

# Lecture 3

## Knowledge Graphs: Vocabularies & Ontologies

COMP 474/6741, Winter 2024

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## Slides Credit

- Includes slides from Jay Pujara & Sameer Singh, *Mining Knowledge Graphs from Text*, <https://kgtutorial.github.io/>
- Includes slides by Ivan Herman, W3C [Her]

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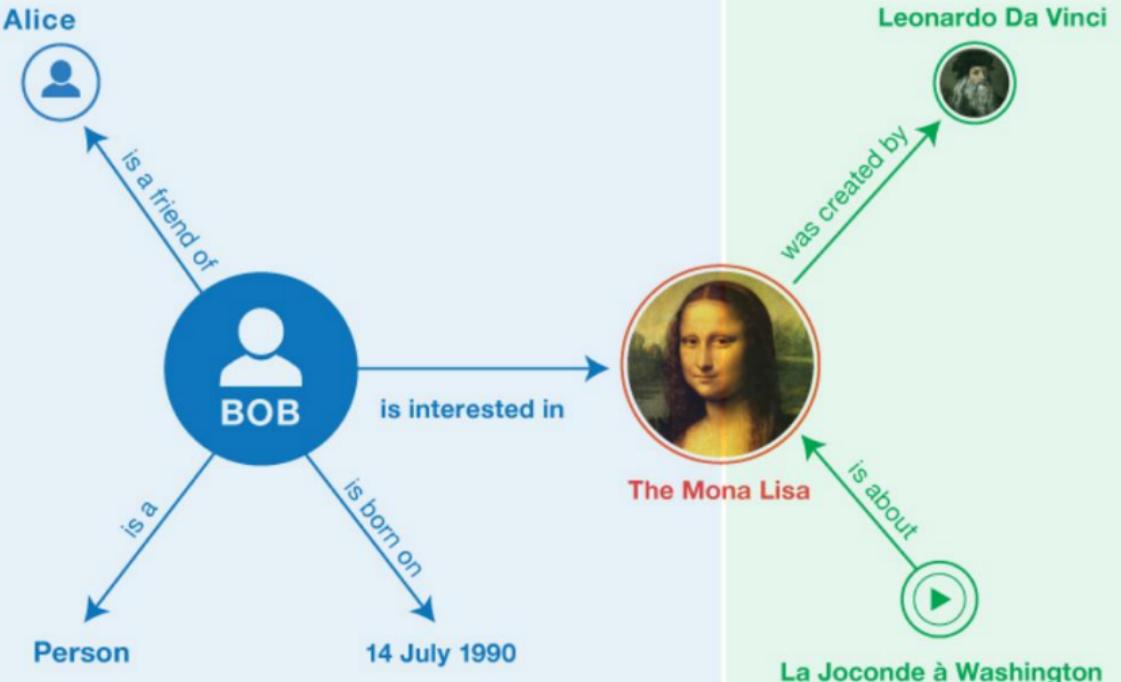
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<http://example.org/bob>

<https://www.wikidata.org/wiki/Special:EntityData/Q12418>



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# Why knowledge graphs?

- Humans:

- Combat information overload
- Explore via intuitive structure
- Tool for supporting knowledge-driven tasks

- AIs:

- Key ingredient for many AI tasks
- Bridge from data to human semantics
- Use decades of work on graph analysis

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# RDF triples (cont.)

- ▶ An RDF Triple (*s,p,o*) is such that:
  - “*s*”, “*p*” are URI-s, ie, resources on the Web; “*o*” is a URI or a literal
    - “*s*”, “*p*”, and “*o*” stand for “subject”, “property”, and “object”
  - here is the complete triple:

```
(<http://...isbn...6682>, <http://.../original>, <http://...isbn...409X>)
```

- ▶ RDF is a general model for such triples (with machine readable formats like RDF/XML, Turtle, N3, RDFa, Json, ...)

