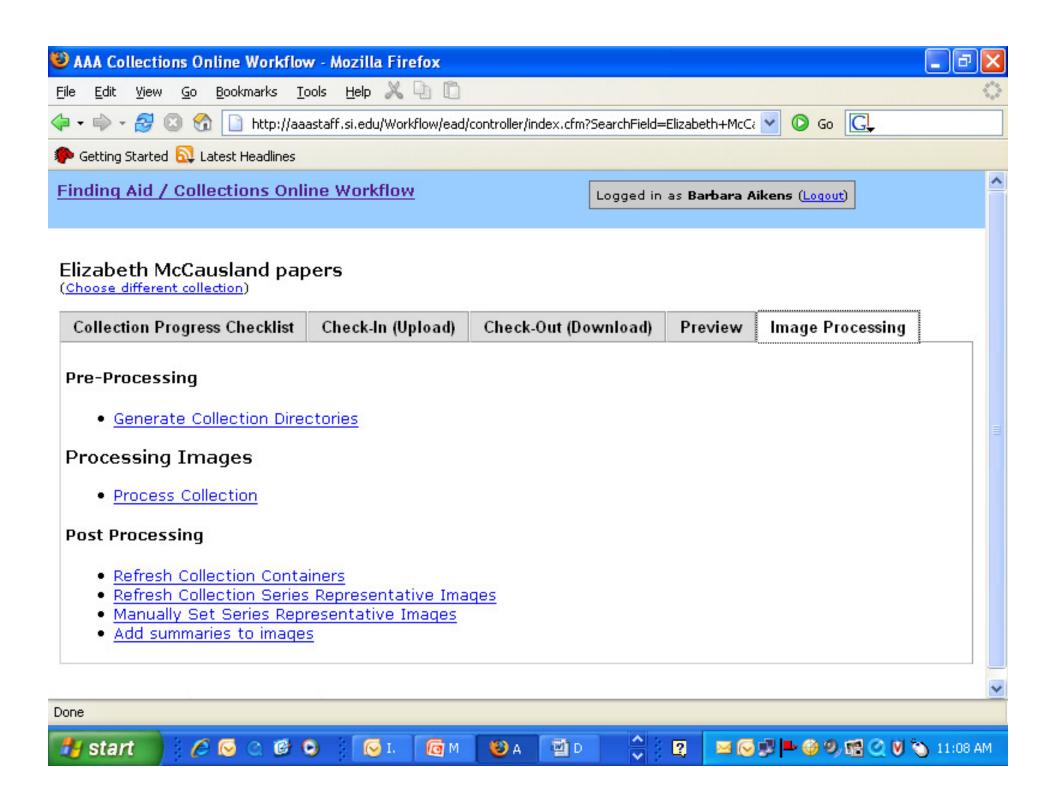
Any tasks that have been crossed out have been completed. The resource is available to the public once all tasks are completed.

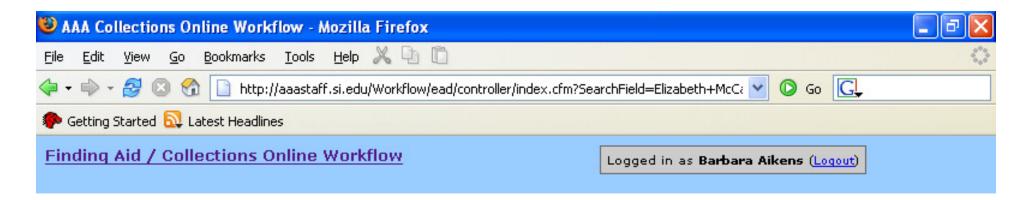
- 1. Archivist uploads new XML File to Finding Aid Repository (Completed by Erin Corley on 3/4/09 02:52 PM Redo)
- 2. Supervisor approves XML Finding Aid (Completed by Barbara Aikens on 12/18/08 09:03 AM Undo)
- Cataloger provides index terms; archivist adds to XML File (Completed by Barbara Aikens on 12/18/08 09:03 AM Undo)
- 4. Second supervisor approves XML Finding Aid (Completed by Barbara Aikens on 12/18/08 09:03 AM Undo)
- 5. Create Image Directory / Begin Scanning (Completed by Karen Zorn on 12/18/08 10:41 AM Redo | Undo)
- 6. Finished Scanning (Completed by Robin Holladay on 1/30/09 09:38 AM Undo)
- 7. Process Images (Completed by Robin Holladay on 1/30/09 09:38 AM Undo)
- 8. Deploy Images to Staging server (Completed by Robin Holladay on 2/2/09 08:07 AM Undo)
- 9. Archivist Reviews Collection Online on aaasite.si.edu (Completed by Erin Corley on 2/6/09 03:23 PM Undo)
- 10. Archivist reports errors to be corrected (Completed by Erin Corley on 2/17/09 08:16 AM Undo)
- 11. Archivist confirms errors have been corrected and approves Collection Online (Completed by Erin Corley on 3/10/09 11:41 AM Undo)
- 12. Supervisor deploys XML file, HTML file, and Collection Online to Web (Completed by Barbara Aikens on 3/10/09 11:55 AM Redo | Undo)
- Supervisor verifies pages on Web site (Collections Online, Col. A=Z, & Finding Aids), notifies staff (Completed by Barbara Aikens on 3/10/09 11:55 AM Undo)



