

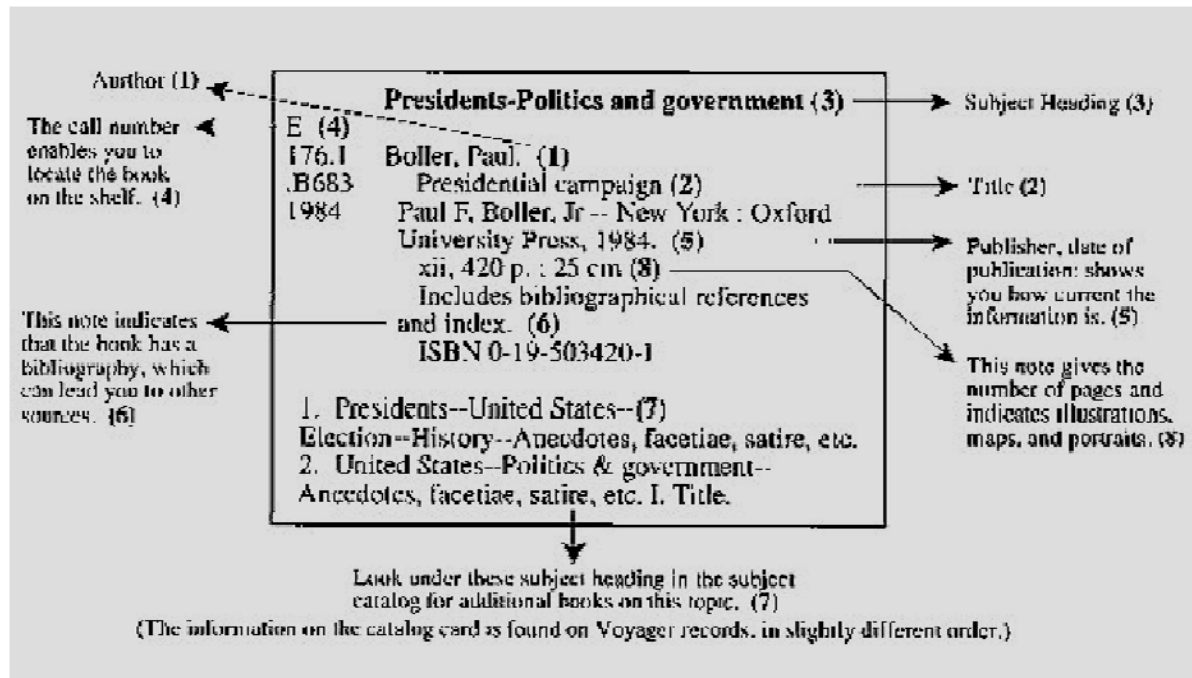
RDA in RDF: Transitioning to the FRBR Catalog and the Semantic Web

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ISBD – AACR2 – MARC

Half a century ago...we built ISBD, AACR2 and MARC...



...for transmitting and printing catalog cards



RDA? RDF? LD? Why?

Problems with ISBD, AACR2 and MARC:

- own, separate bibliographic universe
- not enough globally unique identifiers
- insufficient control; fosters inconsistencies



MARC Bibliographic Data

Solution?

- communicate to the broader data universe
- standards and practices built for networked users
- increase consistency, comprehensibility and extensibility





The Linked Data Environment



Linked Data Environment

- use URIs as identifiers
- use HTTP URIs to look up identifiers
- Provide standardized information for each URI
- Reference other URIs

