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Expanding the Metadata Librarian Horizon: Reflections on the Metadata Practices in the Web and Digital Repositories

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ALA ALCTS Cataloging and Classification Research Interest Group Meeting



Expanding the Metadata Librarian Horizon: Reflections on the Metadata Practices in the Web and Digital Repositories

Sai Deng, University of Central Florida Libraries

Digital Repository, the Web and KOSs

- *Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files*, by Gail Hodge. Copyright 2000 by the Council on Library and Information Resources.
- **Types of Knowledge Organization Systems (KOSs):**

Term Lists

Authority files,
Glossaries, Dictionaries,
Gazetteers

Classifications and Categories

Subject headings,
Classification schemes, Taxonomies,
Categorization schemes

Relationship Lists

Thesauri, Ontologies,
Semantic networks

- **Linking Digital Library Resources to Related Resources**
- **Making Resources Accessible to Other Communities** (see graph)
- **Implementing Knowledge Organization Systems:**
 - **Making the Link (DL-KOS):** metadata; text analysis

alternate Subject Access
expanding free-text search terms
mapping
multiple schemes
indexing
multilingual
geographical
geospatial
textual
new modes

The background of the slide features a soft-focus image of several hot air balloons in various colors (including purple, yellow, and red) floating over a green field under a clear sky. The balloons are scattered across the upper and middle portions of the frame, with some appearing larger and more detailed than others.

Environmental Scanning of Authority Control in Digital Repositories

- Problems in name authority control in institutional repositories. (Salo, Dorothea. 2009)
- FAO's Survey Open Access Repositories in the Agricultural Domain (2009-2010): Only 40% is using some sort of authority control, especially for Journal titles.
- Survey of ARL-member institutions: Despite the system challenge, half use LCNAF in some capacity (Goslen, Anna S. 2011)
- Western Name Authority File Project: Authority Control for Digital Collections Survey, 2016.



Name Disambiguation: Authority Control & Identity Management

- **Name Disambiguation**

- Manual disambiguation (e.g., LCNAF);
- Author registry site;
- Automatic name disambiguation.

(Elliott, Sarah. Survey of Author Name Disambiguation: 2004-2010)

- **Identities:** Scopus author identifier and profile, VIAF, ISNI, ResearcherID, ORCID, Worldcat identities...

- **Shifting from Authority Control to Identity Management**

(Identity Management or Authority Control? Liss, 2017 ALA Annual)

Engaging User Interfaces Using Author Information


OPEN LIBRARY Browse ▾ My Books ▾ More ▾ All Search Q Log In Sign Up

Good news! Starting February, the grace period for redeeming waitlisted books will increase to 48 hours.

Emily Dickinson

10 December 1830 - 15 May 1886.

Last edited by [Clean Up Bot](#) May 16, 2017 | [History](#) [Edit](#)



Emily Dickinson was an American poet. Born in Amherst, Massachusetts, to a successful family with strong community ties, she lived a mostly introverted and reclusive life. After she studied at the Amherst Academy for seven years in her youth, she spent a short time at Mount Holyoke Female Seminary before returning to her family's house in Amherst. Thought of as an eccentric by the locals, she became known for her penchant for white clothing and her reluctance to greet guests or, later in life, even leave her room. Most of her friendships were therefore carried out by correspondence. ([Source](#).)

160 works [Add another?](#)

Most Editions | [First Published](#) | [Most Recent](#) | Everything | Ebooks | Print Disabled

Collected poems of Emily Dickinson
by Emily Dickinson
149 editions (15 ebooks) - first published in 1890 [Read](#)

Letters of Emily Dickinson
by Emily Dickinson
19 editions (1 ebook) - first published in 1894 [Read](#)

SUBJECTS
[Accessible](#)
[Archive](#) [Wi](#)
[American](#) [i](#)
[Children's](#)
[Fiction](#) [Ma](#)
[American](#) [i](#)
[Literature](#)
[Textual Cri](#)
[Translation](#)
[Frisian](#) [Tra](#)
[Translation](#)
[Spanish](#)