12. Supervisor deploys XML file, HTML file, and Collection Online to Web







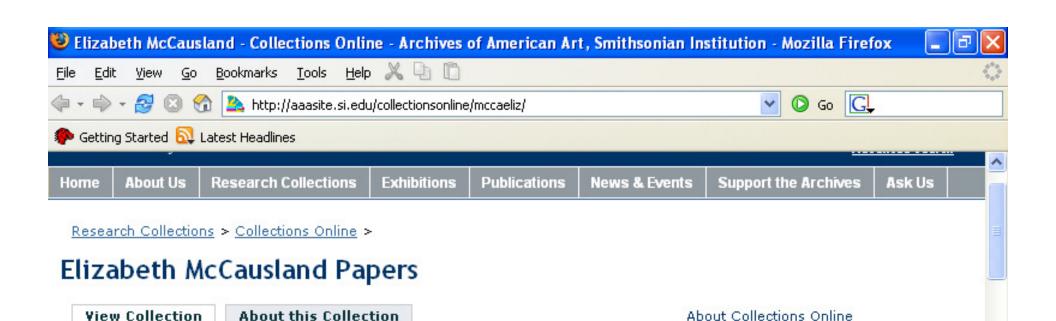
Elizabeth McCausland papers

(Choose different collection)



(SHOW DEBUGGING | HIDE DEBUGGING)