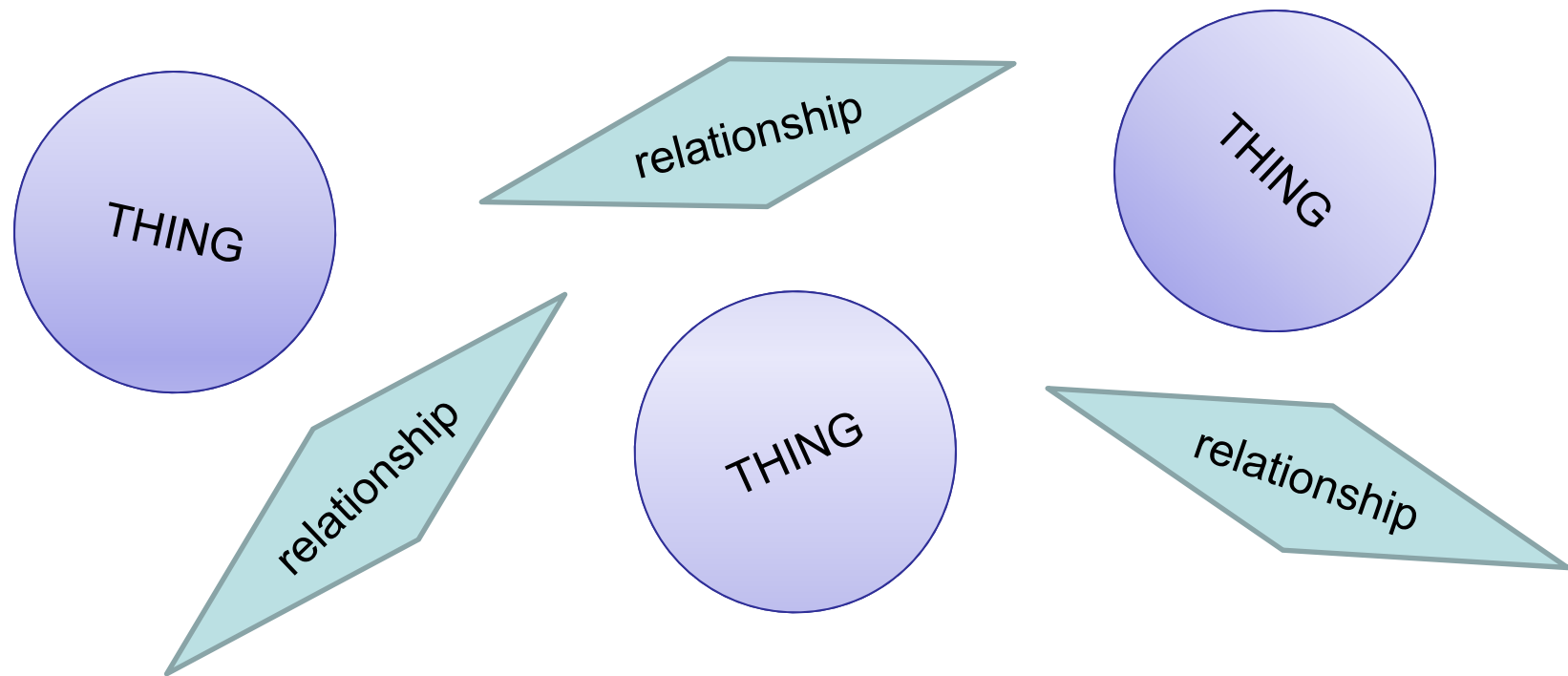
RDA data elements as Linked Data

- Project of the JSC and DCMI since 2007
- Serve as basis for machine interoperation
- Expose library data into Linked Data environment
- Developed independently using RDF



Resource Description Framework is

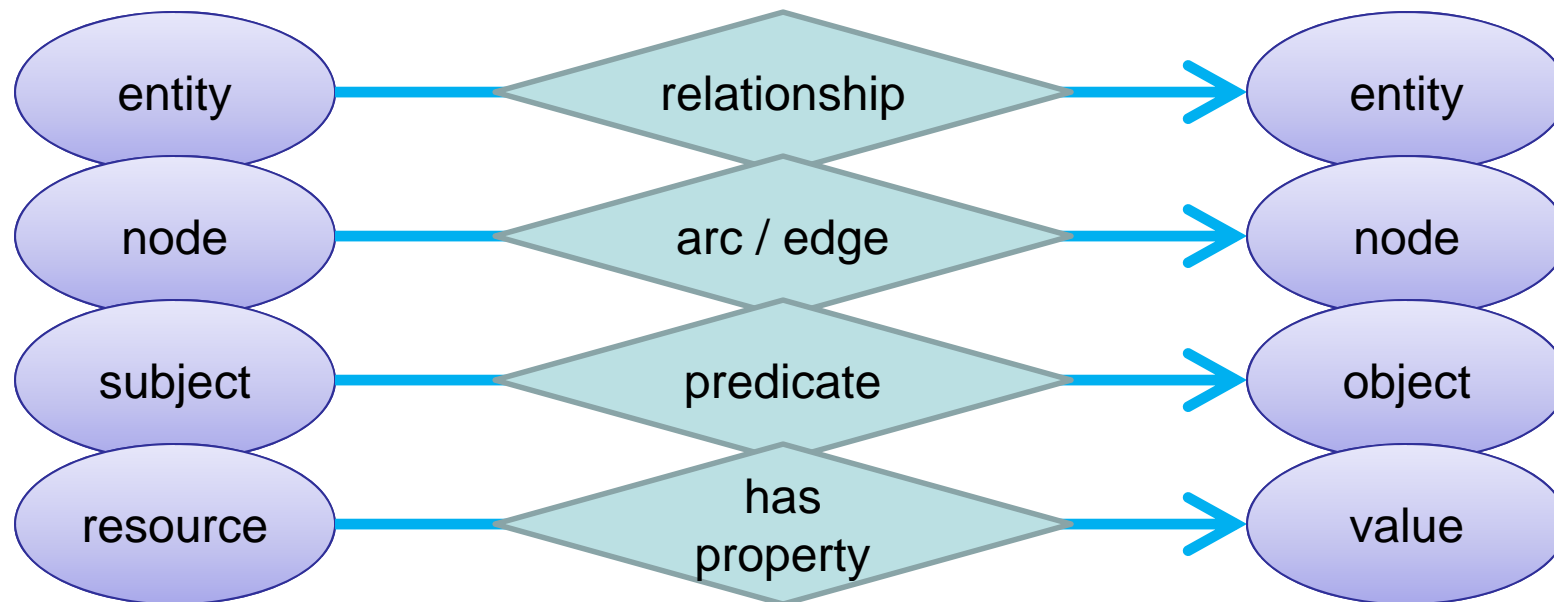
- an abstract data model
- domain-neutral and application-neutral
- provides structure to draw relationships between things



The RDF Triple

In RDF...

