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")
OLAC Work-Centric Moving Image Discovery Interface Prototype (2008)

http://olac-demo.herokuapp.com/

- 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:
http://journal.code4lib.org/articles/775
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:

<table>
<thead>
<tr>
<th>Predictably Irrational: The Hidden Forces That ... - Barnes &amp; Noble</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.barnesandnoble.com/.../predictably-irrational-dan-">www.barnesandnoble.com/.../predictably-irrational-dan-</a>...</td>
</tr>
<tr>
<td>Barnes &amp; Noble ▼</td>
</tr>
<tr>
<td>★★★★★ Rating: 4 - 177 votes - $9.91 to $11.49</td>
</tr>
<tr>
<td>“PREDICTABLY IRRATIONAL is a charmer-filled with clever experiments, engaging ideas, and delightful anecdotes. Dan Ariely is a wise and amusing guide to ...”</td>
</tr>
</tbody>
</table>

In a fully-realized BIBFRAME environment:

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

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/](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.

## Properties used with Work:

<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>
### 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>

## Instance - Class

Resource reflecting an individual, material embodiment of the Work.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>manufacture</td>
<td>Manufacture event / Information relating to manufacture of an instance.</td>
<td>provider</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>

Composite screen shot from: [http://bibframe.org/vocab/Instance.html](http://bibframe.org/vocab/Instance.html)
<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
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>

Composite screen shot from: [http://bibframe.org/vocab/Authority.html](http://bibframe.org/vocab/Authority.html)
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>
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:
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:
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
Libhub Initiative

http://www.libhub.org/

- 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/


Bibliography (page 3 of 3)


Thank You!

Q&A and Discussion

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