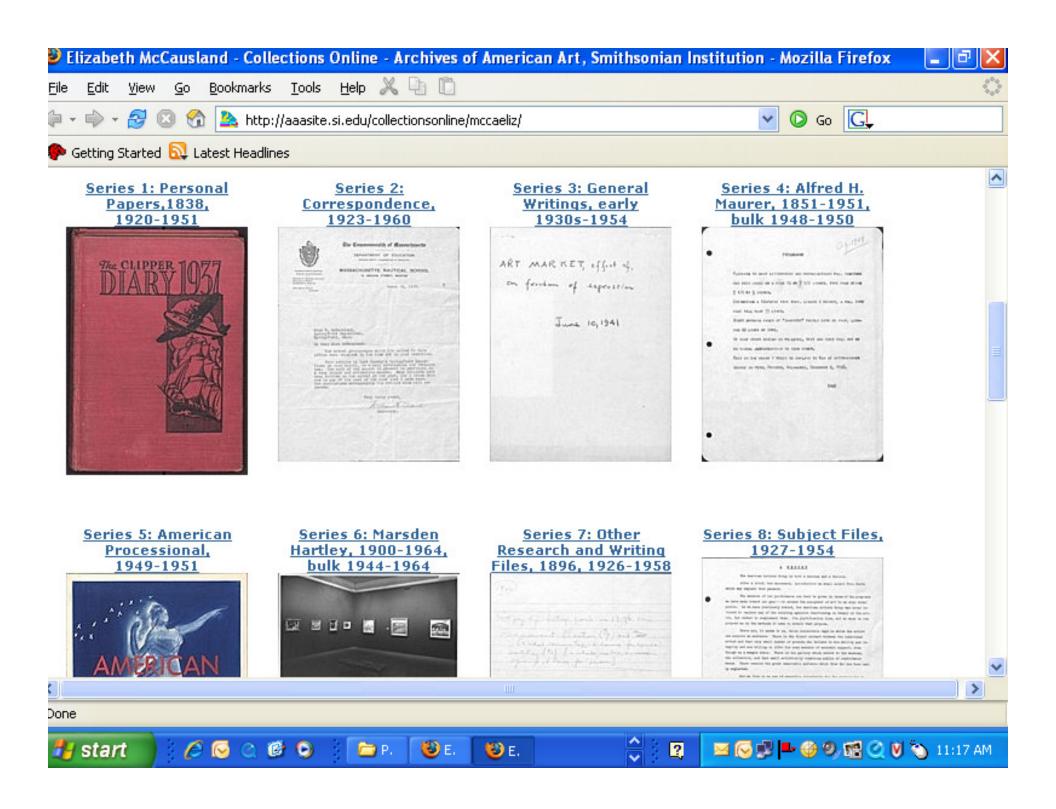
Elizabeth McCausland, ca. 1935

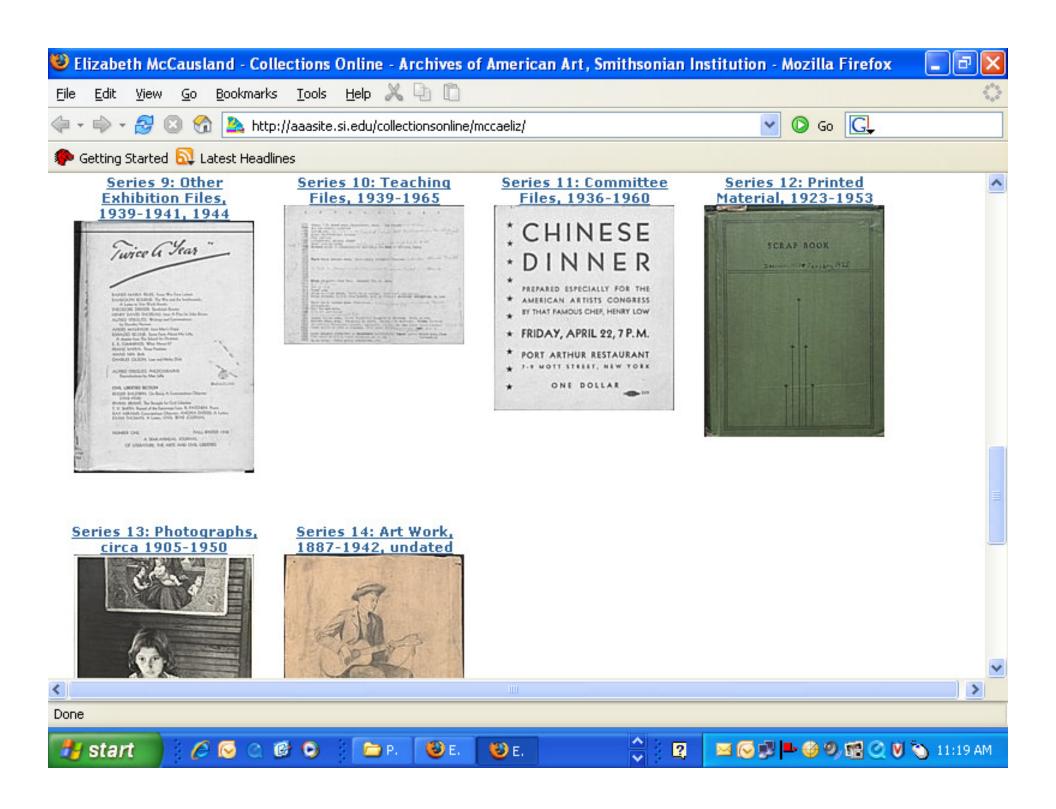
This site provides access to the papers of **Elizabeth McCausland** in the Archives of American Art that were digitized in 2008. The bulk of the papers have been scanned and total 42,751 images.