- a statement, a “triple” is made of three ordered parts
- triples are “directed” and “labeled”
- triples are best visualized as graphs



The RDF Triple

URI references can refer to a thing, a class of things, or a property

<http://id.loc.gov/authorities/names/n79107741.html>

refers to the name authority file for
“Beethoven, Ludwig van, 1770-1827”

<http://rdvocab.info/uri/schema/FRBRentitiesRDA/Manifestation>

refers to the FRBR class of objects “Manifestation”

<http://rdvocab.info/uri/schema/FRBRentitiesRDA/Name>

refers to the FRBR class of objects “Name”

<http://rdvocab.info/ElementsGr2/name>

refers to RDA property “Name”

http://marc21rdf.info/elements/1XX/M1001_a

refers to the MARC 21 property labeled “Personal name in Main Entry-Personal Name (Surname)”
i.e. Field 100 1# subfield a



The RDF Triple

URIs have human-readable “Labels”

Ludwig van
Beethoven

refers to the name authority file for
“Beethoven, Ludwig van, 1770-1827”

Manifestation

refers to the FRBR class of objects “Manifestation”

Name

refers to the FRBR class of objects “Name”

Name

refers to RDA property “Name”

Personal name in
Main Entry-Personal
Name (Surname)

refers to the MARC 21 property labeled “Personal
name in Main Entry-Personal Name (Surname)”
i.e. Field 100 1# subfield a



RDA's RDF Properties

RDA elements are expressed in RDF as “properties”

RDA properties are designed to work with FRBR entities

Some FRBR entities for RDA

| FRBR | RDF Label | URI |
|------|---------------|---|
| | Work | http://rdvocab.info/uri/schema/FRBREntitiesRDA/Work |
| | Expression | http://rdvocab.info/uri/schema/FRBREntitiesRDA/Expression |
| | Manifestation | http://rdvocab.info/uri/schema/FRBREntitiesRDA/Manifestation |
| | Item | http://rdvocab.info/uri/schema/FRBREntitiesRDA/Item |
| | Subject | http://rdvocab.info/uri/schema/FRBREntitiesRDA/Subject |
| | etc... | |



RDA's RDF Properties

Some RDA properties are specific to the FRBR entity

Note correspondence with MARC

| MARC | RDF Property | URI |
|--------------|---|---|
| 245a | Title (Manifestation) | http://rdvocab.info/Elements/titleManifestation |
| 245a 240a | Title of the work | http://rdvocab.info/Elements/titleOfTheWork |
| 245b 245c | Parallel title proper (Manifestation) | http://rdvocab.info/Elements/parallelTitleProperManifestation |
| 245c | Statement of responsibility relating to title proper | http://rdvocab.info/Elements/statementOfResponsibilityRelatingToTitleProper |
| 246a | Variant title (Manifestation) | http://rdvocab.info/Elements/variantTitleManifestation |



RDA's RDF Properties

Some are more straightforward ...

| MARC | RDF Label | URI |
|------|------------------------------|---|
| 336a | Content type (Expression) | http://rdvocab.info/Elements/contentTypeExpression |
| 337a | Media type (Manifestation) | http://rdvocab.info/Elements/mediaTypeManifestation |
| 336a | Carrier type (Manifestation) | http://rdvocab.info/Elements/carrierTypeManifestation |



RDF Triple

Imagine a spreadsheet with information about books.

The rows and columns represent classes of things.

Each row is a “resource”

| Title | Author | Standard ID |
|--------------------------------|-------------------------|---------------|
| Romeo et Juliette | Peter Ilich Tchaikovsky | 0-4862-5217-5 |
| The holy sonnets of John Donne | Benjamin Britten | 028941742827 |
| Romeo and Juliet | William Shakespeare | 0-4864-7573-5 |

Each column header is a “property”
followed by a list of “values”

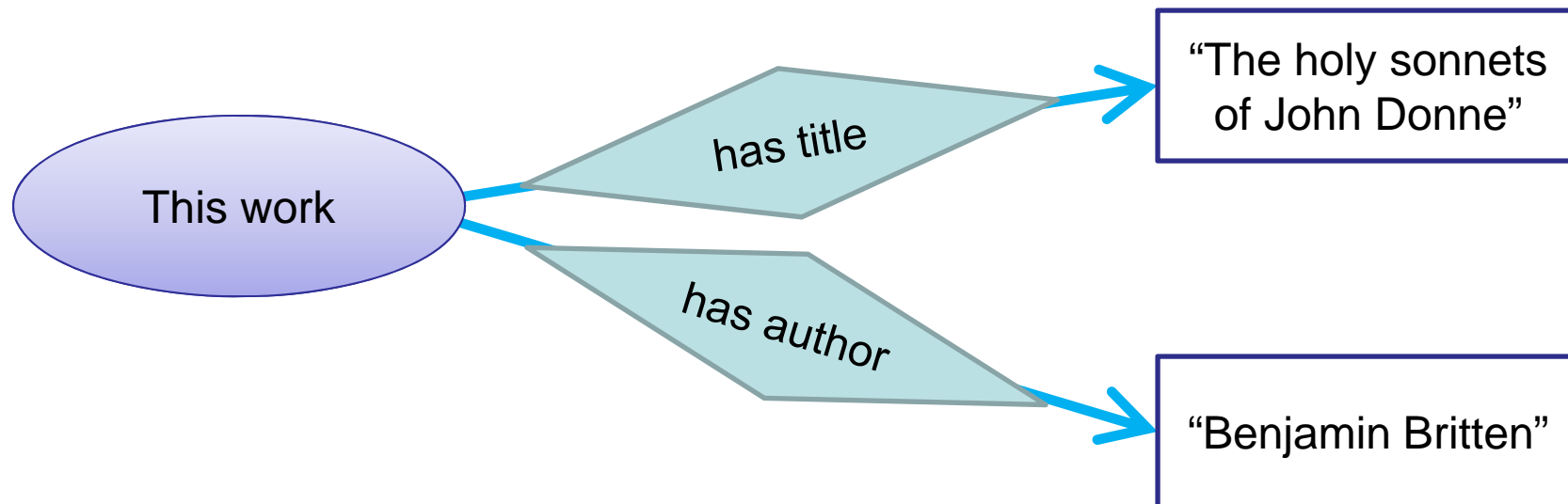
| Title | Author | Standard ID |
|--------------------------------|-------------------------|---------------|
| Romeo et Juliette | Peter Ilich Tchaikovsky | 0-4862-5217-5 |
| The holy sonnets of John Donne | Benjamin Britten | 028941742827 |
| Romeo and Juliet | William Shakespeare | 0-4864-7573-5 |



