

# RDF FOR LIBRARIANS

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METADATA LIBRARIAN

DIGITAL LIBRARY PROGRAM

# From Wikipedia...

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“A collection of RDF statements intrinsically  
represents a labeled, directed multi-graph.”

<[http://en.wikipedia.org/wiki/Resource\\_Description\\_Framework](http://en.wikipedia.org/wiki/Resource_Description_Framework)>

Learning the lingo *is* important; however for us  
it's probably better to start with understanding  
how some of the basic concepts are different  
than what we're used to.

That's what we're going to do today.

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# Structural differences

# Libraries have “records”

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```

=LDR 02578njm 2200505 a 45 0
=001 AJJ3915BM
=008 970800p19971933enkmun\\vefi\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\d
=007 sd?fmngnn???ee
=024 1\\$a2703192792
=028 02$aGEMM CD 9279$bPearl
=035 \\$a(InU)AJJ3915BM
=033 10$a1933----$a193503--$a193504--$a19431123$a1944----
=035 \\$a(0CoLC)ocm37471228
=040 \\$aCR2$cCR2
=047 \\$abt$asg$avr$asn
=245 10$aAaron Copland & Leonard Bernstein$h[sound recording].
=246 3\\$aAaron Copland and Leonard Bernstein
=246 1\\$iTitle on container:$aComposer as performer
=260 \\$aWadhurst, E. Sussex, England :$bPearl,$cp1997.
=300 \\$a1 sound disc :$bdigital, mono. ;$c4 3/4 in.
=500 \\$aThe 1st work a ballet, originally for orchestra, reduced for piano.
=511 0\\$aAaron Copland, Leonard Bernstein, pianos ; Ethel Luening, soprano (3rd work
(6th work) ; Ivor Karmann (2nd work), Jacques Gordon (5th work), violins ; David Freed
=518 \\$aRecorded ca. 1933 (3rd work), in Mar., 1935 (2nd, 4th works), Apr., 1935 (5
works), and in 1944 (1st work).
=505 0\\$aAppalachian spring (24:25) ; Trio Vitebsk : study on a Jewish theme (11:27)
variations (10:48) ; Two pieces for violin and piano (8:06) / Copland -- Sonata for c
Seven anniversaries. For my sister Shirley (:54) ; In memoriam Natalie Koussevitzky (
32) / Bernstein.
=650 \\0$aBallets.
=650 \\0$aPiano music, Arranged.
=650 \\0$aPiano trios.
=650 \\0$aVocalises (High voice) with piano.
=650 \\0$aVariations (Piano)
=650 \\0$aViolin and piano music.
=650 \\0$aSonatas (Clarinet and piano)
=650 \\0$aPiano music.
=700 1\\$aCopland, Aaron,$d1900-1990.$4prf
=700 1\\$aBernstein, Leonard,$d1918-1990$4prf
=700 12$aCopland, Aaron,$d1900-1990.$tAppalachian spring.$pSuite;$soarr.
=700 12$aCopland, Aaron,$d1900-1990.$tVitebsk
=700 12$aCopland, Aaron,$d1900-1990.$tVocalise
=700 12$aCopland, Aaron,$d1900-1990.$tVariations,$mpiano
=700 12$aCopland, Aaron,$d1900-1990.$tPieces,$mviolin, piano
=700 12$aBernstein, Leonard,$d1918-1990.$tSonatas,$mclarinet, piano.
=700 12$aBernstein, Leonard,$d1918-1990.$tAnniversaries$n(1943).$kSelections.
=856 41$uhttp://purl.dlib.indiana.edu/iudl/variations/sound/AJJ3915
=998 \\$a8/8/1997$b9/9/1999$c9/9/1999
=596 \\$a20
=926 \\$aB-MUSIC$bCD$cCD ZC.66$dAV$f1

