The Challenges and Opportunities for Cataloging in Today's Changing Metadata Environment.

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CRISIS

危機

Opportunity in Danger
Our Challenges --

• Large size of collection with many different types of resources.
• Systems in a constant state of evolution.
• So many metadata schema.
• Authority Control or Access Control
• Complexity and non-interoperability.
AACR2, MARC21, LCSH

• You might already have been thinking about this….
  – In the new Internet environment, are these tools enough and suitable: MARC, AACR, LCSH? Do all resources need the same kind of treatment?
  – How about increasing metadata schema?
  – Does the MARC format have a place in this new information age?
  – Are they dynamic enough to describe and document the current information explosion of formats, containers, data, hypertext, and media as well as future technological information packages?
  – Can LCSH be interoperable across disciplines and in various knowledge, discovery and access environments including OPAC?
Must MARC Die?

- Field and record size limitations
- Virtually unused outside of libraries
- Restricted range of scripts supported
- Limited ability to convey hierarchical & complex relationships, attributes
- No ability to embed related objects (e.g., book cover GIF)
- Cannot be directly processed by widely-used web applications
No! New Life through XML—foundation of metadata standards

- Interoperability
- Data longevity
- Data persistence
- Future proofing
- Repurposing data
- Extensibility
- Universal character set
- Internationalization
<book>
  <title>The Mother Tongue: English and How it Got that Way</title>
  <author>
    <aufirst>Bill</aufirst>
    <aulast>Bryson</aulast>
  </author>
  <date>
    <day>19</day>
    <month>December</month>
  </date>
  <year>2004</year>
  <comment>Amusing, somewhat interesting, but not great. It took me forever to finish.</comment>
  <code>nonfiction</code>
</book>

<book>
  <title>Marie Antoinette</title>
  <author>
    <aufirst>Manual and Odette</aufirst>
    <aulast>Kornroff</aulast>
  </author>
  <date>
    <day>4</day>
    <month>December</month>
  </date>
  <year>2004</year>
  <comment>So so. A young adult biography of the famous queen.</comment>
  <code>nonfiction</code>
  <code>younadult</code>
</book>

<book>
  <title>The Belton Estate</title>
  <author>
    <aufirst>Anthony</aufirst>
    <aulast>Trollope</aulast>
  </author>
  <date>
    <day>25</day>
    <month>November</month>
  </date>
</book>
When the opportunities come are you willing to give it a try?

• Metadata Schema
• FRBR (Reference Model)
• FAST (Faceted Application of Subject Terminology)
• RDA (AACR3)
Some Types of Metadata

• Descriptive metadata
• Administrative metadata
  – Technical metadata
  – Preservation metadata
  – Rights metadata
• Structural metadata
Metadata Standards

- Text Encoding Initiative (TEI)
- Visual Resources Association (VRA)
- Global Information Locator Service (GILS)
- Online Information Exchange (ONIX)
Metadata Standards cont.

- Content Standards for Digital Geospatial Metadata (CSDGM) aka FGDC
- Data Documentation Initiative (DDI)
- Metadata for Images in XML (MIX)
- Metadata Object Description Schema (MODS)
- Dublin Core (DC)
- MARC
<table>
<thead>
<tr>
<th>Type</th>
<th>Attributes</th>
<th>Schema</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibliographic metadata</td>
<td>Bibliographic description and identification of the resources: titles, authors, indexing terms, classification codes, abstracts, surrogates, etc.</td>
<td>MARC, METS, MODS, EAD, TEI, DC, ONIX</td>
</tr>
<tr>
<td>Administrative metadata</td>
<td>Information about the resource: information about acquisition process and costs, rights, date of creation, origin, authenticity, etc.</td>
<td>METS, TEI</td>
</tr>
<tr>
<td>Structural metadata</td>
<td>Data providing for a page-turning function; data allowing linkage to encoded text embedded image, audio or video files</td>
<td>METS</td>
</tr>
</tbody>
</table>
MARCXML

• LC has developed a MARC XML schema, stylesheets, and tools
• The schema allows representation of a complete MARC record in XML
  – Conversion without data loss.
• Will support new transformations to new uses of MARC data
  – MARC to MARCXML to Dublin Core and MODS
• http://xml.coverpages.org/xmlmarc.html
MARCXML Architecture
New railroad map of the state of Maryland, Delaware, and the District of Columbia. Compiled and drawn by Frank Arnold Gray.