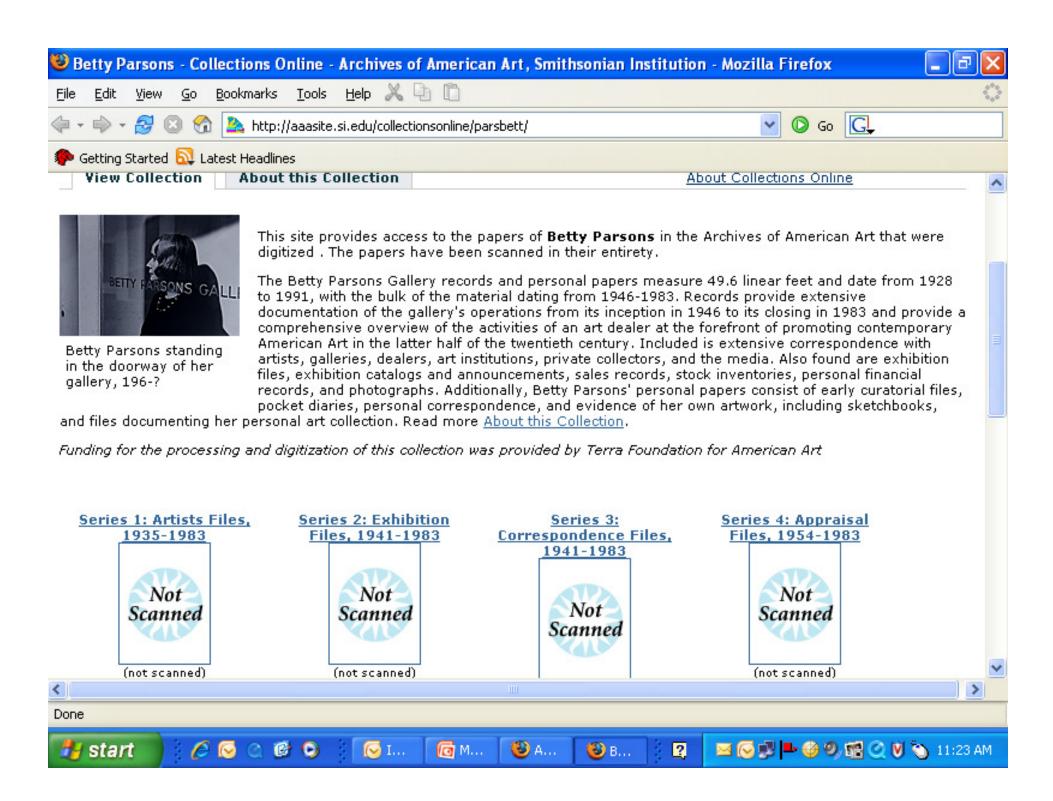
The papers of art critic, writer, and historian Elizabeth McCausland measure 33.9 linear feet and date from 1838 to 1965, with the bulk of the material dating from 1920 to 1960. The collection provides a vast accumulation of research data on various artists and aspects of American art, especially the early American modernists and the Federal Arts Projects. Papers include McCausland's extensive research and writing files, particularly on Marsden Hartley, E. L. Henry, Lewis Hine, George Inness, and Alfred H. Maurer. McCausland's correspondence with artists includes a substantial amount with Arthur Dove and Alfred Stieglitz. Her collaborative work with Berenice Abbott on the Changing New York book and series of photographs is well-documented within the collection. Also found are general writings, subject files, files relating to exhibitions, teaching, and committees, photographs, art work, personal papers, and printed material. Read more About this Collection.

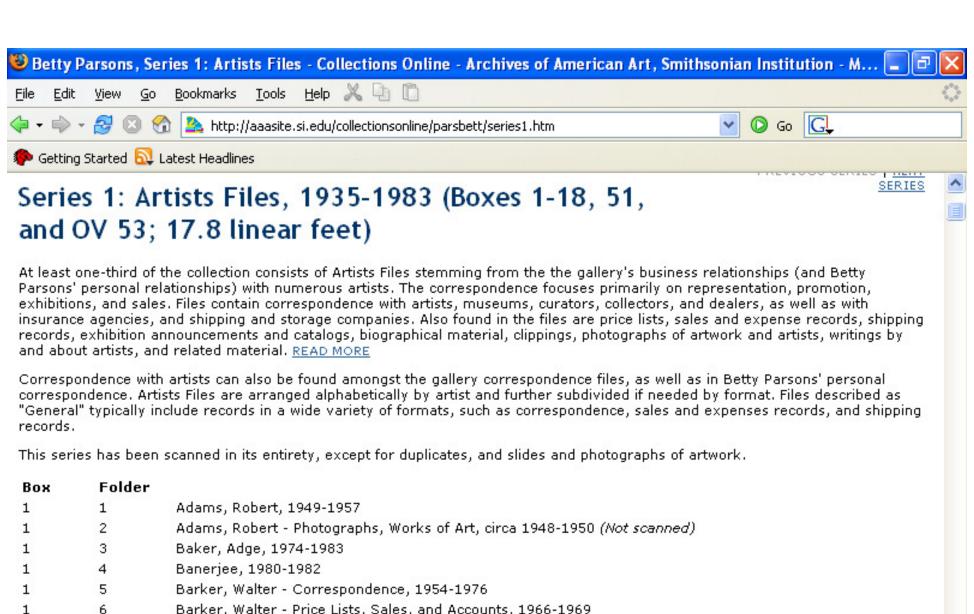
Funding for the processing and digitization of this collection was provided by the Terra Foundation for American Art