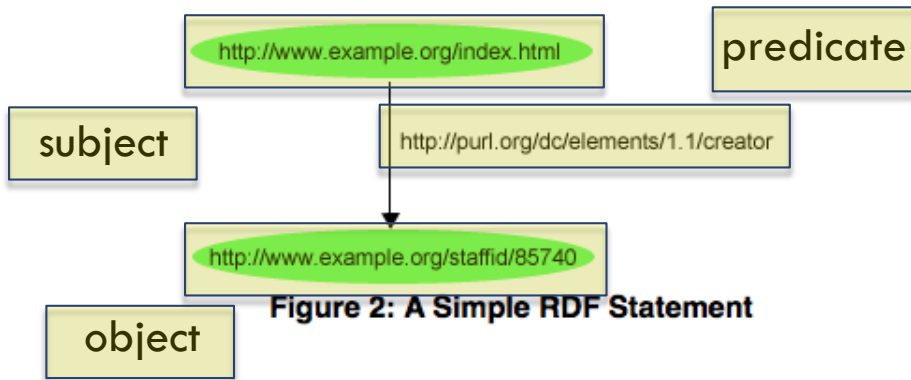
```

```
<?xml version="1.0" encoding="UTF-8" ?>
<marc:collection xmlns:marc="http://www.loc.gov/MARC21/slim"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.loc.gov/MARC21/slim http://www.loc.gov/standards/
<marc:record>
  <marc:leader>01667mjm a2200433 a 45 0</marc:leader>
  <marc:controlfield tag="001">AAK6198BM</marc:controlfield>
  <marc:controlfield tag="008">890105p19871986gw snn 1 </marc:controlfield>
  <marc:controlfield tag="007">sd?fsngnnmpled</marc:controlfield>
  <marc:datafield tag="010" ind1=" " ind2=" " >
    <marc:subfield code="a"> 89750052 /R</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="028" ind1="0" ind2="1">
    <marc:subfield code="a">423 065-2</marc:subfield>
    <marc:subfield code="b">Deutsche Grammophon</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="035" ind1=" " ind2=" " >
    <marc:subfield code="a">(InU)AAK6198BM</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="033" ind1="0" ind2=" " >
    <marc:subfield code="a">198607--</marc:subfield>
    <marc:subfield code="b">6299</marc:subfield>
    <marc:subfield code="c">C6</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="035" ind1=" " ind2=" " >
    <marc:subfield code="a">(OCoLC)ocm19777353</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="040" ind1=" " ind2=" " >
    <marc:subfield code="a">DLC</marc:subfield>
    <marc:subfield code="c">DLC</marc:subfield>
    <marc:subfield code="d">OCL</marc:subfield>
    <marc:subfield code="d">IUL</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="041" ind1="0" ind2=" " >
    <marc:subfield code="g">gerengfreita</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="045" ind1="1" ind2=" " >
    <marc:subfield code="b">d1877</marc:subfield>
    <marc:subfield code="b">d1916</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="048" ind1=" " ind2=" " >
    <marc:subfield code="a">sa01</marc:subfield>
    <marc:subfield code="a">ka01</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="050" ind1="1" ind2=" " >
    <marc:subfield code="a">M219</marc:subfield>
  </marc:datafield>
  <marc:datafield tag="050" ind1="0" ind2=" " >
    <marc:subfield code="a">Deutsche Grammophon 423 065-2</marc:subfield>
  </marc:datafield>
```

# RDF has “statements” and “graphs”

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This is a “statement,”  
aka a “triple”. A  
statement is made in a  
particular direction.



**Figure 2: A Simple RDF Statement**



**Figure 1: An RDF Graph Describing Eric Miller**

Statements combine to form graphs. A graph is of no fixed  
size and contains no predetermined types of statements.

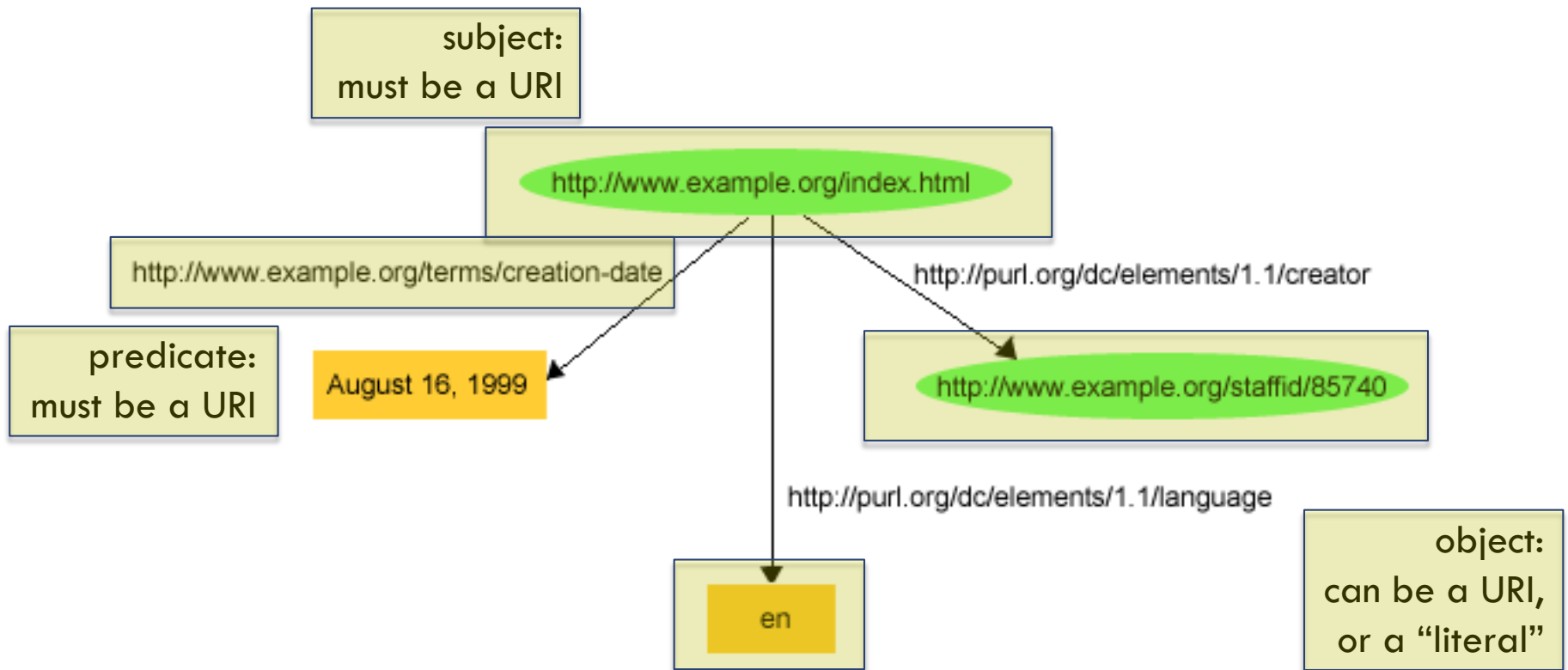
(The graph is the real RDF model;  
a triple is a secondary representation.)

Figures from RDF Primer

<<http://www.w3.org/TR/rdf-primer/>>