Philadelphia, 1876.

Col. map 39 x 62 cm.
<metadata>
  <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/">
    <dc:title>New railroad map of the state of Maryland, Delaware, and the District of Columbia. Compiled and drawn by Frank Arnold Gray.</dc:title>
    <dc:creator>Gray, Frank Arnold.</dc:creator>
    <dc:subject>Railroads--Middle Atlantic States--Maps.</dc:subject>
    <dc:description>Shows drainage, canals, stations, cities and towns, counties, canals, roads completed, narrow gauge and proposed railroads with names of lines. Includes list of railroads.</dc:description>
    <dc:description>Scale 1:633,600.</dc:description>
    <dc:description>LC Railroad maps, 230</dc:description>
    <dc:description>Description derived from published bibliography.</dc:description>
    <dc:publisher>Philadelphia</dc:publisher>
    <dc:date>1876</dc:date>
    <dc:type>image</dc:type>
    <dc:type>map</dc:type>
    <dc:type>cartographic</dc:type>
  </oai_dc:dc>
</metadata>
Metadata Object Description Schema (MODS)

- <metadata>
  - <mods xmlns="http://www.loc.gov/mods/v3"
    xmlns:xlink="http://www.w3.org/1999/xlink"
    xsi:schemaLocation="http://www.loc.gov/mods/v3
    http://www.loc.gov/standards/mods/v3/mods-3-0.xsd">
    - <titleInfo>
      - <title>New railroad map of the state of Maryland, Delaware, and the District of Columbia. Compiled and drawn by Frank Arnold Gray</title>
      - </titleInfo>
      - <name type="personal">
        - <namePart>Gray, Frank Arnold</namePart>
        - <role>
          - <roleTerm authority="marcrelator" type="text">creator</roleTerm>
          - </role>
        - </name>
      - <typeOfResource>cartographic</typeOfResource>
      - <genre authority="marc">map</genre>
      - <originInfo>
New railroad map of the state of Maryland, Delaware, and the District of Columbia. Compiled and drawn by Frank Arnold Gray.

Gray, Frank Arnold.

CREATED/PUBLISHED
Philadelphia, 1876.

SUMMARY
Shows drainage, canals, stations, cities and towns, counties, canals, roads completed, narrow gauge and proposed railroads with names of lines. Includes list of railroads.

NOTES
Scale 1:633,600.
Reference: LC Railroad maps, 230
Description derived from published bibliography.
## Example of Crosswalk

<table>
<thead>
<tr>
<th>MARC</th>
<th>DC</th>
<th>MODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Creator</td>
<td><code>&lt;name&gt;&lt;namePart&gt;</code></td>
</tr>
<tr>
<td>700</td>
<td>Contributor</td>
<td><code>&lt;namePart&gt; with type=&quot;date“</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>&lt;namePart&gt; with type=“term of address”</code></td>
</tr>
<tr>
<td>$d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>245</td>
<td>Title</td>
<td><code>&lt;titleInfo&gt;</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>&lt;subTitle&gt;</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>&lt;partNumber&gt;</code></td>
</tr>
<tr>
<td></td>
<td></td>
<td><code>&lt;PartName&gt;</code></td>
</tr>
</tbody>
</table>
Projects using MODS

• New Jersey Digital Highway
• AV Prototype Project (Library of Congress)
  – Digital preservation for audio and video
  – Uses METS and MODS with focus on metadata
• University of California press
  – Using METS with MODS for freely available ebooks
• California Digital Library
  – Digitization of archival materials
• Other METS projects as descMD section
• MusicAustralia
  – MODS as exchange format between National Library of Australia and ScreenSoundAustralia
Metadata Framework/Container

• Metadata Encoding and Transmission Standard (METS)

Developed by the Digital Library Federation (DLF) and Library of Congress

• A standard that provides a method to encapsulate all the information about an object – whether digital or not

(Tennant, May 15, 2004)
METS Schema
Star spangled banner / John Stafford Smith [sheet music]

Title
Star spangled banner [sheet music]

Composer
[Smith, John Stafford]

Lyricist
[Key, Francis Scott]

Place of Publication/Creation
Philadelphia, PA

Publisher
A. Bacon and Co.

