The Progress of BIBFRAME

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THE PROGRESS OF BIBFRAME

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OLAC-MOUG 2014
"A/V Cataloging at the Crossroads"
October 23-26, 2014
Kansas City, Missouri
Please interrupt me!

- Comments, questions, and discussions are welcome and encouraged at any time
What is BIBFRAME?

- Breaks apart the bibliographic record
- Resources are described with an assembly of metadata pieces which can be mixed and matched as needed
- The relationships between these pieces pulls them together into a coherent display for the end user
BIBFRAME Development

- 2012 – Data model released to public
- 2013 – Early experimenters
  - Vocabulary testing, transformation tools
- 2014 – Implementation Testbed
  - Stable RDF vocabulary, refined transformation, draft specifications, input tools
- 2015 (planned) – Pilot project
  - Profile creation and editing, search and display
Software Coming Soon

Tools have been made/are being made/will be made by

- Library of Congress
- Zepheira
- Traditional ILS vendors
- Individual libraries
- e.g.: Stanford, Cornell, and Harvard Universities are working on a suite of open source software tools

Source:
Bibliographic Exchange Environment

- BIBFRAME is a data model for resource description
- Just one small piece of the bibliographic information exchange environment, which also includes:
  - Content standards
  - Input standards
  - Interchange methodologies
  - Trust/provenance frameworks
  - Policies
  - Fiscal incentives
  - Much more
Why is it needed?

- MARC is not suitable for the Semantic Web
  - Text strings are difficult for machines to interpret
- RDA and FRBR are designed to work with a linked data system
  - Each element contains only one piece of information and one type of information ("atomistic")
Extracted machine-understandable, machine-actionable data from MARC records to identify FRBR Works

Found data scattered over several different text MARC fields, with variant forms and spellings

Source:
YOU CAN GET THAT DONE BY TOMORROW, RIGHT?
Linked Data

- Structured data for the Semantic Web
- Term "linked data" coined by Tim Berners-Lee in 2006
- Linked data concepts date back to the 1960s, with early systems that included
  - Hierarchical views
  - Relationships between terms
  - Rudimentary hyperlinks
How library data could look in Google search results

Now:

Predictably Irrational: The Hidden Forces That ... - Barnes & Noble
www.barnesandnoble.com/.../predictably-irrational-dan-... Barnes & Noble
★★★★☆ Rating: 4 - 177 votes - $9.91 to $11.49
“PREDICTABLY IRRATIONAL is a charmer-filled with clever experiments, engaging ideas, and delightful anecdotes. Dan Ariely is a wise and amusing guide to ...

In a fully-realized BIBFRAME environment:

Predictably Irrational: The Hidden Forces That ...- DCPL
catalog.dclibrary.org/.../Record/u682456... DC Public Library
Call Number: 330.01 A698
Special Location: SE Library, NE library, MLK...
“PREDICTABLY IRRATIONAL is a charmer-filled with clever experiments, engaging ideas, and delightful anecdotes. Dan Ariely is a wise and amusing guide to ...

Images created by Kevin Ford. Appeared in:
http://www.loc.gov/pcc/bibframe/BIBFRAME%20paper%2020140501.docx
No Library Data in Google's Knowledge Graph. Could BIBFRAME Change That?

The Official Web Site of Ella Fitzgerald
www.ellafitzgerald.com
The Official Web Site of Ella Fitzgerald with links to her biography, fast facts, pictures and much more.

Ella Fitzgerald - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Ella_Fitzgerald
Ella Jane Fitzgerald (April 25, 1917 – June 15, 1996) was an American jazz vocalist with a vocal range spanning three octaves (D3 to D6). Often referred to ... Discography - Great American Songbook - Ray Brown - Ray Brown, Jr.

Ella Fitzgerald discography - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Ella_Fitzgerald_discography
This article presents the discography of the jazz singer Ella Fitzgerald, covering ...