# More about statements

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**Figure 3: Several Statements About the Same Resource**

# The centrality of URIs in RDF

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RDF uses URIs to identify:

individuals, e.g., Eric Miller, identified by  
`http://www.w3.org/People/EM/contact#me`

kinds of things, e.g., Person, identified by  
`http://www.w3.org/2000/10/swap/pim/contact#Person`

properties of those things, e.g., mailbox, identified by  
`http://www.w3.org/2000/10/swap/pim/contact#mailbox`

values of those properties, e.g. `mailto:em@w3.org`  
as the value of the mailbox property (RDF also uses  
character strings such as "Eric Miller", and values  
from other datatypes such as integers and dates, as  
the values of properties)



**Figure 1: An RDF Graph Describing Eric Miller**

Figure and text from RDF Primer  
<<http://www.w3.org/TR/rdf-primer/>>

# Implications of statement structure (1)

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- Subjects are always formalized; know *exactly* what is being talked about
  - ▣ They're only implicit in library metadata
  - ▣ Makes moot the 1:1 problem
  - ▣ *Might* still have content vs. carrier problem
- Predicates are always formalized
  - ▣ Maybe not all that different than library/archive/museum metadata models
  - ▣ More obviously reusable



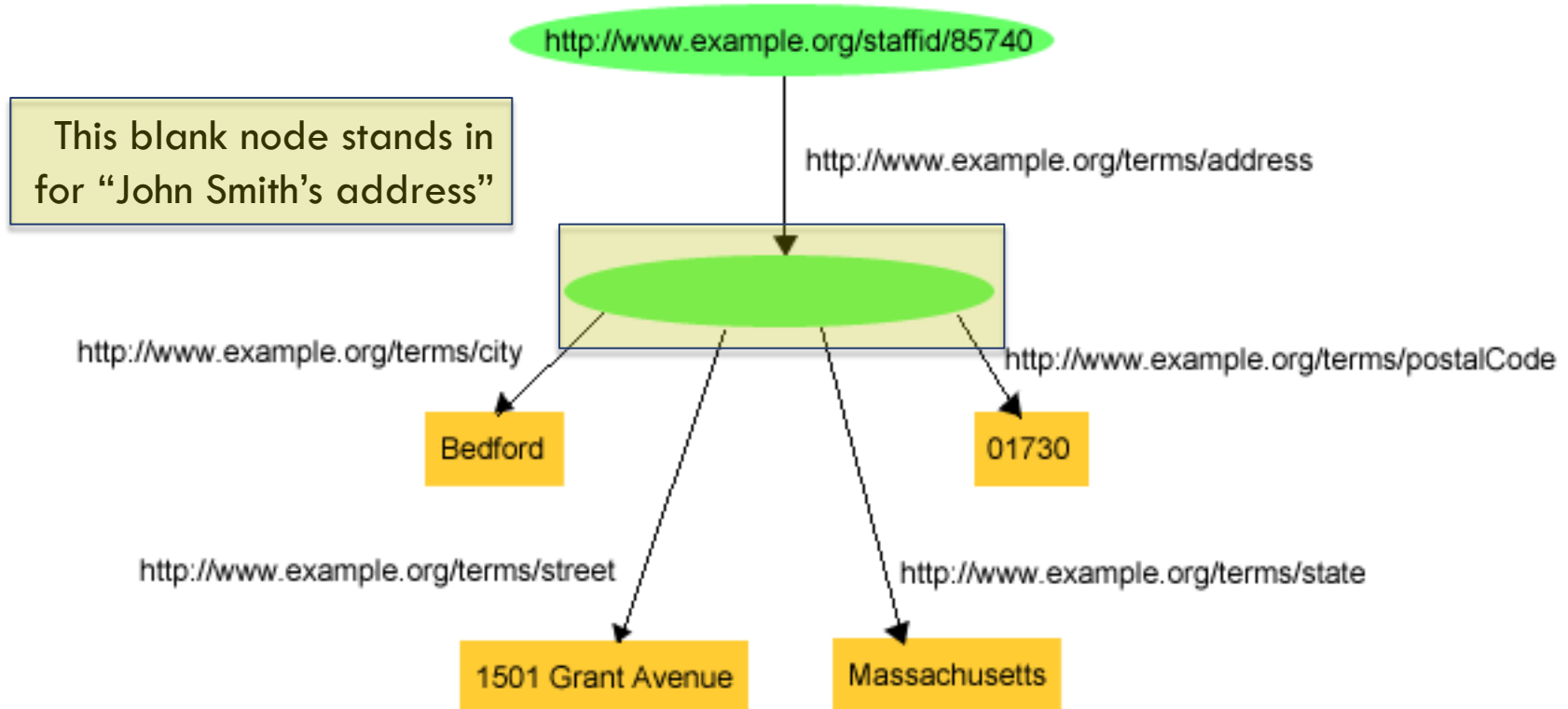
# Implications of statement structure (2)

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- Representation of objects is flexible
  - Using a URI facilitates connecting this value into a larger graph
  - Literals allow more limited functionality; used when the value isn't likely to be useful as part of a vocabulary
  - URI vs. literal a design choice; note the previous example used a literal where a URI might be better!
- Making a statement that two different URIs refer to the same thing can join two graphs
- Note, URIs aren't necessarily dereferencable

# Blank nodes

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**Figure 6: Using a Blank Node**

# Properties vs. elements

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- Remember, a statement's predicate represents a property of the resource (subject) being described
  - ▣ Resource=subject; Property=predicate. I don't know why there are different terms for the model than for individual statements. Let's move on.
- On the surface, an RDF property looks like the same thing as an XML element or a database field
- But the underlying formal model is different
  - ▣ Explicit subjects and directionality of statements
  - ▣ Formality of RDF model places additional restrictions but allows more explicit meaning
- Therefore inferences you can draw for elements and fields are not as strong as you can for properties

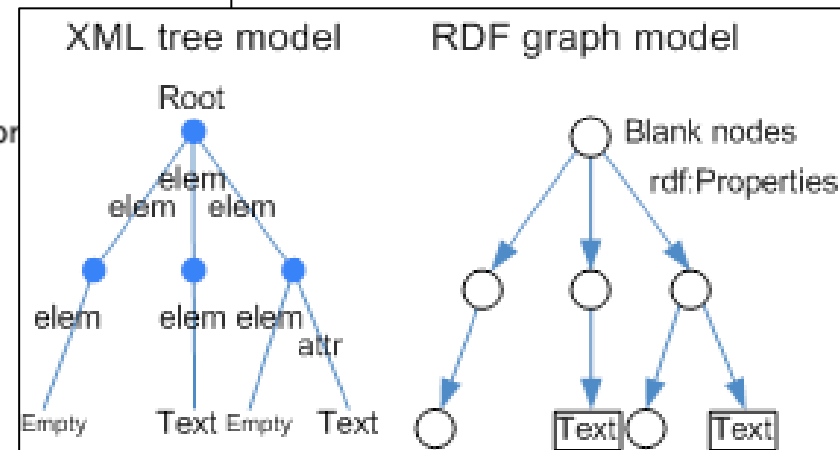
# Graph vs. tree

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XML documents are trees