RDF Triple

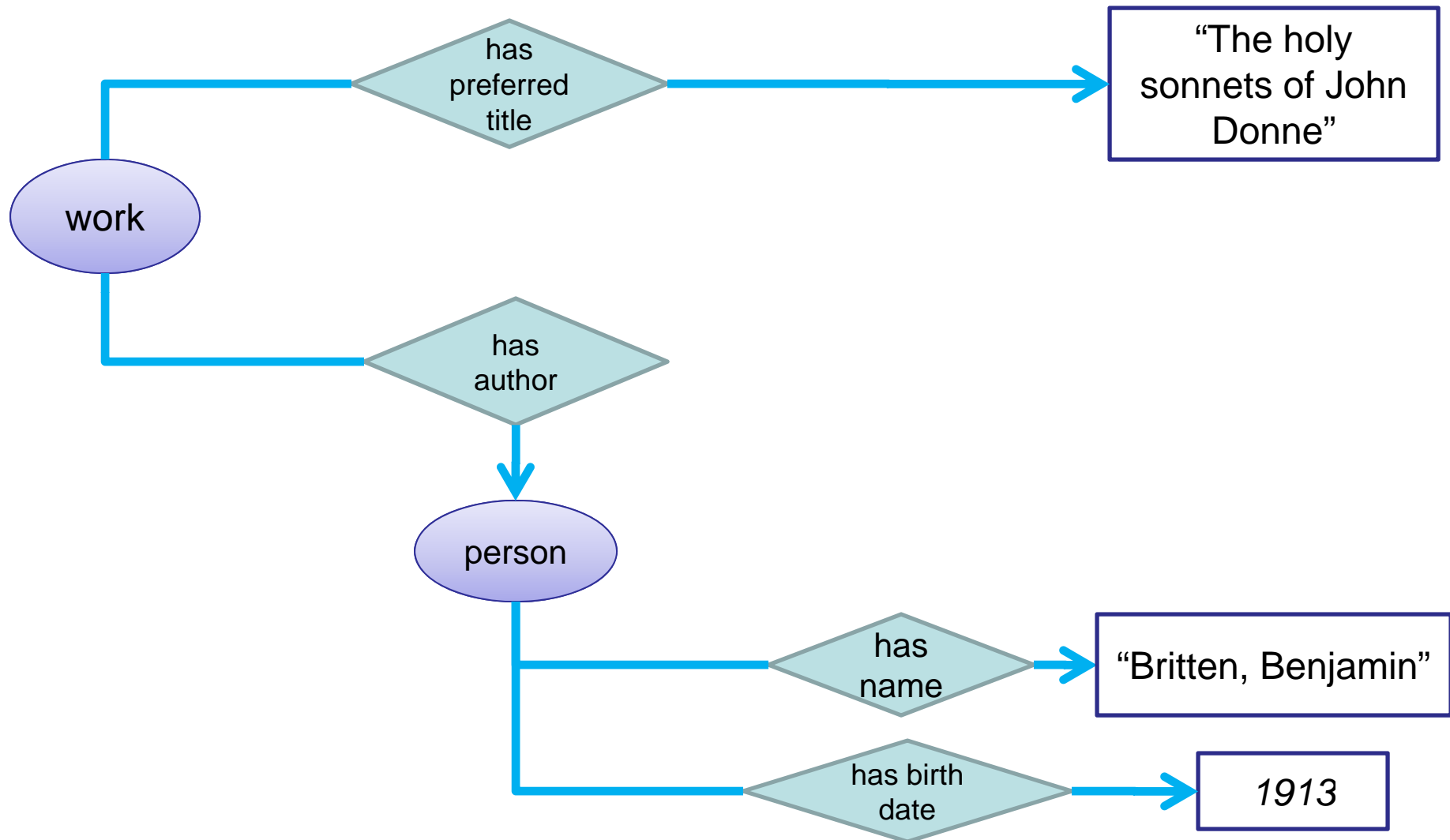
Each cell is a RDF triple

| Title | Author | Standard ID |
|--------------------------------|-------------------------|---------------|
| Romeo et Juliette | Peter Ilich Tchaikovsky | 0-4862-5217-5 |
| The holy sonnets of John Donne | Benjamin Britten | 028941742827 |
| Romeo and Juliet | William Shakespeare | 0-4864-7573-5 |