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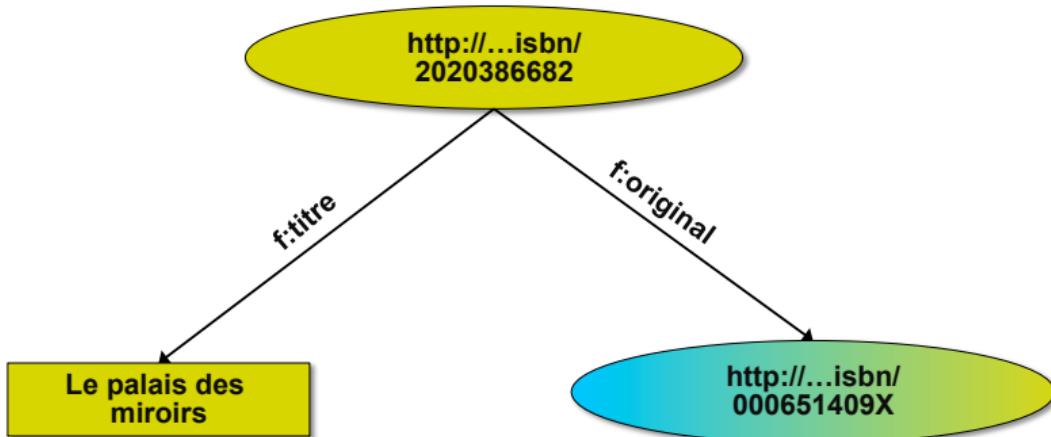
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# A simple RDF example (in Turtle)



```
<http://.../isbn/2020386682>
  f:titre "Le palais des miroirs"@fr ;
  f:original <http://.../isbn/000651409X> .
```

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## Anatomy of a URI

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- A URI (*Uniform Resource Identifier*) uniquely identifies a resource (e.g., person, book, class of things) on the Web.
- A URI is not always a URL (*Uniform Resource Locator*)
  - URNs (*Uniform Resource Names*) are URIs that name resources without specifying how to retrieve them, e.g., urn:isbn:0451450523.
  - It's possible URLs are not available, e.g.,  
`http://www.concordia.ca/comp474/lecture03/slides5`  
is a valid URL, but nothing can be (currently?) retrieved from this address
- URIs have a generic syntax:



- Queries are also possible, following the format:

`scheme : [//authority]path[?query][#fragment]`

- Namespaces are used to shorten URIs and prevent name clashes, e.g., ex:me
- IRIs (*Internationalized Resource Identifiers*) are URIs with Unicode characters

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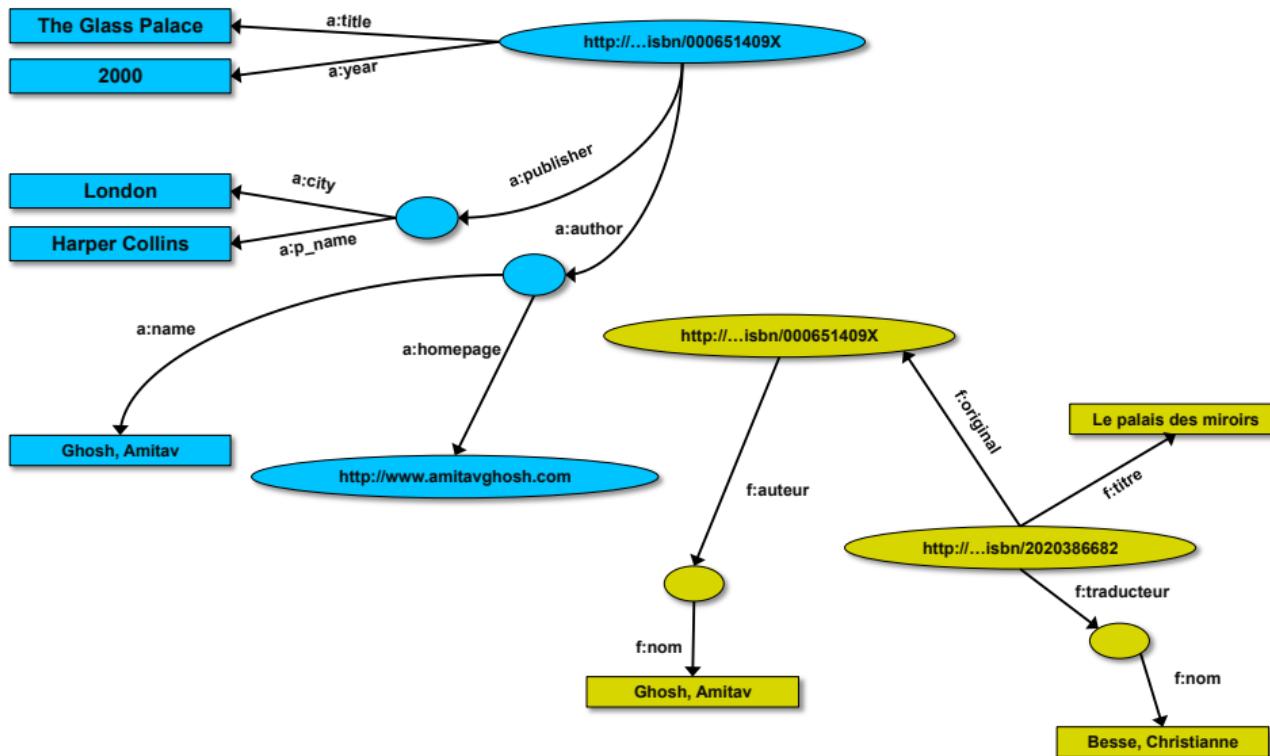
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# 3<sup>rd</sup>: start merging your data