```
<mods version="3.4">
  <titleInfo>
    <title>Ekkoes from Kentucky</title>
  </titleInfo>
  <name type="personal">
    <namePart>Locke, David Ross</namePart>
    <namePart type="date">1833-1888</namePart>
    <role>
      <roleTerm authority="marcrelator" type="text">creator</roleTerm>
      <roleTerm type="code">cre</roleTerm>
    </role>
  </name>
  <name type="personal">
    <namePart>Nast, Thomas</namePart>
    <namePart type="date">1840-1902</namePart>
    <role>
      <roleTerm type="text">illus.</roleTerm>
      <roleTerm type="code">ill</roleTerm>
    </role>
  </name>
</mods>
```

This is as good as you can do inferring a graph from a tree:



Tree vs. graph figure from XML2RDF documentation

<http://rhizomik.net/html/redefer/xml2rdf/>

DLP Brown Bag Series 9/22/10

# Model vs. its syntax(es)

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- There's a difference between:
  - ▣ Model of information representation
  - ▣ Property or element definitions
  - ▣ Binding of the information into a specific syntax
- MARC is both the record structure (syntax) and content designations (element definitions)
- RDF model has many encoding syntaxes
- RDF and MARC operate at different levels in this landscape; but that doesn't mean MARC's structure is capable of representing the RDF model

# Some realities of RDF that scare us

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- No predetermined set of properties to care about
- No guarantee that the same person/item/place/whatever are always referred to with the same URI
- No inherent mechanism/requirement for vetting properties, URIs, etc
- But let's be frank here. Are our library/archive/museum records really:
  - ▣ Complete?
  - ▣ Authoritative?
  - ▣ Consistent?
  - ▣ Accurate?
  - ▣ All that functional for what we want to do?

# More RDF concepts

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- Class
  - ▣ A statement can say a subject is of a certain type or category known as a “class”.
  - ▣ Classes can be formally defined in RDF Schema documents
- Domain and Range
  - ▣ Specify what classes subjects and objects of statements (respectively) using a given property can be
  - ▣ More than one domain or range statement can be made for any given property
- These features allow “inferencing” to deduce statements that aren’t actually made

# But both have...

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- Raging debate over how precise you have to be in indicating what it is you're describing
- An interest in mechanisms to allow consumers of data to evaluate the authority of statements
- A tendency to over-model (see “The Modeller” blog post on handout)
- Other similarities
  - “Application profile” notion applicable to both XML and RDF models, though would be implemented differently
  - XML elements repeatable; RDF makes no restriction on how many statements about the same resource use the same predicate.



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# Terminology differences

# “Subject”

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- In libraries, what an information resource is about
- In RDF, what a statement is about

# “Vocabulary”

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- In libraries, implies a controlled vocabulary of a certain sort
  - ▣ Authorized terms
  - ▣ Lead-in terms (see references, etc.)
  - ▣ Sometimes, hierarchical structure
  - ▣ Sometimes, related terms
- In RDF, much looser definition
  - ▣ Includes formal definitions of classes and properties

# “Class”

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- In libraries, a classification scheme indicating the general topic or area of knowledge covered by an information resource
- In RDF, a type or category that any type of object or resource belongs to

# “Schema”

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- XML Schema defines a set of *elements* intended to be used together
- RDF Schema defines *classes* and *properties* intended to be used anywhere, alone or in combination

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So, wait, *why* should I learn this?

# Libraries are moving in this direction

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- At least a little bit
- Increasing viability and acceptance of interoperating with data from outside of libraries
- RDA gives us an opportunity to fundamentally rethink some features of our data
- Semantic Web activities have been given new life with the grassroots Linked Data movement

# Linked Data design issues

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- Use URIs as names for things
- Use HTTP URIs so that people can look up those names.
- When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
- Include links to other URIs. so that they can discover more things.

Tim Berners-Lee

[<http://www.w3.org/DesignIssues/LinkedData.html>](http://www.w3.org/DesignIssues/LinkedData.html)



# How much planning do we need to do?

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“There are other cases where the easiest thing for somebody to do is to just put data up in whatever form it's available.”

Tim Berners-Lee

<[http://www.readwriteweb.com/archives/interview\\_with\\_tim\\_berners-lee\\_part\\_1.php](http://www.readwriteweb.com/archives/interview_with_tim_berners-lee_part_1.php)>

Let's review some of what libraries have done so far.

LIBRARY OF CONGRESS
ASK A LIBRARIAN
DIGITAL COLLECTIONS
LIBRARY CATALOGS
GO
Options

The Library of Congress > Authorities & Vocabularies > LC Subject Headings > Boston terrier

## Boston terrier

From Library of Congress Subject Headings

Details
Visualization
Suggest Terminology

**Boston terrier**

**URI**  
<<http://id.loc.gov/authorities/sh85015953#concept>>

**Type**  
Topical Term

**Alternate Labels**  
> Boston terriers

**Broader Terms**  
> [Terriers](#)

**Sources**  
> Work cat.: 97-28310: Boston terriers, 1997: CIP galley (Boston terrier, recognized as breed by AKC)  
> Prisco, A.D. Mini-atlas of dog breeds, 1990: p. 361 (Boston terrier)

**LC Classification**  
SF429.B7

**Created**  
1986-02-11

**Modified**  
1997-08-12 14:13:59

**Similar concepts from other vocabularies**  
> <<http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148/cb12573073p>> [↗](#)

**Instance Of**  
> [SKOS Concept](#) [↗](#)

**Alternate Formats**  
> [RDF/XML](#)  
> [N-Triples](#)  
> [JSON](#)