PEOPLE
[Emily Dicki](#)
[Dickinson](#)
[Huntington](#)
[Barnet](#) (19)

[Open Libraries Author Page](#)

WorldCat Identities

Name: [Search](#)

Top 100 Identities

Aristotle Asimov Augustine Austen Bach Balzac Beethoven Bloom Brahms Bush Cervantes Saenschi Charles I Chaucer Chopin Christie Cicero Clinton Columbus Conrad Dante Alighieri Debussy Dickens Disney Dostoyevsky Doyle Jules Verne Dvořák Eliot Faulkner Fielding Franklin Freud Goethe Grimm Christ Joyce Kant Mozart Shakespeare Shaw

Shakespeare, William 1564-1616

Overview

Works: 91,874 works in 313,712 publications in 102 languages and 5,420,712 library holdings

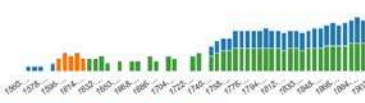
Genres: Drama Film adaptations History Tragedies (Drama) Comedy plays Criticism Interpretation, etc Television adaptations Jomwie works Outlines and synopsi Historical drama

Subject Headings: Dramatists, English--Early modern; Dramatists, English Authors, English

Roles: Author, Biographic antecedent, Other Lyricist Librettist, Honoree, Creator, Contributor, Dedicatee, Composer, Arranger, Illustrator, Originator, Conceptist, Editor, Authorial adaptations or text abridacts, Artist, Narrator, Adapter, Author of introduction, Dubious author, Attributed name, Translator, Alt. Author of dialog, 3001, Performer, two Producers personnel, Compiler, Responsible party, Iain

Classifications: PR2205.A2, B22.33

Publication Timeline



Related Identities

- [Hamlet](#) (Legendary character)
- [Macbeth](#) (King of Scotland active 11th century)
- [Lionel King of England](#) (Soponymy character)
- [Henry IV \(King of England 1392-1413\)](#)
- [Elton John](#) (Musician) (Other: Introduction, Author, Contributor, Editor)
- [Wells, Henry 1836](#) (Other: Editor, Author of introduction, Publishing director, Author, Contributor, C)
- [Carroll, John](#)
- [Henry V \(King of England 1413-1422\)](#)
- [Henry VI \(King of England 1422-1429\)](#)
- [Juliet](#) (Fictional character)

Useful Links

- [Library of Congress Authority File \(English\)](#)
- [Wikia International Authority File](#)
- [Internet Archive Shakespeare](#)
- [iSTWOL](#)

Associated Subjects

[Aging](#) [patriarchy](#) [Ambrosius](#) [Marianus](#) [Archaeology](#) [Literature](#) [Fiction](#) [Brothers](#) [Cleopatra](#) [Queen of Egypt](#) [Conspiracies](#) [Fathers and daughters](#) [Italy](#) [Verona](#) [Jews](#) [Juliet](#) [Fictional](#) [King of England](#) [Legend](#)

Most widely held works about William Shakespeare

- [Tales from Shakespeare](#) by Charles Lamb (book)
- [Hamlet](#) by William Shakespeare (play)
- [Shakespearean tragedy: lectures on Hamlet, Othello, King Lear, Macbeth](#) by A. C Bradley (book)
- [Romeo and Juliet](#) by William Shakespeare (play)
- [The taming of the shrew](#) by William Shakespeare (play)

Most widely held works by William Shakespeare

[The tragedy of Romeo and Juliet](#) by William Shakespeare (book)
5,100 editions published between 1 and 2016 in 57 languages and held by 33,223 WorldCat member libraries worldwide
Presents the original text of Shakespeare's play side by side with a modern version

[The merchant of Venice](#) by William Shakespeare (book)

Alternative names

- Emily Elizabeth Dickinson
- Dickinson, Emily, 1830-1886.
- Emily Dickinson (1830-1886)

[WorldCat Identities](#)

Subjects & Keywords: Debate on the Use of Controlled Vocabularies

- **Information retrieval research** shows that the use of CVs does not improve precision and recall;
- **Indexing researchers** show that CV usage can improve indexing consistency.
- **This study found that: LCSH works best for topical terms; Bio thesaurus ITIS works better for scientific terms.**

(White, Hollie. Examining scientific vocabulary: Mapping controlled vocabularies with free text keywords, 2013.)