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# From the first week's lecture...

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## Common Issue

- Data in Information Silos  
Documents, databases,  
spreadsheets, emails, ...
- Disconnected, missing knowledge

## Knowledge Integration

- Connect silo-ed knowledge
- Leverage existing, external  
Knowledge Bases
- Freely available, many domains
- Continuously updated



WIKIDATA

Main page  
Community portal  
Project chat  
Create a new item  
Create a new lexeme  
Recent changes  
Random item  
Query Service  
Nearby  
Help  
Donate  
Tools  
What links here  
Related changes  
Special pages  
Permanent link  
Page information

Item Discussion

**support vector machine (Q282453)**

set of methods for supervised statistical learning  
SVM | support vector machines

► In more languages

**Statements**

Instance of algorithm  
0 references

subclass of supervised learning  
1 reference



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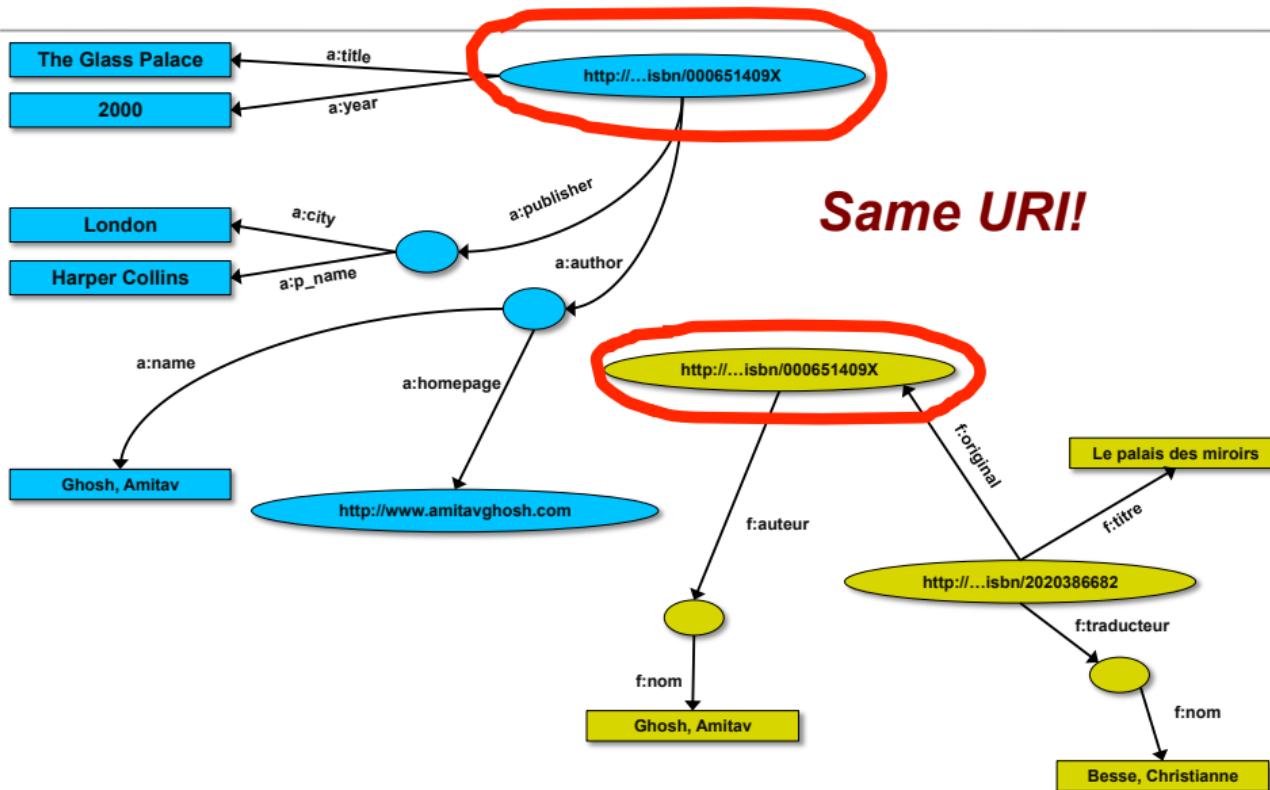
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But: we do not want that!