```

<rdf:RDF>
- <rdf:Description rdf:about="http://id.loc.gov/authorities/sh85015953#concept">
- <dcterms:source xml:lang="en">
    Work cat.: 97-28310: Boston terriers, 1997: CIP galley (Boston terrier, recognized as breed by AKC)
  </dcterms:source>
- <dcterms:source xml:lang="en">
    Prisco, A.D. Mini-atlas of dog breeds, 1990: p. 361 (Boston terrier)
  </dcterms:source>
  <dcterms:modified rdf:datatype="http://www.w3.org
/2001/XMLSchema#dateTime">1997-08-12T14:13:59-04:00</dcterms:modified>
  <skos:closeMatch rdf:resource="http://stitch.cs.vu.nl/vocabularies/rameau/ark:/12148
/cb12573073p"/>
  <skos:broader rdf:resource="http://id.loc.gov/authorities/sh85134103#concept"/>
  <owl:sameAs rdf:resource="info:lc/authorities/sh85015953"/>
  <skos:inScheme rdf:resource="http://id.loc.gov/authorities#topicalTerms"/>
  <skos:inScheme rdf:resource="http://id.loc.gov/authorities#conceptScheme"/>
  <skos:prefLabel xml:lang="en">Boston terrier</skos:prefLabel>
  <rdf:type rdf:resource="http://www.w3.org/2004/02/skos/core#Concept"/>
  <skos:altLabel xml:lang="en">Boston terriers</skos:altLabel>
  <dcterms:created rdf:datatype="http://www.w3.org
/2001/XMLSchema#dateTime">1986-02-11T00:00:00-04:00</dcterms:created>
</rdf:Description>
- <rdf:Description rdf:about="http://id.loc.gov/authorities/sh85134103#concept">
  <skos:prefLabel xml:lang="en">Terriers</skos:prefLabel>
  <rdf:Description>
</rdf:Description>
</rdf:RDF>

```

# German National Library

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English Kontakt A-Z Förderer Datenschutz Impressum Hilfe Mein Konto

## KATALOG DER DEUTSCHEN NATIONALBIBLIOTHEK

Gesamter Bestand Deutsches Musikarchiv Deutsches Exilarchiv

→ Suchformular zurücksetzen

Finden

<http://d-nb.info/gnd/118540238>

<b>Person</b>	Goethe, Johann Wolfgang /von (männlich)
<b>Andere Namen</b>	Goethe, Johann Wolfgang von Goethe, Johann Wolfgang /v. Goethe, Johann Wolfgang %ADB Goethe, Ioannes W. Goethe, Iohan Wolphgang Goethe, Jan Wolfgang Goethe, Jean Wolfgang /von Goethe, João Wolfgang /von Goethe, Juan W. Goethe, Juan Wolfgang /von Goethe, Volfango Goethe, Volfango Goethe, Wolfgang /von Goethe, Johann W. /von Goethe, Wolfgang Goethe, Wolfango Goethe, Wolfgang Goethe, ... Goethius, ...