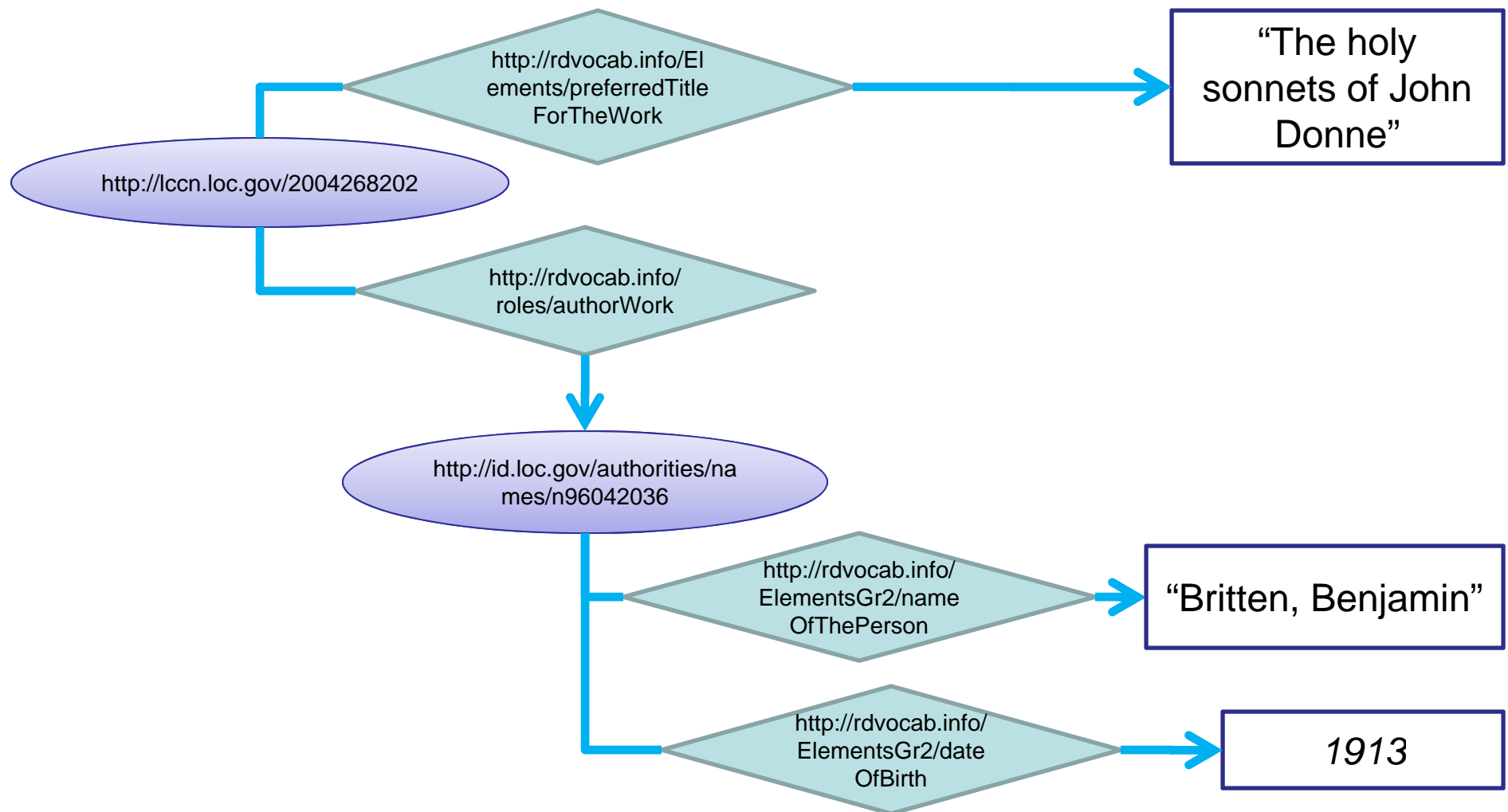
RDF Graph

RDF graph for a work, showing labels



RDF Graph

The same graph using URIs

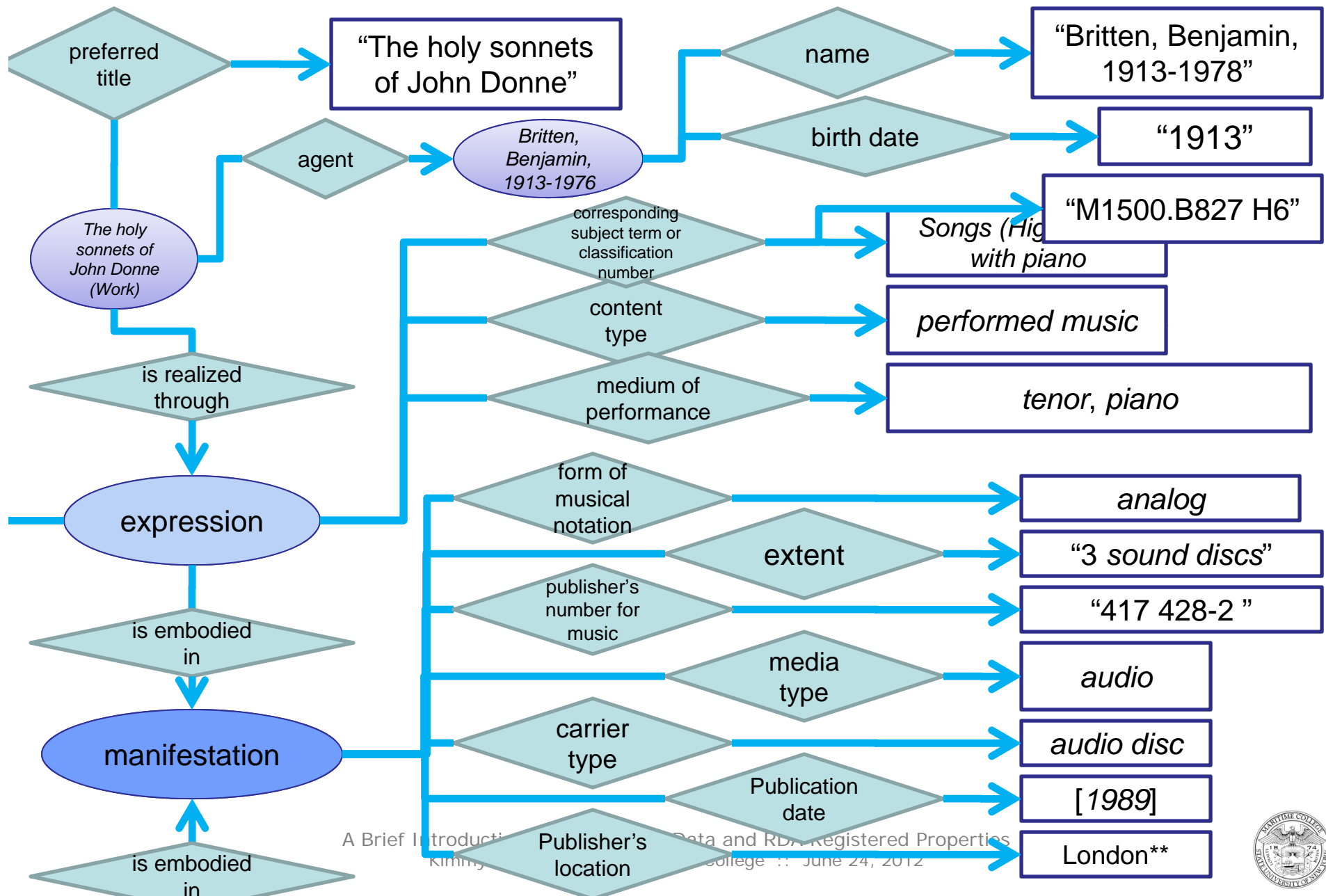


RDA in RDF: Example

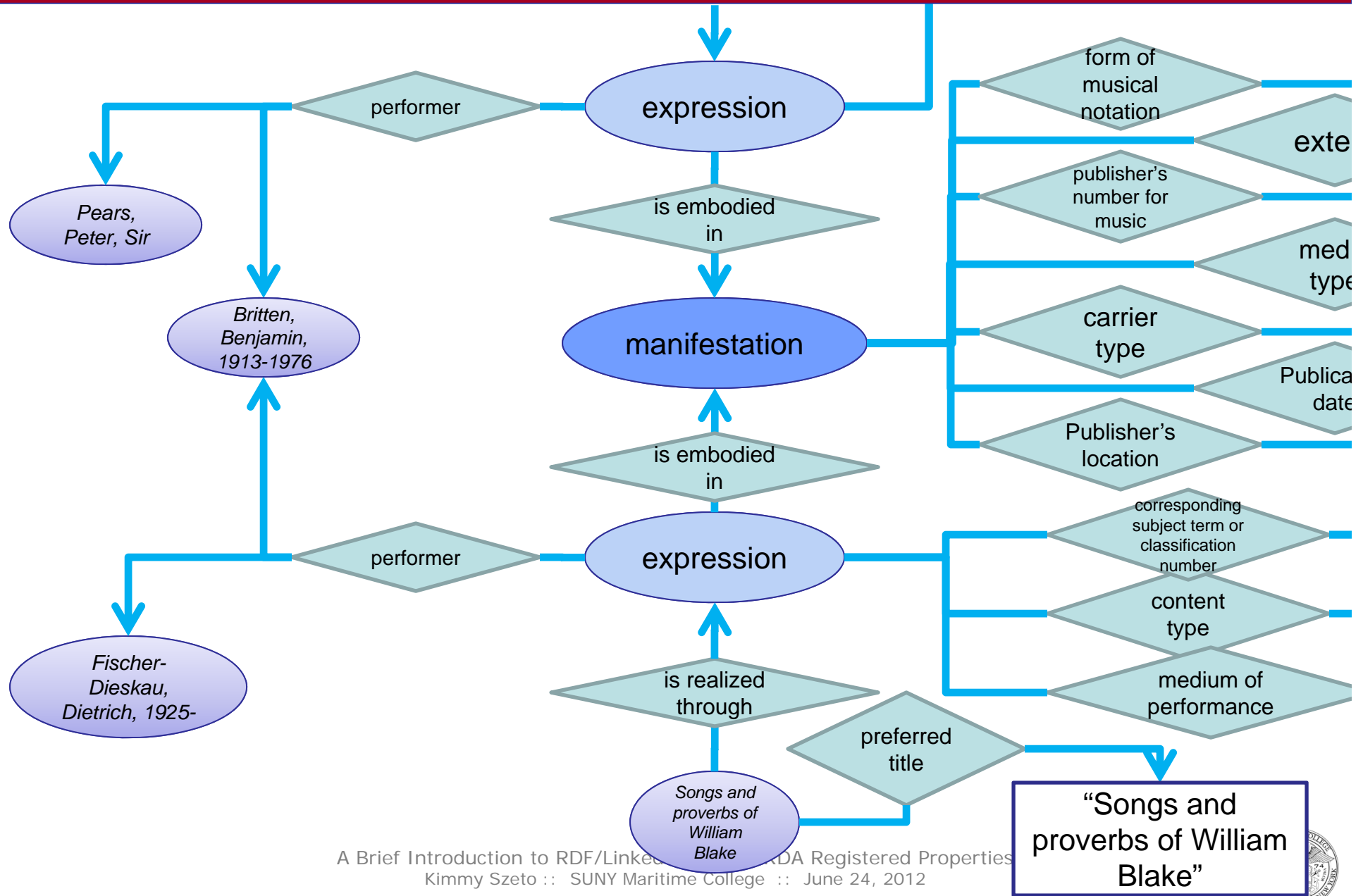
040 RBN ‡c RBN ‡d OCL ‡d IUL ‡d OCL ‡d JNA ‡d OCL ‡d NZCPL ‡d
JTA ‡d BTCTA ‡d ORX ‡d YQU ‡d OCLCG ‡d OCLCA ‡d MTG ‡d OCL ‡d IK2
‡d EUX
028 00 417 428-2 ‡b London
050 4 M1500.B827 ‡b H6
100 1 Britten, Benjamin, ‡d 1913-1976.
240 10 Vocal music. ‡k Selections
245 14 The holy sonnets of John Donne ‡h [sound recording] ; ‡b
Songs and proverbs of William Blake ; Billy Budd / ‡c Britten.
260 London : ‡b London, ‡c [1989]
300 3 sound discs : ‡b digital, stereo. ; ‡c 4 3/4 in.
500 Compact discs; analog recordings.
505 0 The holy sonnets of John Donne, op.35 -- Songs and proverbs
of William Blake, op.74 -- Billy Budd, op.50.
650 0 Songs (High voice) with piano.
650 0 Songs (Medium voice) with piano.
650 0 Operas.
600 10 Donne, John, ‡d 1572-1631 ‡v Musical settings.
600 10 Blake, William, ‡d 1757-1827 ‡v Musical settings.
700 10 Donne, John, ‡d 1572-1631.
700 10 Blake, William, ‡d 1757-1827.
etc.