# 3<sup>rd</sup>: start merging your data (cont)

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**Same URI!**

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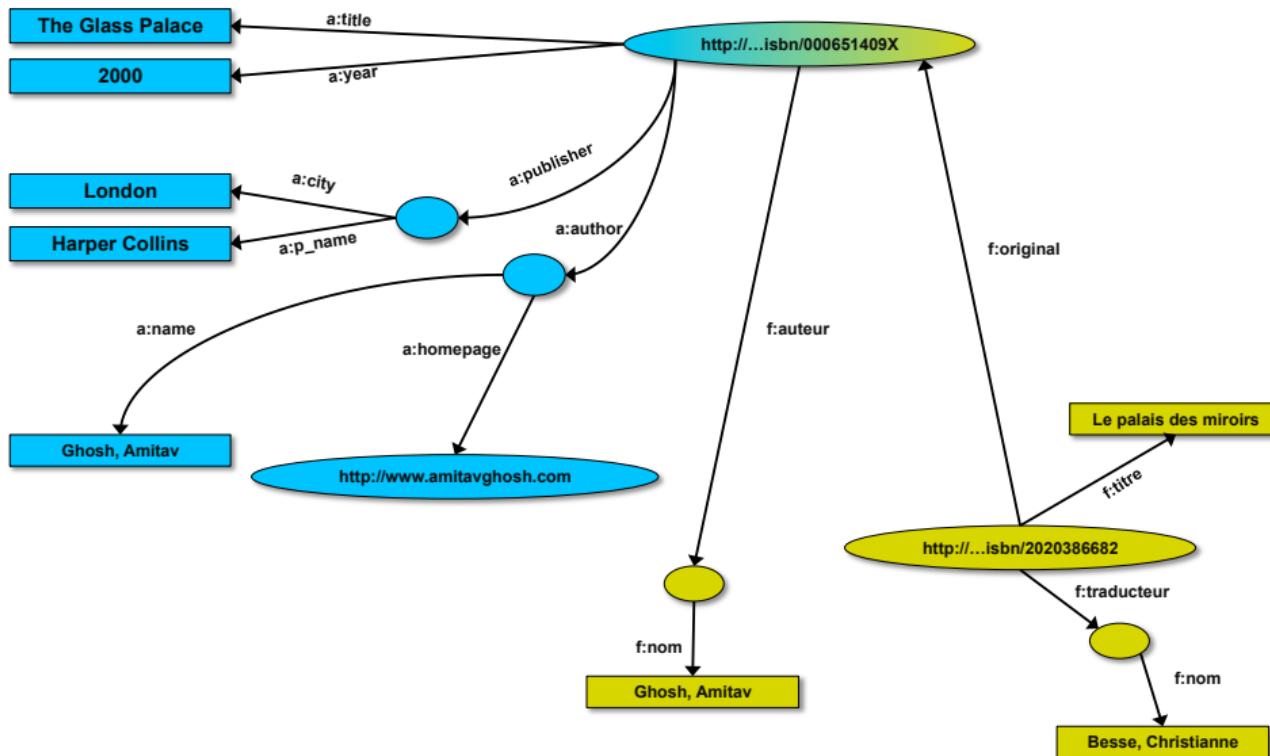
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## What's an "author"?