Ella Fitzgerald - Biography - Singer - Biography.com
www.biography.com/people/ella-fitzgerald-9296210
First Lady of Song Ella Fitzgerald is one of the most beloved jazz singers of all time. She became the first African-American woman to win a Grammy Award in ...

Ella Fitzgerald - Free listening, videos, concerts, stats and ...
www.last.fm/music/Ella+Fitzgerald
Watch videos & listen free to Ella Fitzgerald: Dream a Little Dream of Me, Cheek to Cheek & more, plus 83 pictures. Ella Jane Fitzgerald (April 25, 1917 – June ...

Ella Fitzgerald - IMDb
www.imdb.com/name/nm0280228/
Ella Fitzgerald, Soundtrack: The Master. On Saturday, June 15th, 1996, an era in jazz singing came to an end, with the death of Ella Fitzgerald at her home in ...

Ella Fitzgerald - PBS
www.pbs.org/.../artist_id_fitzgerald_ella.htm
Ella Fitzgerald was orphaned in early childhood and moved to New York to attend an orphanage school in Yorkers. In 1934, she was discovered in an amateur ...

Ella Fitzgerald | Facebook

Ella Fitzgerald
Vocalist

Listen now

Google Play
Listen with free trial

Rhapsody
Listen with free trial

Spotify
Listen for free

Ella Jane Fitzgerald was an American jazz vocalist with a vocal range spanning three octaves. Often referred to as the "First Lady of Song," the "Queen of Jazz" and "Lady Ella," she was noted for her ...

Wikipedia

Born: April 25, 1917, Newport News, VA
Children: Ray Brown, Jr.
Spouse: Ray Brown (m. 1947–1953), Benny Kornegay (m. 1941–1943)

Songs

Ella
Dream a Little Dream of Me
Linked Data Triples

RDF

subject—predicate—object

FRBR

entity—relationship—attribute

BIBFRAME

resource—relationship—property
"The Missouri-Kansas Conflict: Civil War on the Western Border"

http://www.civilwaronthewesternborder.org/content/relationship-viewer

- Site designed with FRBR, RDA, BIBFRAME, and Drupal
- Relationship viewer shows data triples in action

Source:
BIBFRAME Linked Data Possibilities

- One-click reciprocal linking?
- Elements added by non-library organizations and patrons?
- Resolution to the latest-entry versus successive-entry debate for serials?
- Better collaborative, distributed cataloging?
MARC/XML vs. BIBFRAME RDF/XML

Author of a book, expressed in MARC/XML:

```xml
<marcxml:datafield tag="100" ind1="1" ind2=" ">
  <marcxml:subfield code="a">Erman, Adolf,</marcxml:subfield>
  <marcxml:subfield code="d">1854-1937.</marcxml:subfield>
</marcxml:datafield>
```

The same author, expressed in BIBFRAME RDF/XML:

```xml
<bf:creator>
  <bf:Person>
    <bf:label>Erman, Adolf, 1854-1937.</bf:label>
    <bf:authorizedAccessPoint>Erman, Adolf, 1854-1937.</bf:authorizedAccessPoint>
    <bf:hasAuthority>
      <madsrdf:Authority xmlns:madsrdf="http://www.loc.gov/mads/rdf/v1#">
        <madsrdf:authoritativeLabel>Erman, Adolf, 1854-1937.</madsrdf:authoritativeLabel>
      </madsrdf:Authority>
    </bf:hasAuthority>
  </bf:Person>
</bf:creator>
```

Example: BIBID 4541231 (The literature of the ancient Egyptians)  
BIBFRAME Comparison Tool: [http://bibframe.org/tools/compare/]
BIBFRAME Core Classes

- **Creative Work**
  - Properties applicable to all editions and formats

- **Instance**
  - Properties specific to one edition or format

- **Authority**
  - Agent, place, temporal, or topic

- **Annotation**
  - Summaries, reviews, holding information, etc.
Source:
Work - Class