- **User search query compared with FAST terms and legacy keywords in the IR: FAST terms match better.**
(Hanrath & Radio. 2016)
- **Researchers assign subject/keyword metadata to their own materials in IRs; Tagging**
- **Advantage of controlled vocabularies lies in linked data?!**
- **The web's impact to library practices and digital repositories: BIBFRAME! What about digital repositories**

What about the Web: Metadata & Text Analysis

- **Web archiving: Capturing E-Publications of Public Documents (CEP); SWISH-E based IGI search engine**
 - **Illinois Subject Tree, Metadata Generator available**; worked as RA;
 - **Author generated metadata is rare, supplement with:**
 - Inclusion of plain-text; extraction of noun phrases; knowledge of the ownership of the website; collection level metadata; classifier program for assigning subject classifications (Jackson, 2005)
 - **Automatic subject heading assignment** for online government publications using a semi-supervised machine learning approach. (Hu, X., Jackson, L., Deng, S. and Zhang, J., 2006.)
- **“Making the link”**: metadata; machine learning, natural language processing...
- **Learn about web technology, web standards**: HTTP, RDF, URIs...
- **Search engine optimization and digital repositories**

What about the Web: IR Working w/ Search Engines

- **Google's ranking algorithm:** PageRank; RankBrain
- **Google Scholar:** "Rank documents the way researchers do"
 - **Author page:** created for authors
 - Name, position, email, research interest, **publications** (title, author, journal name, volume, issue, year), **cited by** (Citations, h-index, i10-index), Co-authors
 - Author has no unique alphanumeric identifiers; use **statistical model** to try to tell authors apart; author mediation
- **IR Content Discovery:** Provide metadata structured according to **Google Scholar guidelines** can greatly improve the indexing ratio of IR content; transform Dublin Core to **High Wire Press tags** and include as meta tags in html (Arlitsch & O'Brien)

What about the Web: Get Metadata to be Understood by Search Engines

- **Schema.org:** a set of extensible schemas that enable webmasters to embed **structured data** to web pages for use by search engines and other applications.
 - Created by search engines (Google, Bing, Yahoo)
 - **Schema.org vocabulary** (entities, actions, relationships)
 - **Extensions**
 - **Bibliographic Extension** (<http://bib.schema.org/>)
 - **Extend Schema.org to represent archives** (<https://archival.github.io/schema-org/>)
- **Schema.org, Libraries & Digital Repositories:** Get metadata to be understood by search engines
 - WorldCat, Europeana, Islandora...

Changing Digital Repositories

Islandora

- Open source. Supports Dublin Core, MODSXML, MADS, METS, PREMIS...
- Authority Control in Islandora 7.x: **Entities Solution Pack**
 - **Entities:** Person, place, event, organization;
 - Entities created in **MADS** or **EAC-CPF**;
 - Build departmental directories and faculty profiles;
 - **Islandora FLVC:** Some institutions populated author and department names (w/ basic authority control)
- **Integrated doi** (batch ingest module), **ORCID**.
- **Subject:** authority can be defined, e.g., <Subject authority="LCSH" ...>
 - [FSU DigiNole case](#): local script to reconcile and add subjects to MODS records (Miguez, 2017)
- **Google Scholar tags** added to citation object's page; **schema.org tags** added to metadata fields

CONTENTdm

- Proprietary. Supports DC, XML.
- **Support multiple controlled name& subject vocabularies and thesauri:**
 - AAT, TGN, TGM, ULAN...
 - LCSH, FAST not included;
 - CVs can only be chosen when first establishing a field; local terms can be added, but not separated from controlled lists; validation enforced

Changing Digital Repositories

Islandora Collection Example

CONTENTdm Collection Example

SORT RESULTS BY:

- Title
- Author
- Date
- ID
- Relevancy
- Date Created

NARROW RESULTS BY:

Topical Subject

- African Americans (96)
- Collectibles (88)
- Black Americana (87)
- Blacks (78)
- African Americans in art (59)

Show more

Collection

- African American Legacy - The Carol Mundy Collection 1794-2010 (121)
- Civil War (34)

Geographic Subject

- United States (25)
- New York (N.Y.) (18)
- New York County (N.Y.) (10)
- Durham (N.C.) (3)
- New York (3)

Show more

Temporal Subject




- Civil War, 1861-1865 (21)
- 19th century (7)
- 1901 (6)
- 1940s (6)

Current Search: [African American Legacy - The Carol Mundy Collection 1794-2010](#) (x)

[View All Items](#)

(1 - 20 of 121) [Collection home](#)

1 2 3 4 5 ... [next >](#) [last >](#)

	Title	Creator	Date Created	Identifier	Format	PURL
	"Deed Child's, I's didn't know you's was dare."	Ingersoll, T. W. (Truman Ward)	1898	DP0015452	Image (JPEG)	http://purl.flvc.org/ucf/fd/DP0015452
	"Deed, I dun eat no chicken".					
						

**Discovery/Display
(MODS granularity)**

Narrow Results by Facets:
Topical/geographic/temporal
subjects, Genre, Type, Creator,
Format...

Digital Collections Home **Browse This Collection** **Civil War Home** [Log in](#) [Favorites](#) [Help](#)

Search [within results](#) [Search](#) [Advanced Search](#)

Add or remove other collections to your search:

- Civil War
- African American Legacy - The Carol Mundy Collection
- Central Florida Memory
- Dick Pope Sr. Institute for Tourism Studies
- Digital Library of the Caribbean

[Show 12 more](#)

Narrow your search by:

Subject




- united states -- history -- civil war, 1861-1865 (20)
- new york (n.y.) -- newspapers (10)
- new york county (n.y.) -- newspapers (10)
- african americans -- portraits (3)
- black women (3)
- civil war -- pictorial works (3)
- periodical illustrations (3)
- women, black, in art (3)
- african americans -- pictorial works (2)
- american literature -- 19th century -- periodicals (2)

[more](#)

Browsing items in: Civil War

Sort by: **Title** [Display Options](#) [Save to favorites](#) 1 2

Display: 20

Thumbnail	Title	Date Original	Description	Collection
	1859 Florida Court Indictment	1859-01-21	1859 Florida Court Indictment reads: "To J. N. Butler, We recommend you to appear before the Judge of our Circuit Court for the County of Jackson, in the Western Circuit of the State aforesaid, at the Court House in Marianna, on the first Monday in...	Civil War
	"Traveling in state" - General Burnside road from New B...			
	A narrative of the campaign in the Va...			

Discovery/Display

Display by title, date, description, subject;

Facets: Subject, Date...

Changing Digital Repositories

Islandora

- **Linked Data:** Effort in mapping MODS to RDF. Fedora 4, LDP implementation; Islandora CLAW
- **Cases:**
 - [TU Delft repository example: Colonial Architecture](#) (Delftdora module, Fedora 3)
 - [A Lightweight Structured Data Implementation Using JSON-LD and Schema.org for Digital Repository](#) (Mak et al.)
- **My own experience:**
 - Data mapping, transformation, Notepad++ text editor. [Metadata migration to Islandora: Is there an easy way?](#) 2014.
 - Standards implementation. [Applying RDA to CONTENTdm & Islandora.](#) 2015.

CONTENTdm

- **Linked data experiments:**
 - Not inside the system, but work on exported data.
 - **UIUC.** Challenges of Mapping Digital Collections Metadata to Schema.org (Lampron et. al. 2016.)
 - **OCLC& CONTENTdm.** Metadata Refinery, transforms CONTENTdm metadata to Linked Data, 2016. Not yet scalable. (Washburn et al. 2016.)
- **My own experience:**
 - Used a mixture of terms from id.loc.gov (text only) and local.
 - Reconcile certain fields (e.g., advisor) in exported datasheet against LC authorities in OpenRefine.