- author
- auteur
- Autor
- book author
- writer
- editor
- ghostwriter
- co-author
- blogger
- ...

How can we define their meaning? And relations?

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## Authors and publishers

Here are entered works on the relations between author and publisher.

### URI(s)

- <http://id.loc.gov/authorities/subjects/sh85010023>
- [info:lc/authorities/sh85010023](#)
- [http://id.loc.gov/authorities/sh85010023#concept](#)

### Instance Of

- MADS/RDF Topic
- MADS/RDF Authority
- SKOS Concept ↗

### Scheme Membership(s)

- [Library of Congress Subject Headings](#)

### Collection Membership(s)

- [LCSH Collection - Authorized Headings](#)
- [LCSH Collection - General Collection](#)
- [LCSH Collection - May Subdivide Geographically](#)

### Variants

- Author and publisher
- Authors and publishers--Law and legislation
- Publishers and authors
- Publishing contracts

### Broader Terms

- [Authorship](#)
- [Contracts](#)

### Narrower Terms

- [Queries \(Authorship\)](#)

### Related Terms

- [Book proposals](#)
- [Contract](#)

Everything



## Subject Of Works

243 resources

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Alden, Chevy. How to get published, guaranteed  
Alden, Chevy. How to get published-guaranteed  
Allen, Marilyn. complete idiot's guide to book  
proposals & query letters

Allfeld, Philipp, 1852- gesetze betreffend das  
urheberrecht an werken der literatur und der  
tonkunst und über das verlagsrecht

Allfeld, Philipp, 1852- verlagsrecht

Allison, Alida. Grad student's guide to getting  
published

Amir, Nina, How to blog a book

Amir, Nina, author training manual

Amir, Nina. How to blog a book

Anderson, Rick, 1965- Scholarly communication

Anderson, Rick, 1965- Scholarly communication

Appelbaum, Judith. How to get happily published

Anneliemi, Judith. How to get happily published

Suggest Alternative Terminology

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## RDF Triples (SKOS vocabulary, introduced later)

```
<http://id.loc.gov/authorities/subjects/sh85010023>
  <http://www.w3.org/1999/02/22-rdf-syntax-ns#type>
  <http://www.w3.org/2004/02/skos/core#Concept> .

<http://id.loc.gov/authorities/subjects/sh85010023>
  <http://www.w3.org/2004/02/skos/core#prefLabel>
  "Authors and publishers"@en .

<http://id.loc.gov/authorities/subjects/sh85010023>
  <http://www.w3.org/2004/02/skos/core#broader>
  <http://id.loc.gov/authorities/subjects/sh85031620> .

<http://id.loc.gov/authorities/subjects/sh85010023>
  <http://www.w3.org/2004/02/skos/core#narrower>
  <http://id.loc.gov/authorities/subjects/sh85109817> .

...
http://id.loc.gov/authorities/subjects/sh85010023.html
```

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*Photo credit "kxly", Flickr*

# TBL at TED on “The year open data went worldwide” (2010)

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A globe showing the Earth from space, with city lights visible, illustrating the global reach of open data.