Resource reflecting a conceptual essence of the cataloging resource.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>Related To</th>
</tr>
</thead>
<tbody>
<tr>
<td>accompaniedBy</td>
<td>Accompanied by / Resource that has an accompanying resource which adds to it</td>
<td>relatedTo</td>
</tr>
<tr>
<td>accompanies</td>
<td>Accompanies / Resource that adds to or is issued with the described resource</td>
<td>relatedTo</td>
</tr>
<tr>
<td>expressionOf</td>
<td>Expression of / Expression has a related work. For use to connect Works under FRBR/RDA rules.</td>
<td>relatedTo, Work</td>
</tr>
<tr>
<td>hasExpression</td>
<td>Expressed as / Work has a related expression. For use to connect Works under FRBR/RDA rules.</td>
<td>relatedTo, Work</td>
</tr>
<tr>
<td>hasInstance</td>
<td>Instance of Work / Work has a related Instance/manifestation. For use to connect Works to Instances in the BIBFRAME structure.</td>
<td>relatedTo, Instance</td>
</tr>
</tbody>
</table>

Composite screen shot from: [http://bibframe.org/vocab/Work.html](http://bibframe.org/vocab/Work.html)
# BIBFRAME Resource Types Discussion Paper

25 June 2013

<table>
<thead>
<tr>
<th>RDA content type value</th>
<th>BIBFRAME Work subclass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Language material</td>
</tr>
<tr>
<td>Tactile text</td>
<td>Language material + Tactile</td>
</tr>
<tr>
<td>Performed music</td>
<td>Audio with subtype: musical</td>
</tr>
<tr>
<td>Sounds</td>
<td>Audio with subtype: nonmusical + sounds</td>
</tr>
<tr>
<td>Spoken word</td>
<td>Audio with subtype: nonmusical + spoken word</td>
</tr>
<tr>
<td>2-dimensional moving image</td>
<td>Moving image with subtype: Two dimensional</td>
</tr>
<tr>
<td>3-dimensional moving image</td>
<td>Moving image with subtype: Three dimensional</td>
</tr>
<tr>
<td>Still image</td>
<td>Still image</td>
</tr>
</tbody>
</table>

Not a one-to-one correspondence with RDA content types

## Instance - Class

Resource reflecting an individual, material embodiment of the Work.

### Properties used with Instance: Resource reflecting an individual, material embodiment of the Work.

<table>
<thead>
<tr>
<th>Property</th>
<th>Definition</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>manufacture</td>
<td>Manufacture event / Information relating to manufacture of an instance.</td>
<td></td>
</tr>
<tr>
<td>matrixNumber</td>
<td>Audio matrix number / Matrix number from the master from which a specific sound recording was pressed.</td>
<td>identifier</td>
</tr>
<tr>
<td>mediaCategory</td>
<td>Media type / Categorization reflecting the general type of intermediation device required to view, play, run, etc., the content of a resource.</td>
<td>Category</td>
</tr>
<tr>
<td>modeOfIssuance</td>
<td>Mode of issuance / Categorization reflecting whether a resource is issued in one or more parts, the way it is updated, and its intended termination.</td>
<td>Literal</td>
</tr>
<tr>
<td>musicKey</td>
<td>Music Key / Pitch and mode for music.</td>
<td>Literal</td>
</tr>
<tr>
<td>musicMedium</td>
<td>Music medium / Instrumental, vocal, and/or other medium of performance for which a musical resource was originally conceived, written or performed.</td>
<td>URL</td>
</tr>
</tbody>
</table>
**Likely need to mix and match Instance types**

