GEOINFORMATION IN DIGITAL LIBRARIES AND LINKED DATA
OVERVIEW

• Intro – LD4L project
• History/Background: MARC Bibliographic Records
• Linked Records / BIBFRAME
• Current Project: LD4L-Labs & LD4L-Production (LD4P)
  • Sub-group Examining Cartographic Content
• Gathering your input / Use Cases
WHITHER MARC?

• Developed in the 1960s
• MARC coded catalog records were created with the intent to share catalog records electronically
• They are created and used by virtually all library catalog systems around the world
• Is not discoverable on the web
• MARC is not indexed by search engines (other than formal catalog systems)
• Bibliographic connects to extensive names and subjects cross-referencing structures
### MARC CATALOG RECORD

- **Text-based**
- **Flat data structure**
- **Non-semantic**
- **Deployed in closed systems**

#### MARC record

**Source**: HVD ALEPH

- **Title**: San Francisco and vicinity.
- **Author / Creator**: Southern Pacific Company.
- **Published**: [San Francisco, Calif.] : Southern Pacific Company, c1915 (Buffalo, N.Y. : Matthews-Northrup Works)
- **Description**: Scale [ca. 1:30,800] (W 122°31'–W 122°21'/N 37°49'–N 37°42')
  1 map : col., both sides ; 65 x 68 cm.
- **Language**: English
- **Notes**: Relief shown by hachures.
  Inset map: San Francisco and adjacent territory.
  Indexed.
  Text, ill., and map on verso.
  Folded titles: Map of San Francisco : California invites the world, Panama Pacific Exposition. – Map of San Francisco : what to see, how to see.
  Copyright dates: 1914 on recto. 1915 on verso.
  Available also as a digital image through the Harvard University Web site.
- **Subject**: Transportation -- California -- San Francisco -- Maps; San Francisco (Calif.) -- Maps.
- **Form / Genre**: Maps.
- **Author / Creator**: Matthews-Northrup Works.
- **HOLLIS Number**: 008620083
- **Creation Date**: c1915
- **Permalink**: [http://id.lib.harvard.edu/aleph/008620083/catalog](http://id.lib.harvard.edu/aleph/008620083/catalog)
- **Source**: HVD ALEPH
Deep Ellum: the other side of Dallas / Alan Govenar and Jay Brakefield.


Includes bibliographical references, discography and index.

SUBJECT AUTHORITY RECORD WITH GEOGRAPHIC COORDINATES

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<p>| 010  | sh 85114790 |
| 040  | DLC #b eng #c DLC #d DLC |
| 034  | #d W1150000 #e W1150000 #f N0490000 #g N0490000 #2 Other |
| 151  | Rocky Mountains |
| 451  | Rockies |
| 451  | Stoney Mountains |
| 550  | Mountains #z Canada #w g |
| 550  | Mountains #z West (U.S.) #w g |
| 670  | Longman, Hurst, Rees, and Orme. N. America, 1807: #b map recto (Stoney Mountains) |
| 670  | Oxford Atlas of the World, 2008 #b (range; 49°00′00″N 115°00′00″W) |
| 675  | Gnis; #a Col. gaz. web site |
| 781  | 0 #z Rocky Mountains |</p>
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BIBFRAME

• A way to evolve the catalog to a linked environment
• Launched in 2011 by LC, uses triples statements
• 2016 version 2.0 of BIBFRAME (model, vocabulary, profiles)
  • implementation testbeds & pilot – specialty groups – arts, music, maps
  • tool development – including transformation services
• Work (has instance) → Instance (has Item) → Item
BIBFRAME 2.0 DESCRIPTION

BIBFRAME 1.0
• Linked descriptions
• Graph data structure
• Semantically-enabled
• Deployed on open web

BIBFRAME 2.0 adds to Work/Instance/Item:
• Agents
• Subjects
• Events

Library of Congress
BIBFRAME 2.0 Model³
LOD VOCABULARIES FOR CARTOGRAPHIC MATERIALS

- Dbpedia
- GeoNames
- VIAF
- Library of Congress
- Getty Thesaurus of Geographic Names
BENEFITS OF SUPPORTING LIBRARY BIBLIOGRAPHIC METADATA IN LOD

- Increased discoverability
- Disambiguation through URIs & structured web
- Improved interoperability
LOD EXAMPLE: RAVENS HOUSE

Kamienica Pod Kruki (Kraków, Poland)