```

<rdf:RDF>
  <rdf:Description rdf:about="http://d-nb.info/gnd/118540238">
    <gnd:variantNameForThePerson>Gete, Vol'fgang</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Goethe, Ioannes W.</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson rdf:parseType="Resource">
      <gnd:prefixName>p'lon</gnd:prefixName>
      <gnd:usedRules>RAK-WB</gnd:usedRules>
      <gnd:surname>Koet'e</gnd:surname>
      <gnd:foreName>Yohan Polp'ügang</gnd:foreName>
    </gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Goethe, Johann Wolfgang von</gnd:variantNameForThePerson>
    <rdaRelGr2:relatedPersonPerson rdf:resource="http://d-nb.info/gnd/118617222"/>
    <gnd:variantNameForThePerson>Gete, Johan Wolfgang</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Göte, ...</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson rdf:parseType="Resource">
      <gnd:usedRules>RAK-WB</gnd:usedRules>
      <gnd:surname>Gyot'e</gnd:surname>
      <gnd:foreName>Yohan Wolfgang</gnd:foreName>
    </gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Göte, Iogann V.</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson rdf:parseType="Resource">
      <gnd:usedRules>RAK-WB</gnd:usedRules>
      <gnd:surname>Goethe</gnd:surname>
      <gnd:foreName>...</gnd:foreName>
    </gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson rdf:parseType="Resource">
      <gnd:usedRules>RAK-WB</gnd:usedRules>
      <gnd:surname>Gete</gnd:surname>
      <gnd:foreName>Iogann W.</gnd:foreName>
    </gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Koet'e, ...</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>G'öte, ...</gnd:variantNameForThePerson>
    <rdaGr2:placeOfResidence xml:lang="de">Weimar</rdaGr2:placeOfResidence>
    <gnd:invalidIdentifierForThePerson>(DE-101c)310270162</gnd:invalidIdentifierForThePerson>
    <gnd:variantNameForThePerson>Goethe, Johan Wolfgang von</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson>Goethe, J. W. v.</gnd:variantNameForThePerson>
    <gnd:variantNameForThePerson rdf:parseType="Resource">
      <gnd:usedRules>RAK-WB</gnd:usedRules>
      <gnd:surname>Goethius</gnd:surname>
      <gnd:foreName>...</gnd:foreName>
    </gnd:variantNameForThePerson>
  </rdf:Description>
</rdf:RDF>

```

# Virtual International Authority File

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VIAF

Beta

Virtual International Authority File

## Search

Select Field:

All Names

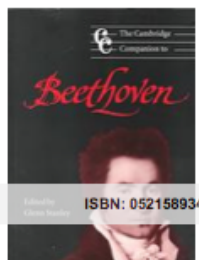
Select Index:

All VIAF

Search Terms:

Beethoven, Ludwig van 1770

## Selected Covers



Beethoven, Ludwig van 1770-1827

БЕТХОВЕН, ЛЮДВИГ ВАН, 1770-

Beethoven, Ludwig van

VIAF ID:32182557

## Preferred Forms

- 200 1a Beethoven, lb Ludwlg van, f 1770-1827
- 100 1a Beethoven, Ludwig van f 1770-1827
- 100 1a Beethoven, Ludwig van f 1770-1827
- 100 1a БЕТХОВЕН, ЛЮДВИГ ВАН, f 1770-1827
- 100 1a Beethoven, Ludwig van, f 1770-1827
- 100 1a Beethoven, Ludwig van f 1770-1827
- 100 1a Beethoven, Ludwig van, f 1770-1827
- 100 1a Beethoven, Ludwig van, f 1770-1827
- 100 1a Beethoven, Ludwig van, f 1770-1827
- 100 1a Beethoven, Ludwig van, f 1770-1827
- 100 1a Beethoven, Ludwig van
- 200 1a Beethoven lb Ludwlg van f 1770-1827

```
<rdf:RDF xml:base="http://viaf.org">
  <viaf:NameAuthorityCluster rdf:about="viaf/32182557">
    <viaf:names rdf:resource="viaf/32182557/#foaf:Person"/>
    <viaf:names rdf:resource="viaf/32182557/#skos:Concept"/>
    <viaf:names rdf:resource="viaf/32182557/#rdaEnt:Person"/>
    <viaf:hasEstablishedForm rdf:resource="viaf/32182557/#Beethoven,+Ludwig+van+1770-1827"/>
    <viaf:hasEstablishedForm rdf:resource="viaf/32182557/#БЕТХОВЕН,+ЛЮДВИГ+ВАН,+1770-1827"/>
    <viaf:hasEstablishedForm rdf:resource="viaf/32182557/#Beethoven,+Ludwig+van"/>
    <viaf:clusters rdf:resource="viaf/32182557/#PTBNP%7C14224"/>
    <viaf:clusters rdf:resource="viaf/32182557/#BNE%7CXX826607"/>
    <viaf:clusters rdf:resource="viaf/32182557/#NII%7CDA00371498"/>
    <viaf:clusters rdf:resource="viaf/32182557/#NLcy%7C000148383"/>
    <viaf:clusters rdf:resource="viaf/32182557/#LC%7Cn++79107741"/>
    <viaf:clusters rdf:resource="viaf/32182557/#DNB%7C118508288"/>
    <viaf:clusters rdf:resource="viaf/32182557/#NKC%7Cjn19990000607"/>
    <viaf:clusters rdf:resource="viaf/32182557/#NLA%7C000035016586"/>
    <viaf:clusters rdf:resource="viaf/32182557/#SWNL%7Cvts000026767"/>
    <viaf:clusters rdf:resource="viaf/32182557/#BNF%7C13891295"/>
    <viaf:clusters rdf:resource="viaf/32182557/#SELIBR%7C177119"/>
    <viaf:clusters rdf:resource="viaf/32182557/#LAC%7C0103E4796"/>
    <viaf:clusters rdf:resource="viaf/32182557/#BAV%7CADV10208311"/>
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    <viaf:hasXRefAlternate rdf:resource="viaf/32182557/#XRefAlternate:Bit'hu'fin,+1770-1827"/>
    <viaf:hasXRefAlternate rdf:resource="viaf/32182557/#XRefAlternate:Beethoven,+Li'u'dvig+van,+1770-1827"/>
    <viaf:hasXRefAlternate rdf:resource="viaf/32182557/#XRefAlternate:Beethoven,+Ludwig+van,+1770-1827"/>
    <viaf:hasXRefAlternate rdf:resource="viaf/32182557/#XRefAlternate:贝多芬,+1770-1827"/>
```



# LIBRIS – Swedish National Library

29

LIBRIS

Start Extend

onr:5060570

Search: onr:5060570

1 of 1 ◀ Prev

The difference engine

Gibson, William  
Sterling, Bruce  
ISBN 0-575-60029-2  
London : Vista,  
English 383 s.  
Book

Abstract

Get it

Loan Interlib

Title available

Southern Swed

Folkbibliotek

Local library

Shelf mark: (SK)

Loan status Opening hours, address etc.