Date Issued
[ca. 1815]

Physical Description
2 p., 12 1/4 x 9 3/4 in.

Sheet Music Views:
- Brief Display
- Page Turner
- Contact Sheet
- Full Description

Display XML: MODS Bibliographic Data | METS Object Description
MODS and METS schema-1

<?xml version="1.0" encoding="UTF-8" ?>

- <mets:mets OBJID="loc.natlib.ihas.100000006"
xsi:schemaLocation="http://www.loc.gov/METS/
http://www.loc.gov/standards/mets/mets.xsd
http://www.loc.gov/mods/v3
http://www.loc.gov/standards/mods/v3/mods-3-0.xsd"
PROFILE="lc:sheetMusic"
xmlns:mets="http://www.loc.gov/METS/"
xmlns:lc="http://www.loc.gov/mets/profiles"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xlink="http://www.w3.org/1999/xlink"
xmlns:rights="http://www.loc.gov/rights/"
xmlns:mods="http://www.loc.gov/mods/v3"
xmlns:sm="http://www.loc.gov/mets/profiles(sheetMusic)"

- <mets:dmdSec ID="DMD">
- <mets:mdWrap ID="MODS1" MDTYPE="MODS">
- <mets:xmlData>
- <mods:mods version="3.2" ID="MODS"
xsi:schemaLocation="http://www.loc.gov/mods/v3
http://www.loc.gov/standards/mods/v3/mods-3-2.xsd">
<mods:titleInfo>
  <mods:title>Star spangled banner</mods:title>
</mods:titleInfo>

<mods:name>
  <mods:namePart>[Smith, John Stafford]</mods:namePart>
  <mods:role>
    <mods:roleTerm type="text" authority="marcrelator">Composer</mods:roleTerm>
  </mods:role>
</mods:name>

<mods:name>
  <mods:namePart>[Key, Francis Scott]</mods:namePart>
  <mods:role>
    <mods:roleTerm type="text" authority="marcrelator">Lyricist</mods:roleTerm>
  </mods:role>
</mods:name>
<mods:typeOfResource>notated music</mods:typeOfResource>
<mods:originInfo>
<mods:place>
<mods:placeTerm type="text">Philadelphia, PA</mods:placeTerm>
</mods:place>
<mods:publisher>A. Bacon and Co.</mods:publisher>
<mods:dateIssued>[ca. 1815]</mods:dateIssued>
<mods:issuance>monographic</mods:issuance>
</mods:originInfo>
<mods:physicalDescription>
<mods:form authority="ihas">sheet music</mods:form>
<mods:reformattingQuality>access</mods:reformattingQuality>
<mods:extent>2 p., 12 1/4 x 9 3/4 in.</mods:extent>
<mods:digitalOrigin>reformatted digital</mods:digitalOrigin>
</mods:physicalDescription>
<mods:targetAudience authority="marctarget">adult</mods:targetAudience>
- <mods:subject authority="lcsh">
  <mods:topic>National songs--United States</mods:topic>
</mods:subject>
- <mods:subject authority="lcsh">
  <mods:topic>Patriotic music--United States</mods:topic>
</mods:subject>
<mods:classification>M1630.3.S7M2Case</mods:classification>
<mods:identifier type="local" displayLabel="IHASDigitalID">100000006</mods:identifier>
<mods:identifier type="local" displayLabel="IHASMODSID">714</mods:identifier>
- <mods:location>
  <mods:physicalLocation>Music Division</mods:physicalLocation>
  <mods:physicalLocation authority="marcorg">DLC</mods:physicalLocation>
</mods:location>
MODS & METS Schema-5

- <mods:recordInfo>
  <mods:recordContentSource>IHAS</mods:recordContentSource>
  <mods:recordChangeDate encoding="marc">05053116</mods:recordChangeDate>
  <mods:recordIdentifier source="IHAS">loc.natlib.ihas.100000006</mods:recordIdentifier>
</mods:recordInfo>
</mods:mods>
</mets:xmlData>
</mets:mdWrap>
</mets:dmdSec>
MODS & METS Schema-6