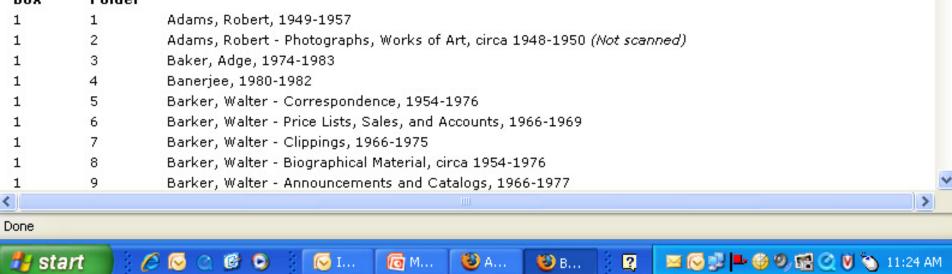












SCANNING INFORMATION WORKSHEET (To be completed by Processing Archivist; after scanning, worksheet to be returned to archivist) •Date: •NAME OF COLLECTION: •NAME OF PROCESSING ARCHIVIST: •Total # of containers ____ : Boxes ___ Hols ___ Pams ___ Sols ___ OVs ___ Other ____ •Location of containers: •Copy of Finding Aid attached?: Yes •Are there oversized materials that can only be scanned by Marv or Amy (circa 2 x 3 feet) No Yes •f yes, approximate # of items OR # of OV containers _____ If yes, please list the Containter#/s and folder #/s ____ ___ ____ _____ •Are there negatives, glass plate negatives, transparencies, slides, etc. that can only be scanned by Marv? No •Yes Have you clearly flagged those items? Container #/s and folder #/s _____ -_ ___ ___ ___ ____ _____ _____ •Are there Removal Notices within the collection? Yes No If Yes, do you want tech to scan the photocopy attached to the notice and rescan original at a later date Yes OR Do you want a "Marv scan" (high res) inserted at a later date? Yes Container #s/ and folder #/s of Removal Notices _____ ____ ____ (continue on reverse if needed) •Are there materials that you have clearly identified to be scanned in color that fall outside of our normal color scanning guidelines? •Yes No •Is there interleaving material in the collection that must be maintained? Yes No Special Instructions: •Date of meeting between Processing Archivist and Scanning Technician: •Initials ____

Collections Online Final Review Checklist

Name of Collection:	
Name of Reviewer:	
Date:	
Confirm/Select representative image in the DCD	
Edit collection Digitization Note in collection record in DCD	
Confirm collection Abstract Note added to collection record in DCD	
Check for errors on the following pages:	
Collection Homepage	
View Collection page	
About the Collection page	
Series pages	
Verify Folder Heading Links/Image Display for each series, and list all errors for	ound in Review Table
Route a photocopy of Review Table to necessary staff	
Date:	
Processing Archivist for errors in XML file	
•Toby for programming issues (Also use Devnotes to report programming errors	online)
•Erin for images needing re-scanning	,
Upload New Finding Aid	
Final approval of reviewer Date:	
Notify Karen and Barb that review is complete.	

Archival Appraisal and Approach

- Use your processing archivists!
- Take advantage of their appraisal skills and archival expertise.
- Allow them to identify privacy and ethical issues, and non-archival materials while processing.

What About MLP?

- Does processing for large scale digitization of entire collections support Minimal Level Processing? No.
- Does integrating processing workflows and archival approaches into the digitization workflow support Minimal Level Digitization or MLD? Yes.