**e.g.: Electronic + Monograph**

<table>
<thead>
<tr>
<th>Property</th>
<th>Label / Description</th>
<th>Subclass Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archival</td>
<td>Archival controlled / Resource that is controlled archivally.</td>
<td>Instance</td>
</tr>
<tr>
<td>Collection</td>
<td>Collection / Aggregation of resources, generally gathered together artificially.</td>
<td>Instance</td>
</tr>
<tr>
<td>Electronic</td>
<td>Electronic / Resources organically created, accumulated, and/or used by a person, family, or organization in the course of conduct of affairs and preserved because of their continuing value.</td>
<td>Instance</td>
</tr>
<tr>
<td>Integrating</td>
<td>Integrating / Cataloging resource that is added to or changed by means of updates that do not remain discrete but are integrated into the whole.</td>
<td>Instance</td>
</tr>
<tr>
<td>Manuscript</td>
<td>Manuscript / Resource that is written in handwriting or typescript. These are generally unique resources.</td>
<td>Instance</td>
</tr>
<tr>
<td>Monograph</td>
<td>Single unit / Single unit cataloging resource.</td>
<td>Instance</td>
</tr>
<tr>
<td>MultipartMonograph</td>
<td>Multiple units / Multiple unit cataloging resource that is complete or intended to be completed within a finite number of parts.</td>
<td>Instance</td>
</tr>
<tr>
<td>Print</td>
<td>Printed / Resource that is printed.</td>
<td>Instance</td>
</tr>
<tr>
<td>Serial</td>
<td>Serial / Multiple unit cataloging resource issued in successive parts that has no predetermined conclusion.</td>
<td>Instance</td>
</tr>
</tbody>
</table>

Screen shot from: [http://bibframe.org/vocab/Instance.html](http://bibframe.org/vocab/Instance.html)
Authority - Class

Resource reflecting key authority concepts that have defined relationships reflected in the Work and Instance.

More specific Authority types

Resort a column by clicking the column header. Select a linked element below to learn more about that property or class.

<table>
<thead>
<tr>
<th>Property</th>
<th>Label / Description</th>
<th>Subclass Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>Agent / Entity having a role in a resource (Person, Organization, etc.).</td>
<td>Authority</td>
</tr>
<tr>
<td>Place</td>
<td>Place / Controlled term for a geographic area.</td>
<td>Authority</td>
</tr>
<tr>
<td>Temporal</td>
<td>Temporal Concept / Controlled term for a chronological period.</td>
<td>Authority</td>
</tr>
<tr>
<td>Topic</td>
<td>Topic / Controlled term for a subject/topic.</td>
<td>Authority</td>
</tr>
</tbody>
</table>
Lightweight Abstraction Layer

- Can serve as a sort of local authority layer
- May connect to controlled vocabularies from many sources
- Easy to create a new URI for authority concepts lacking existing URIs
- Linkback to notify the Library of Congress of a proposed new authority
Annotation - Class

Resource that asserts additional information about other BIBFRAME resource.

More specific Annotation types

Resort a column by clicking the column header. Select a linked element below to learn more about that property or class.

<table>
<thead>
<tr>
<th>Property</th>
<th>Label / Description</th>
<th>Subclass Of</th>
</tr>
</thead>
<tbody>
<tr>
<td>CoverArt</td>
<td>Cover Art Annotation / Link to a cover illustration of an instance.</td>
<td>Annotation</td>
</tr>
<tr>
<td>HeldMaterial</td>
<td>Material held / Summary holdings information.</td>
<td>Annotation</td>
</tr>
<tr>
<td>Review</td>
<td>Review Annotation / Critique of a resource, such as a book review, analysis, etc.</td>
<td>Annotation</td>
</tr>
<tr>
<td>Summary</td>
<td>Summary Annotation / Description of the content of a resource, such as an abstract, summary, etc.</td>
<td>Annotation</td>
</tr>
<tr>
<td>TableOfContents</td>
<td>Table of Contents Annotation / Table of Contents information for a resource</td>
<td>Annotation</td>
</tr>
</tbody>
</table>

Composite screen shot from: [http://bibframe.org/vocab/Annotation.html](http://bibframe.org/vocab/Annotation.html)
Holdings Information

- HeldMaterial is a subclass of Annotation
  - Properties apply to every copy of an Instance owned by the library
- HeldItem is a subclass of HeldMaterial
  - Unique, copy-specific information
  - Here is the FRBR Item entity, an annotation of an annotation in BIBFRAME
Is it bad that BIBFRAME doesn't strictly follow RDA/FRBR?