- <mets:fileSec>
-   <mets:fileGrp USE="MASTER">
-     <mets:file MIMETYPE="image/tiff" GROUPID="G1" ID="FN10024">
-     </mets:file>
-     <mets:file MIMETYPE="image/tiff" GROUPID="G2" ID="FN10029">
-     </mets:file>
-   </mets:fileGrp>
MODS & METS Schema-7

- <mets:fileGrp USE="SERVICE">
  - <mets:file MIMETYPE="image/jpeg" GROUPID="G1" ID="FN10057">
    <mets:FLocat LOCTYPE="URL" xlink:href="http://lcweb2.loc.gov/natlib/ihas/service/ssbanner/10000006/0001v.jpg" />
  </mets:file>
  - <mets:file MIMETYPE="image/jpeg" GROUPID="G2" ID="FN1007A">
    <mets:FLocat LOCTYPE="URL" xlink:href="http://lcweb2.loc.gov/natlib/ihas/service/ssbanner/10000006/0002v.jpg" />
  </mets:file>
</mets:fileGrp>
</mets:fileSec>

- <mets:structMap>
  - <mets:div TYPE="sm:sheetMusicObject" DMDID="MODS1">
    - <mets:div TYPE="sm:sheetMusicScore">
      - <mets:div TYPE="sm:page">
        <mets:fptr FILEID="FN10024" />
        <mets:fptr FILEID="FN10057" />
      </mets:div>
    </mets:div>
  </mets:div>
</mets:structMap>
Title Information
Title: Stream of Praise [sheet music]
Name:Corporate
   Name Part: Stream of Praise Music Ministry (Musical group)
Role
   Role Term:Code: prf
Type of Resource: sheet music

Origin Information
Place
   Place Term:Code (MARC Country Code): cau
Place
   Place Term:Text: El Monte, CA
Publisher: Stream of Praise Music, Inc
Date Issued: p1996
Date Issued (encoding="marc"): 1996
Issuance: monographic

Language
Language Term:Code (ISO 639-2B): chi
Blake Wedding Collection / Sandy Chen-Blake [sheet music]

Title
Stream of Praise [sheet music]

Performers
Stream of Praise Music Ministry

Place of Publication/Creation
El Monte, CA

Publisher
Stream of Praise Music, Inc.

Date issued
1996

Physical Description
2 p., 10 x 13 in.

Sheet Music Views:
- Brief Display
- Page Turner
有一位神

在這美麗的時刻
我們相聚在一起
神的愛臨到我們
神的靈充滿這地
當我們進入祂的門
當妳我進入祂的院
讓讚美從四處響起
讓音符在空中飛舞
讓我們的心可和開開
讓音符從空中飛舞
讓音符從空中飛舞
讓音符從空中飛舞

有一位神，有權能創造宇宙萬物
有一座神，有權能審判一切罪惡
有一位神，保守我們的軟弱
有一位神，我們的神
有一位神，我們的神
有一位神，我們的神

有一位神，我們的神
有一位神，我們的神
有一位神，我們的神

有一位神，我們的神
有一位神，我們的神
有一位神，我們的神

有一位神，我們的神
有一位神，我們的神
有一位神，我們的神
FRBR (Functional Requirement for Bibliographic Records)

• A study by IFLA (International Federation of Library Associations) of the full range of functions performed by the bibliographic record
• The report provides a framework for the nature of and uses for bibliographic records
• A conceptual model that can be used as a means to meet user needs and expectations
• http://www.loc.gov/cds/downloads/FRBR.PDF#search='frbr'
FRBR Entity Levels-Monograph

Work:
- The Novel
- The Movie

Expression:
- Orig. Text
- Transl.
- Critical Edition
- Orig. Version

Manifestation:
- Paper
- PDF
- HTML
FRBRized Public Display

- Author: Aesop
- Work: Aesop's fables. Selections
  - Form: text - English
    - Title: Fabulae Aesopicae selectae; or, Select fables of Aesop: with an English translation more literal than any yet extant, designed for the reader instruction of beginners in the Latin tongue.
    - Statement of responsibility: By H. Clarke.
    - Imprint: Printed for Thomas & Thomas by D. Newhall, 1802.
    - Physical Description: 155 p., 18 cm.