F M A M J J A S O N D 2009

4.00 / 6.03

OpenStreetMap TED

Map data © OpenStreetMap contributors CC-BY-SA www.openstreetmap.org

CC BY SA

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Tim Berners-Lee: The year open data went worldwide

<https://www.youtube.com/watch?v=3YcZ3Zqk0a8>

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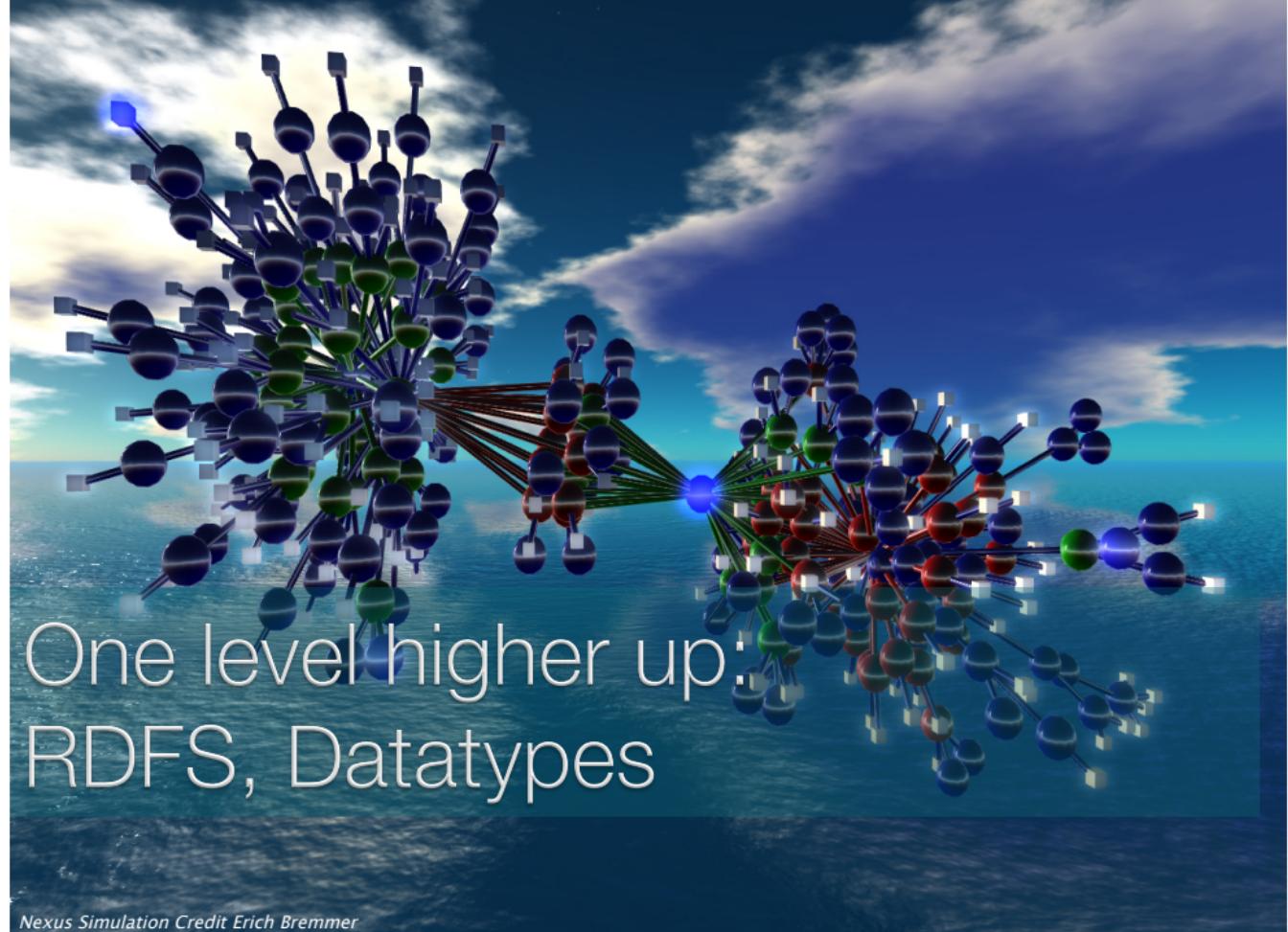
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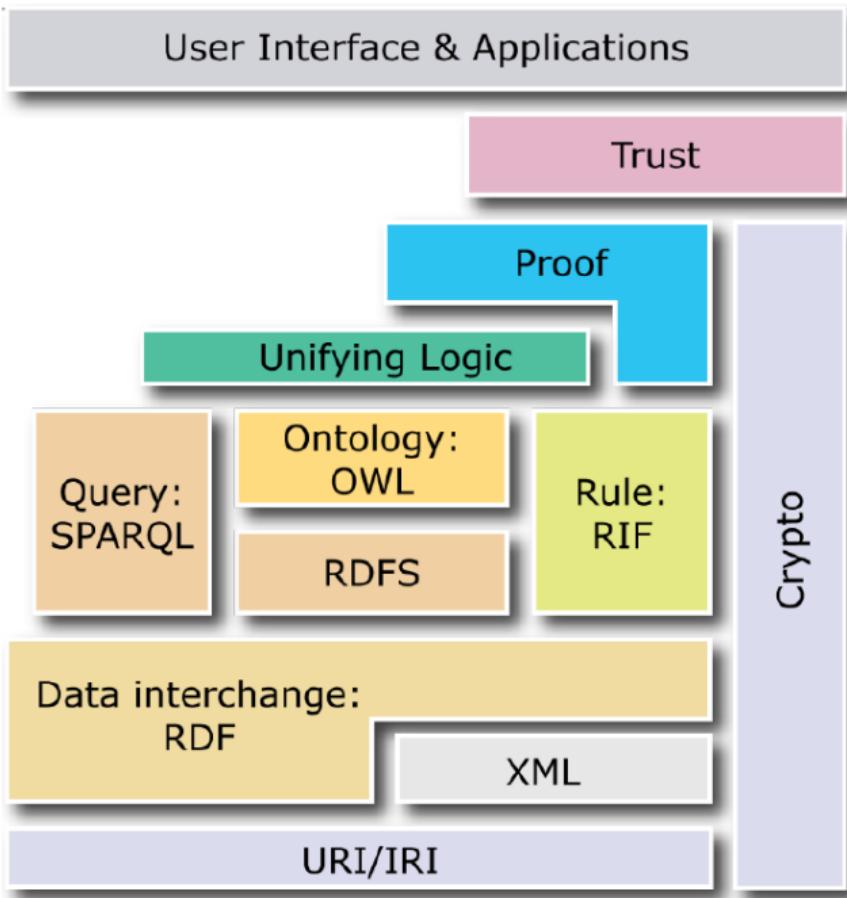
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One level higher up:  
RDFS, Datatypes