```
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix libris: <http://libris.kb.se/vocabulary/experimental#> .
@prefix bibo: <http://purl.org/ontology/bibo/> .

<http://libris.kb.se/resource/bib/5060570> rdfs:isDefinedBy <http://libris.kb.se/data/bib/5060570> .
<http://libris.kb.se/resource/bib/5060570> rdf:type bibo:Book .
<http://libris.kb.se/resource/bib/5060570> dc:title "The difference engine"@en .
<http://libris.kb.se/resource/bib/5060570> dc:creator "Gibson, William, 1948-" .
<http://libris.kb.se/resource/bib/5060570> dc:creator "William Gibson" .
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<http://libris.kb.se/resource/bib/5060570> dc:creator "Bruce Sterling" .
<http://libris.kb.se/resource/bib/5060570> dc:type "text" .
<http://libris.kb.se/resource/bib/5060570> dc:publisher "Vista" .
<http://libris.kb.se/resource/bib/5060570> dc:date "1996" .
<http://libris.kb.se/resource/bib/5060570> dc:description "Originally published: London: Gollancz, 1990"@en .
<http://libris.kb.se/resource/bib/5060570> dc:subject "American fiction" .
<http://libris.kb.se/resource/bib/5060570> dc:subject "Steampunk" .
<http://libris.kb.se/resource/bib/5060570> dc:identifier <URN:ISBN:0575600292> .
<http://libris.kb.se/resource/bib/5060570> bibo:isbn10 "0575600292" .
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<http://libris.kb.se/resource/bib/5060570> libris:frbr_related <http://libris.kb.se/resource/bib/5059476> .
```

# Open Library

30

SUBJECTS

AUTHORS

ADD A BOOK

LISTS

RECENTLY

ABOUT US

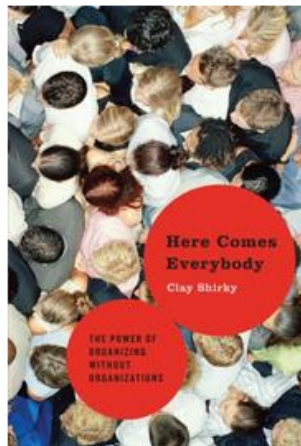
One web page for



5 editions of [Here comes everybody](#) by [Clay Shirky](#)

[Add another?](#)

[← Previous](#) | [Next →](#)



[Manage Covers](#)

## Here Comes Everybody

*The Power of Organizing With*

Published February 28, 2008 by [Penguin](#)

Written in [English](#).

### The Physical Object

Format Hardcover

Number of pages 336

### ID Numbers

Open Library OL12433648M

ISBN 10 1594201536

ISBN 13 9781594201530

Library Thing [4312391](#)

Goodreads [1998185](#)

[g](#) | [Add book](#)


2,248 people read it (3.4

<rdf:RDF>

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  <!-- authors -->
  - <bibo:authorList rdf:parseType="Collection">
    - <rdf:Description rdf:about="http://openlibrary.org/authors/OL482102A">
      <rdf:value>Clay Shirky</rdf:value>
    </rdf:Description>
  </bibo:authorList>
  <!-- bibliographic description -->
  - <dcterms:title>
    Here Comes Everybody The Power of Organizing Without Organizations
  </dcterms:title>
  <dcterms:publisher>Penguin Press HC</dcterms:publisher>
  <dcterms:issued>February 28, 2008</dcterms:issued>
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  <dc:subject>Management - General</dc:subject>
  <dc:subject>Telecommunications</dc:subject>
  <dc:subject>Business & Economics / Management</dc:subject>
  <dc:subject>Computer networks</dc:subject>
  <dc:subject>Information Technology</dc:subject>
  <dc:subject>Internet</dc:subject>
  <dc:subject>Social aspects</dc:subject>
  <!-- description -->
  <dcterms:language>eng</dcterms:language>
  <!-- identifiers -->
  <dcterms:identifier>/books/OL12433648M</dcterms:identifier>
  <bibo:isbn10>1594201536</bibo:isbn10>
  <bibo:isbn13>9781594201530</bibo:isbn13>
  <!-- administrative -->
  <dcterms:modified>2010-08-17 12:56:29.759962</dcterms:modified>
</rdf:Description>
</rdf:RDF>
```

# Registering FRBR and RDA properties

31




**open metadata registry**  
Supporting Metadata Interoperability

**Element Sets: Show detail for**

Detail Elements History

Label
Work
Expression
Manifestation
Item
Person
Corporate Body
Concept
Object
Event
Place
is realized through
is realization of
is embodied in
is embodiment of
is exemplified by
is exemplar of
is created by (corporate body)
is creator (corporate body) of
is creator (person) of
is created by (person)