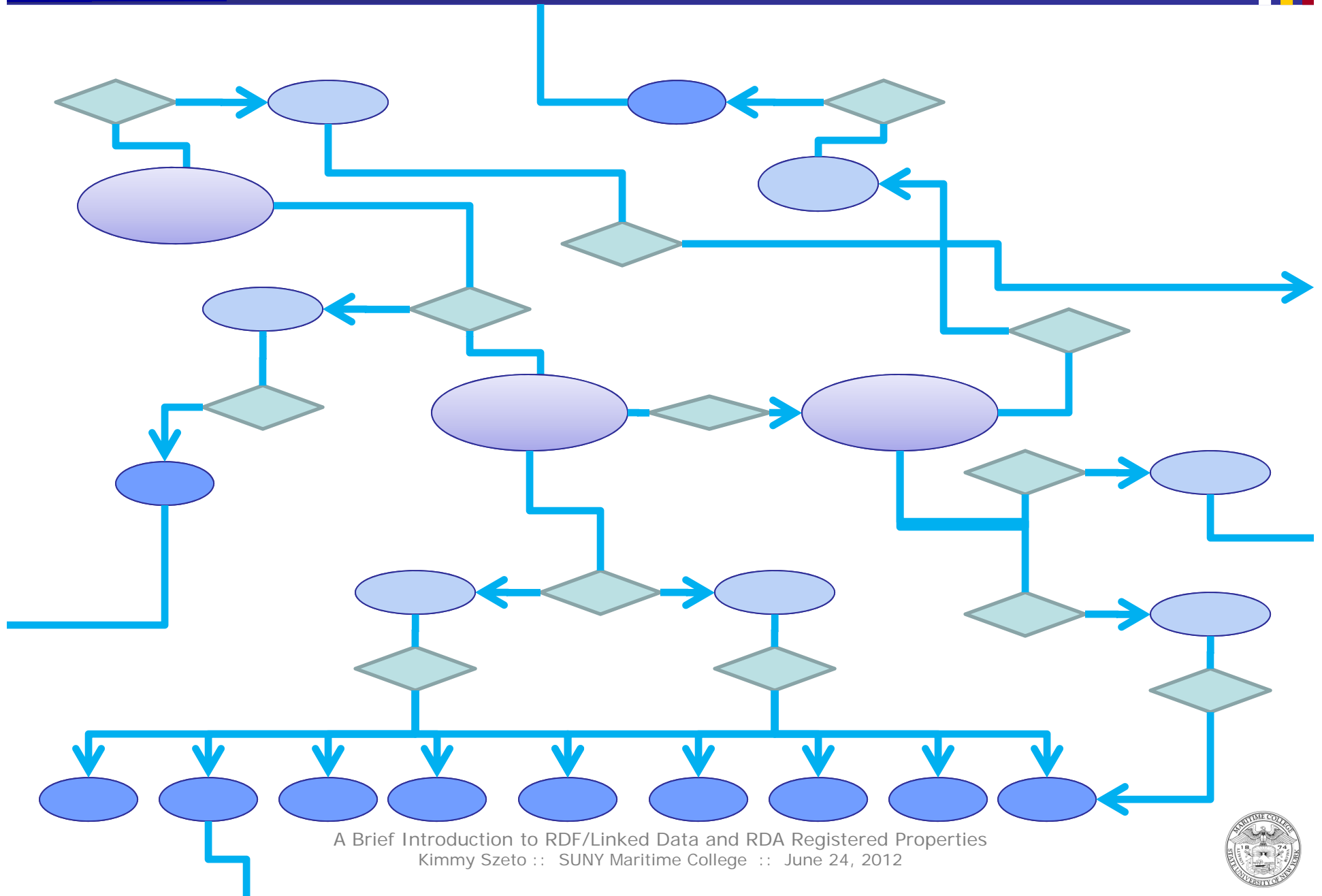
RDA in RDF: Example



RDA in RDF: Example



Linked Data



RDA in RDF: Example

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
3   xmlns:rdaElementsGp1="http://rdvocab.info/Elements"
4   xmlns:rdaElementsGp2="http://rdvocab.info/ElementsGr2"
5   xmlns:frbrEntities="http://rdvocab.info/uri/schema/FRBREntitiesRDA"
6   xmlns:frbr="http://iflastandards.info/ns/fr/frbr/frbrer/"
7   xmlns:rdaRoles="http://rdvocab.info/roles/">
8
9   <!-- NOTE! THIS EXAMPLE IS VERY INCOMPLETE. ITS PURPOSE IS SOLELY TO ILLUSTRATE THE PRINCIPLES
10      INVOLVED, NOT PROVIDE COMPLETE DATA ABOUT THIS MANIFESTATION, THE WORKS ON IT, OR ANY ASSOCIATED
11      ENTITIES. KTHXBAI. -->
12
13   <!-- Manifestation data -->
14   <rdf:Description about="http://www.librarydata.org/manifestation/ocm21529894">
15     <rdf:type rdf:resource="http://rdvocab.info/uri/schema/FRBREntitiesRDA/Manifestation" />
16     <rdaElementsGp1:titleProperManifestation>The holy sonnets of John Donne ; Songs and proverbs of William Blake ; Billy Budd</rdaElementsGp1:tit
17     <rdaElementsGp1:publishersNumberForMusicManifestation>417 428-2</rdaElementsGp1:publishersNumberForMusicManifestation>
18     <rdaElementsGp1:publishersNumberForMusicManifestation>417 429-2</rdaElementsGp1:publishersNumberForMusicManifestation>
19     <rdaElementsGp1:publishersNumberForMusicManifestation>417 430-2</rdaElementsGp1:publishersNumberForMusicManifestation>
20     <rdaElementsGp1:publishersNumberForMusicManifestation>417 431-2</rdaElementsGp1:publishersNumberForMusicManifestation>
21     <rdaElementsGp1:extentManifestation>3 sound discs</rdaElementsGp1:extentManifestation>
22     <!-- Digital -->
23     <rdaElementsGp1:typeOfRecordingManifestation rdf:resource="http://rdvocab.info/termList/typeRec/1002" />
24     <!-- Stereo -->
25     <rdaElementsGp1:configurationOfPlaybackChannelsManifestation rdf:resource="http://rdvocab.info/termList/configPlayback/1002" />
26     <rdaElementsGp1:dimensionsManifestation>12 cm</rdaElementsGp1:dimensionsManifestation>
27     <!-- CD audio -->
28     <rdaElementsGp1:encodingFormatManifestation rdf:resource="http://rdvocab.info/termList/encFormat/1007" />
29     <rdaElementsGp1:publicationStatementManifestation rdf:nodeID="abc"/>
30     <!-- isEmbodimentOf -->
31     <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/123" />
32     <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/456" />
33     <frbr:P2004 rdf:resource="http://www.librarydata.org/expression/789" />
34   </rdf:Description>
35
36   <!-- Blank node with Manifestation publication statement -->
37   <rdf:Description rdf:nodeID="abc">
38     <rdaElementsGp1:placeOfPublicationManifestation>London</rdaElementsGp1:placeOfPublicationManifestation>