URI(s)
- http://id.loc.gov/authorities/subjects/sh2009007699
- info:lc/authorities/sh2009007699
- http://id.loc.gov/authorities/sh2009007699#concept

Instance Of
- MADS/RDF CorporateName
- MADS/RDF Authority
- SKOS Concept

Scheme Membership(s)
- Library of Congress Subject Headings

Collection Membership(s)
- LCSH Collection - Authorized Headings
- LCSH Collection - General Collection

Variants
- Ravens House (Kraków, Poland)

Additional Information
- http://id.loc.gov/rwo/agents/sh2009007699

Broader Terms
- Dwellings--Poland
- Office buildings--Poland

Sources
- found: Work cat.: Metamorfozy, c2009: t.p. (Ravens House) p. 6 (loc. at 25 Main Market Square, Krakow, Poland; now used by the International Cultural Center)
- found: Czytam.pl website, Aug. 17, 2009 (Metamorfozy Kamienicy Pod Kruki [description of Polish edition of same book])
- found: Międzynarodowe Centrum Kultury website, Aug. 17, 2009 (renovating building Kamienica Pod Kruki; loc. Kraków; work began in 1998)
- found: Ronald Berger Reading Room-Counterparts website, Aug. 17, 2009 (The International Cultural Center (ICC) is located in Krakow; its building has a rich cultural history; in 1842 two medieval houses on the main market square were converted to create the Ravens House; the building was initially residential, it later housed a bank and later offices of youth organizations; the ICC has been there since 1991 and began extensive renovations on the building in 1998)
WHY AT DH2016?

• To engage cartographic materials linked data user communities to build use cases and user stories to properly frame the ontology modeling, vocabulary selection, and tool development.

• By engaging with the DH community we hope to answer questions such as which description points are most critical, what vocabularies are most useful, and how the library community can change current resource description practices to meet researcher needs.
LINKED DATA FOR:
LIBRARIES/PRODUCTION GRANT

• 2014-2016 → LD4L Cornell, Harvard, Stanford
  • Mission to integrate metadata schemes in use in libraries (MARC, MODS, to LOD environments outside libraries, ie. Shema.org, CIDOC-CRM, EDM

• 2016 → LD4P adds Library of Congress, Columbia, Princeton
  • Mission to transition library technical services workflows to LOD
  • extension to BIBFRAME for special materials, including cartographic

• https://www.ld4l.org
Focus on evaluating ontologies and vocabularies best-suited to the description of cartographic resources (maps, atlases, and geographic datasets)

Goal - establish a set of library community shared best practices for describing cartographic and geospatial resources

- Evaluate existing LOD ontologies to integrate existing classes and properties to extend the Linked Data for Libraries BIBFRAME profile to support description of cartographic data.
- Web Ontology Language (OWL) ontology based on an extended variant of the Bibliographic Framework (BIBFRAME)
- Shared as linked data triples in the Resource Description Framework (RDF)

http://search.ld4l.org
LD4P CARTOGRAPHIC PROJECT OBJECTIVES, 2016-2018

- Identify Cartographic Metadata Use Cases
- BIBFRAME Schema Evaluation, Cartographic Profile
- Metadata Creation Tools, Create Sample Records
- Recommendations, Best Practices
EXAMPLE CARTOGRAPHIC USE CASES

- Search by **cartographic feature types**
  - elevation data, administrative boundaries, cadastral, transportation, etc.
- Search by **geographic feature types**
  - populated places, natural features, man-made features, etc.
- Browse material via **hierarchical administrative geography relationships**
- **Geospatial search and discovery**
  - use of coordinate data explicitly defined and/or inferred from LOD vocabularies
- **LOD contributions to historical gazetteer development**
MORE USE CASES?

The Empire State Building was built in 1931.

At that time, it was the tallest building in the world. It’s an amazing place.

But, there were many challenges in building it.

When engineers had to link the island of Manhattan to the Bronx and Brooklyn, they came up with an innovative tunnel. East River Tunnels were built underneath the city, not just underground, to support the weight of the buildings.

In other places in the city, engineers had to push deep down into the ground. They dug thirty-five feet into the ground, almost the height of a four-story building!

The Empire State Building is an amazing structure. It’s not just tall; it’s also unique and innovative in its construction methods.

So, the next time you see the Empire State Building, remember the challenges that went into making it a reality. It’s a testament to human ingenuity and determination.
REFERENCES

YOUR INPUT -

- khw2@rice.edu
- @kathy_weimer