**216 results**



**open metadata registry**  
Supporting Metadata Interoperability

**Element Sets: Show detail for RDA Group 1 Elements**

Detail Elements History Maintainers

Label	Type	URI	Status	Updated
Title	property	.../Elements/title	New-Proposed	2009-08-09 14:46
Edition statement	property	.../Elements/editionStatement	New-Proposed	2009-08-13 13:25
Place of production	property	.../Elements/placeOfProduction	New-Proposed	2009-08-09 14:14
Date of production	property	.../Elements/dateOfProduction	New-Proposed	2009-08-09 14:29
Copyright date	property	.../Elements/copyrightDate	New-Proposed	2009-08-10 14:42
Identifier for the manifestation	property	.../IdentifierForTheManifestation	New-Proposed	2009-08-11 9:48
Publisher's number for music	subproperty	.../publishersNumberForMusic	New-Proposed	2009-08-20 12:10
Plate number for music	subproperty	.../Elements/plateNumberForMusic	New-Proposed	2009-08-20 12:12
Media type	property	.../Elements/mediaType	New-Proposed	2009-08-20 9:46
Carrier type	property	.../Elements/carrierType	New-Proposed	2009-08-10 14:44
Extent	property	.../Elements/extent	New-Proposed	2009-07-09 12:03
Dimensions	property	.../Elements/dimensions	New-Proposed	2009-06-15 9:49
Base material	property	.../Elements/baseMaterial	New-Proposed	2009-08-20 14:23
Applied material	property	.../Elements/appliedMaterial	New-Proposed	2009-08-20 14:36
Form of work	property	.../Elements/formOfWork	New-Proposed	2009-09-21 13:55
Date of work	property	.../Elements/dateOfWork	New-Proposed	2009-09-21 13:53
Place of origin of the work	property	.../placeOfOriginOfWork	New-Proposed	2009-09-21 13:54
Date of expression	property	.../Elements/dateOfExpression	New-Proposed	2009-08-21 11:30
Language of expression	property	.../Elements/languageOfExpression	New-Proposed	2009-08-21 11:31
Other distinguishing characteristic of the expression	property	...gCharacteristicOfTheExpression	New-Proposed	2009-09-10 6:04

**467 results**



# What about incorporating data from other sources?


32



## Humboldt Squid page, pulled together from a diversity of Linked Data sources

**FEATURED IN THE FOLLOWING TV PROGRAMMES**


**CATCH UP**



Lost Chance to see: Blue Whale


Watch now

**ARCHIVED**




Deadly 60: Baja California, Mexico

**ARCHIVED**



Life: Creatures of the Deep

**FEATURED IN THE FOLLOWING COLLECTIONS**



**The wildlife of Life**

In autumn 2009, a major new series brought us life as we've never seen it before.

**SCIENTIFIC CLASSIFICATION**

- Kingdom: Animal (animalia)
- Phylum: Mollusca
- Class: Cephalopod (Cephalopoda)
- Order: Squid (Teuthida)
- Family: Ommastrephidae
- Genus: Dosidicus
- Species: **Humboldt Squid (gigas)**

**COMMON NAMES**

- Jumbo flying squid
- Jumbo squid
- Red devil

**WAYS OF LIFE**

- Adapted to swimming
- Camouflage
- Carnivorous
- Egg layer
- Marine
- Nocturnal**
- Pack hunter
- Predator
- Social
- Spawning
- Visual communication

Adaptation data provided by Animal Diversity Web

**WHERE CAN I SEE THEM?**

They can be found in the following habitats:

- Deep ocean
- Open ocean

**ELSEWHERE ON THE WEB**

- Animal Diversity Web (animaldiversity.ummich.edu)

**BBC TV Documentary**

**BBC News item**

**Wikipedia**

**Animal Diversity Web: Nocturnal way of life**

BBC Wildlife Finder

<<http://www.bbc.co.uk/wildlifefinder/>>

Slide by Thomas Baker, "What Makes the Linked Data Approach Different," NISO DCMI Webinar 2010.

<[http://dublincore.org/resources/training/NISO\\_Webinar\\_20100825/dcmi-webinar-02.pdf](http://dublincore.org/resources/training/NISO_Webinar_20100825/dcmi-webinar-02.pdf)>



## 33 Challenges to implementing RDF in practice

# How do you...

34

- find all the triples you need?
- know what predicates and URIs to use when creating new triples?
- know what predicates and URIs to use when processing data?

# What infrastructure needs to be built in order to...

35

- negate an erroneous statement?
- say that a statement is time-dependent?
- judge the likely validity of a statement made by someone else?

...actually end up with machine-understandable  
data in the end???

# Don't run away!

36

- These uncertainties do not give librarians permission to write off the entire model.
- Incorporating new ideas doesn't mean we have to give up our core principles.
- We have an opportunity here:
  - ▣ to create classes and properties that represent data as we think it should be.
  - ▣ to bring new features to the model and to its implementations.
  - ▣ to provide some of the infrastructure that's missing.
  - ▣ to participate in the discussion.

# Let's go!

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Photo by Gregory Moine

<<http://www.flickr.com/photos/gregory-moine/4713276677/>>

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<<http://creativecommons.org/licenses/by/2.0/deed.en>>

# For more information

38

- jenrile@indiana.edu
- These presentation slides:  
<<http://www.dlib.indiana.edu/~jenrile/presentations/bbfall10/rdf/rdfForLibrarians.pptx>>
- Recording of talk on DLP Brown Bag page:  
<<http://www.dlib.indiana.edu/education/brownbags/>>
- More resources on handout:  
<<http://www.dlib.indiana.edu/~jenrile/presentations/bbfall10/rdf/handout.pdf>>

## Thank you!