39     <rdaElementsGp1:publishersNameManifestation>London</rdaElementsGp1:publishersNameManifestation>
40     <rdaElementsGp1:dateOfPublicationManifestation>1989</rdaElementsGp1:dateOfPublicationManifestation>
41   </rdf:Description>
42
```



The RDF Graph Model

- conceptual framework that enables Linked Data
- independent of any specific syntax or metadata encoding
- encourages the use of controlled vocabulary

RDA in RDF – The End Result...

- many inter-connected controlled vocabularies
- no fixed bibliographic “records”
- data gathered from unbounded range of sources...



Implementation

- identify trusted data sources
- manipulate external objects, properties, and classes
- intelligent data caching
- globally shared cataloging
- enforce (!?) best practices in the library community
 - metadata creation
 - metadata management
 - resource sharing
 - exposure and discovery systems



RDA as RDF Registered Properties



[sign in / register](#) | [about](#)

Element Sets

| Label | Owner | Last Updated | Updated by | Actions |
|---|--------------------------------|--------------|------------------|---------|
| RDA Relationships for Works, Expressions, Manifestations, Items | Metadata Management Associates | 2009-11-08 | DianeH | |
| RDA Roles | Metadata Management Associates | 2011-04-11 | DianeH | |
| RDF | Metadata Management Associates | 2008-08-05 | Jon Phipps | |
| RDF Schema | Metadata Management Associates | 2008-08-05 | Jon Phipps | |
| Resource Identity & Provenance | Analekta Ltd. | 2008-07-17 | bbater | |
| Rising Stars | Necula Sabina | 2011-07-14 | sabinanecula | |
| SAAP Vocabulary | Matt Boris | 2010-11-07 | mjboris | |
| SKOS (Simple Knowledge Organization System) | Metadata Management Associates | 2008-08-05 | Jon Phipps | |
| SKOS Community Extensions | SKOS Community | 2011-01-18 | aliman | |
| test | otnc | 2008-12-12 | gmdr | |
| Thematic Indexes | Damian Iseminger | 2011-06-07 | Damian Iseminger | |
| Title | Chandana Patra | 2009-08-20 | chandana | |
| Trials and Tests | Chris | 2011-12-05 | ChrisC | |
| z test | Richard F | 2011-07-07 | Richard F | |
| 54 results | | | | |

Browse...

[Resource Owners](#)
[Vocabularies](#)
[Element Sets](#)
[SPARQL](#)

Feedback





Current Linked Data Projects



What the Library Community has done...

- RDA as registered properties in the Open Data Registry
- Library of Congress Bibliographic Framework Transition Initiative
- W3C Library Linked Data Incubator Group
- Stanford University Linked Data Workshop Technology Plan
- PCC Acceptable Headings Implementation Task Group - LC/NACO authority file conversion
- LC Genre/Form Headings
- Harvard Library Bibliographic Dataset