Changing Digital Repositories

DSpace

- Open source. Supports Qualified DC, can export to METS, MODS...
- DSpace 6.x, XMLUI (Manakin), JSPUI.
- **Metadata Registry:** Default registry (DC, DCTERMS); Local Metadata Registry.
- **Authority control & Identity Management**
 - Can be enabled in configuration;
 - CVs in form fields; in separate XML files;
 - Authority key; ORCID integration.
- dc.subjects doesn't enforce control; supports some specific vocabularies (e.g., SRSC); has dc.subject.lcsh field
- Usage analysis via plug-in, SEO

Digital Commons

- Proprietary. Supports qualified DC.
- **Authority Control & Identity Management**
 - **Author:** author names entered as they appear in email or source; include name, email and institution
 - **Author merge tool**
 - **DOI and ORCID integration**
- **Subject:** built-in Discipline thesaurus; only has Keywords field, can request to add subject field, but not included in browsing/ facets
- **Some features:** Impact & Analytics map, improved SEO

Changing Digital Repositories

DSpace Author Page Example

- **HKUST IR** (Powered by VuFind and DSpace)

Scholar profile example

Scopus, Google Scholar, ResearchID, ORCID; publication timeline, publication list, bibliometric...



Co-authorship graph

Digital Commons Author & Record Examples

- **UCF Author/contributor Linked Data**

SelectedWorks Author Page
Author bio, follow/contact; list of works, by category, feed...

“Linked data” fields

Contributor (Linked data)
[Yousef, Yousef A.](#)
University of Central Florida College of Engineering
Collection (Linked data)
[Retrospective Theses and Dissertations](#)

Changing Digital Repositories

DSpace

- **DSpace Linked Data support spans all three Layers:** “the storage layer with a **triple store**, the business logic with classes to **convert** stored contents into RDF, and the application layer with a module to **publish** RDF serializations.” (Donohue, DSpace documentation)
- **Discovery/Display:**
 - **Browse by** communities, collections, date, authors, titles, **subjects**, type;
 - Author, subject, date **facets**.
- **My past experience at WSU** (in interface, data repurposing, transformation and transfer):
 - [Building Collections in IRs from External Data Sources](#)
 - [Enhancing workflow through batch import from Excel to DSpace; Customized mapping and metadata transfer from DSpace/SOAR to OCLC and Voyager](#)
 - [Building New Interfaces for Shocker Open Access Repository](#)

Digital Commons

- **Linked data:** Allow to add extra fields for links (not RDF)
- **Discovery/Display:**
 - **Browse by** collections, **disciplines**, authors;
 - Discipline, keyword, year, type **facets**;
 - **Exhibit-like presentation**;
 - Included in **Bepress’ networks** (e.g., Digital Humanities Commons).
- **Our experience:**
 - Include links (id.loc.gov, viaf.org) in added additional fields for author, advisor, department names etc.;
 - [Preparing for linked data in digital repositories.](#)
 - Data (in spreadsheet) cleanup and reconciliation using OpenRefine;
 - Verifying author names (challenging): Google, university and departmental websites, publications, CV...

Changing Digital Repositories

Omeka

- Open source web publishing platform. Supports Dublin Core. Can export METS, dc-rdf, json etc.
- **Subject** field not enforced; has additional tag feature.
- **Browse/Discovery:**
 - Terms can be accessed via clicking tags in the record;
 - Browse by tag (word cloud);
 - Browse items/collections/exhibits;
 - Collection tree
- **Plug-ins:**
 - Import from Dropbox, YouTube; CSV batch import
 - [LC Suggest \(plug-in\)](#)
 - [User Profiles \(plug-in\)](#)
 - [Ozmeka \(plug-ins\)/ Omeka linked data](#)
- My own experience: [CALASYS](#) (as a CALASYS Group member)



The screenshot shows the CALASYS website. At the top, there is a header with the text "CALASYS - CALA Academic Resource & Repository System" and Chinese characters "華人圖書館員協會 - 學術資源庫". Below the header is a navigation menu with links: "About", "Browse Items", "Browse Collections", "Help / FAQ", "Browse Exhibits", "Collection Tree", "Contact Us", and "Contribute an". The main content area is titled "BROWSE ITEMS" and includes a search bar with the text "Browse All", "Browse by Tag", and "Search items". Below the search bar, there is a list of items, including "Article Photos Video Event Brochure Poster Report Discovery System Services and Tools Online Tutorial Distance Learning Tagging OPAC", "Biotrame Information Organization Linked Data Presentation Data/reference Survey report Chinese immigrants East Asian Publications Chinese Studies Library Services Academic Libraries T. H. Tsien", and "Chinese American Librarians Association CALA".