- Strict adherence to FRBR's Work-Expression hierarchy can be problematic.
- "Work" means different things to different communities.
- FRBR isn't optimal for audiovisual resources, for which work and primary expression are not easily separable.
- FRBR isn't optimal for serials, which must be described at journal level and article level.
Development Path of Linked Open Data in Libraries, Archives, and Museums

- Phase 1: define specifications, data models, focus on metadata quality (example: BIBFRAME)
- Phase 2: aggregate resources, harmonize, distribution, implement user services (ex: DPLA)
- Phase 3: increase scale, wider distribution, enhanced data models, merge into commercial or open-source info sector (ex: Europeana)
- Phase 4? No one is there yet.

Source:
BIBFRAME and Schema.org

- Not rivals, but complements
- Schema.org extension vocabulary by OCLC and W3C Schema Bib Extend Community Group
- OCLC working to align their Schema.org vocabulary with BIBFRAME
  - Schema.org for discovery
  - BIBFRAME for curation and management

Source:
BIBFRAME AV Modeling Study

- Comparative analysis of FRBR, RDA, OLAC Moving Image Work-Level Records Task Force Recommendations, and many other standards
- No existing content model met all needs, but most met some
- "BIBFRAME . . . has the potential to offer a logical but flexible data model, and a strong core set of vocabularies that are extensible as needed."

Source:
BIBFRAME AV Modeling Study

- Common needs of LC's MBRS Moving Image Section and Recorded Sound Section:
  - Option for event-centric content
  - Collections of different types of content

- MBRS Content Creation Domain Model
  - Work or Event
  - Instance created via Affix Process

Source:
AV Modeling Study: Content Data Description Model

Source:
BIBFRAME AV Modeling Study

Recommendations include:

- Add bf:Event as an optional core class
- Superclass bf:Content encompassing bf:Work and bf:Event
- Clarify multiple types for bf:Work and bf:Instance
- Technical metadata for preservation
- Sequencing

Source:
Two Official BIBFRAME Websites

Bibliographic Framework Initiative
http://www.loc.gov/bibframe/
General information, reports, webcasts, etc.

BIBFRAME.ORG Technical Site
http://bibframe.org/
Vocabulary and tools
Demonstrations

http://bibframe.org/demos/

Sample collections from the early experimenters
Test Suite Harness

http://bibframe.org/tools/tests/

Potential solutions for specific challenges
MARC to BIBFRAME Comparison Service

http://bibframe.org/tools/compare/

Enter a Library of Congress BIBID to see MARC/XML and BIBFRAME for same record
MARC to BIBFRAME Transformation Service

http://bibframe.org/tools/transform/start

Sample MARC/XML records available on the Library of Congress website:

http://www.loc.gov/standards/marcxml/Sandburg/sandburg.xml
http://www.loc.gov/standards/marcxml/xml/collection.xml
MarcEdit by Terry Reese

http://marcedit.reeset.net/

MARCNext includes BibFrame Testbed

Convert a source file of MARC records to BIBFRAME RDF/XML
BIBFRAME Editor

http://bibframe.org/tools/editor/

Code written in JavaScript to work on any browser
BIBFRAME Scribe

http://editor.bibframe.zepheira.com/static/

Zepheira's prototype BIBFRAME editor
Zepheira's new BIBFRAME project
To publish bibliographic records from participant libraries as BIBFRAME resources
To track visibility of those resources in search engines
To adjust linking and publishing to improve said visibility in search engines
THE FUTURE
OF CATALOGING
CONSTRUCTION AHEAD
HAVE A NICE DAY

http://atom.smasher.org/highway/


University of California, Davis, University Library and Zepheira, LLC. "BIBFLOW: An IMLS Project of the UC Davis Library and Zepheira." *BIBFLOW*. http://www.lib.ucdavis.edu/bibflow/about/


Thank You!

Q&A and Discussion

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