- Author: Aesop
- Work: Aesop's fables. 1673
  - Form: text - English
    - Title: The fables of Aesop.
    - Statement of responsibility: paraphrased in verse, adorned with sculpture, and illustrated with annotations by John Ogilby.
    - Imprint: Printed by the author, 1673.
    - Physical Description: 59, [5], 244 p., [8] leaves of plates : ill.

- Edition
  - Title: Aesop's fables
  - Statement of responsibility: Art adapted from the works of Gustav Doré and Thomas Bewick.
  - Physical Description: 95 p. : ill. ; 29 cm.
  - ISBN: 0706411161

- Edition: 1st printing.
  - Title: The fables of Aesop
  - Statement of responsibility: Selected and illustrated by David Levine ; translated by Patrick and Justina Gregory.
Journal Indexing Analytics

The Work record for the Journal, Brigham Young University Studies.
Journal Indexing Analytics

The expanded tree showing three Expressions: One for the title itself and the other for individual issues.
The tree expanded to show the Manifestations of the first two Expressions

The Expression record for the issue v.35 no.1 1995 as shown in the 866 tag
Journal Indexing Analytics

Manifestation (analytic) record for the issue v.35 no.1 1995
FRBR Projects

- OCLC’s Fiction Finder Project
  - http://fictionfinder.oclc.org/
- RLG’s RedLightGreen
  - http://www.redlightgreen.com
- Examples of faceted browsing:
  - Endeca’s ProFind
- Elsevier’s Scopus
  - http://www.info.scopus.com/demo/
- North Carolina State University new catalog
  - http://www.lib.ncsu.edu/catalog/
- Example of serial record “family tree”:
  - http://www.secstate.wa.gov/library/docs/
Why Authority Control

- Brings consistency to the catalog
- Controls access points
- Ensures access points are unique and consistent
- Provides linkages for variant & related headings
- Virtual international authority file
Authority Control vs. Access Control

Authority Control
- Topical
- Geographic
- Form (genre)
- Chronological
- Name

Access Control
- Main & Added author entries (corp. meeting)
- Series
- Subject Headings
- Titles
- Uniform titles
- Variant titles
- Numeric fields (ISBN, ISSN, DOI)
FAST (Faceted Application of Subject Terminology)- Eight Facets

• Topical
• Geographical (Place)
• Personal Name
• Corporate Name
• Form (Type, Genre)
• Chronological (Time, Period)
• Title
• Meeting Name
Faceting of LCSH

LCSH:
1. Gold mines and mining $z$ California
2. Silver mines and mining $z$ Colorado

FAST:
1. Gold mines and mining
2. Silver mines and mining
3. California
4. Colorado
Faceting of LCSH

<table>
<thead>
<tr>
<th>LCSH</th>
<th>FAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>650 America loyalists $z England.</td>
<td>648 1775 – 1783</td>
</tr>
<tr>
<td>651 United States $x History $y Revolution, 1775-1783 $v Biography.</td>
<td>650 American loyalists</td>
</tr>
<tr>
<td>650 Secret service $z Great Britain.</td>
<td>650 Secret service</td>
</tr>
<tr>
<td>650 Painters $z United States.</td>
<td>650 Painters</td>
</tr>
<tr>
<td></td>
<td>651 England</td>
</tr>
<tr>
<td></td>
<td>651 United States</td>
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<tr>
<td></td>
<td>651 Great Britain</td>
</tr>
<tr>
<td></td>
<td>655 Biography</td>
</tr>
<tr>
<td></td>
<td>655 History</td>
</tr>
</tbody>
</table>
Obsolete heading example

- Old LC subject heading
  Trade-unions

Leader/05 ‘o’
150 Trade-unions
750 0 Labor unions $0(DLC)sh 85136516
750 7 Labor unions $7 (fast)[OCLC assigned number] $w

- New FAST Authority Record for Labor unions

Leader/05 ‘n’
150 Labor unions
450 Trade-unions
750 0 Labor unions $0(DLC)sh 8516516
Old Wine in New Bottles

• The opportunity is here.
• We can give it a try without fear.

危机? Or 转机?
Questions & Answers

Sandy Chen
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