**Browse
by Tag**

Various Approaches in Authority Control/Identity Management/Discovery etc.

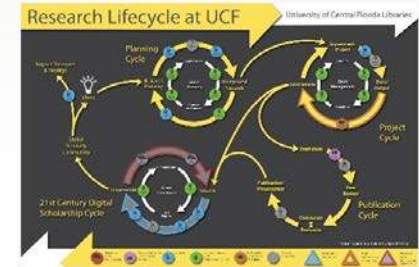
- **System approach:** Develop new functionality; develop extensions and plug-ins; collaboration
- **Institutional approach:**
 - e.g., Name Authority Control: An institutional repository approach (Waugh, 2013)
- **Regional approach,** e.g., [Western Name Authority File Project](#)
- **National and International approach,** e.g., WorldCat Identities, VIAF, ISNI...
- **Individual reflection:**
 - Being a cataloger means to be not only a guardian of principles and standards but also a knowledge organizer, collaborator, researcher and an innovative and curious-minded lifelong learner (Diao & Hernandez. 2014)

Some Discussions

- **A *Very Basic Understanding of the Big Environment (Broaden your horizon)**
 - How to organize knowledge and information? How does search work in various platforms and the web?
 - **Knowledge Organization Systems (KOSs); Every DL uses one or more KOS.**
 - **Primary applications:** Indexing, browsing, searching DLs
 - **Other applications:** Automatic annotation/indexing of contents/documents, automatic classification of contents/documents, developing Concept Space and ontologies for enhanced browsing/navigation, interoperability among DLs, linked data creation, publication venue authority control, visualization for browsing...
 - **Additional applications:** Automatic query expansion, Search Term Recommendation (STR) System (Sunny, TISS. Application of Traditional Knowledge Organization Systems in Digital Libraries: A Study on Current Status. Tata Institute of Social Sciences)
- **Understanding of Metadata and the Profession**
 - The Evolving Role of the Metadata Librarian: Competencies Found in Job Descriptions (Han& Hswe, 2010)
 - Metadata standards, schemas, vocabularies... “What then?”
 - While users and authors can contribute metadata, do Metadata Librarians have values to add? What are those values?

In addition...

- **Metadata Services is defined as:** Providing metadata consultation and assistance to university faculty and students in their research lifecycle.
- [The Research Lifecycle at UCF](#)
 - Sub-cycles: the Planning cycle, the Project cycle, the Publication cycle, the 21st century digital scholarship cycle
 - Dataset Metadata and Metadata Services
- **Challenges and Opportunities for Metadata Services**
 - [Connecting the dots: Defining scholarly services in a research lifecycle model](#), 2013.
 - [Diving into the University Knowledge Community](#), 2017.



The background of the slide features a soft-focus photograph of several hot air balloons in flight over a green field. The balloons are in various colors, including shades of orange, purple, and blue. The sky is a pale, hazy blue, suggesting a clear morning. The overall aesthetic is bright and optimistic.

Final Thoughts

- **Open mindset**
- **Learn new knowledge, information and skills**
 - Possible areas: vocabulary management, document encoding, data processing;
 - Learn some basic skills in working with data: XML, XSLT, RDF...
 - Learn to use tools, e.g., semi-automatic metadata editing tools: MarcEdit, Notepad++, OpenRefine...
 - Think out of the box: what can we learn from the web practices?
- **Be flexible and collaborative**
 - Flexible in working with different systems;
 - Collaborate with people beyond cataloging/metadata, Technical Services, your own library and the library field.

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Thank you!

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