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## W3C Recommendation

- “RDF Vocabulary Description Language 1.0: RDF Schema” (RDFS 1.0)
- Current version (2014): “RDF Schema 1.1”

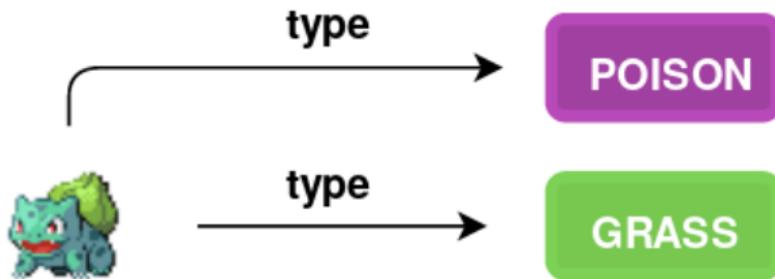
## Used together with RDF

- RDF provides “a way to make statements about resources” (IRIs)
- RDFS provides *semantics* about what the IRIs stand for  
(Schemas aka Vocabularies aka Ontologies aka . . . )

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## Classes

- Resources may be divided into groups called **classes**
- The members of a class are known as **instances** of the class
- An instance can be member of **more than one class**



What is a knowledge graph – Pokémon edition: <https://pieterheyvaert.com/blog/2019/12/27/kg-pkmn/>

## Defining Classes

We define that an URI in a triple is a class using ... a triple!  
*(sounds weird the first time you hear it, but you get used to it)*

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## Defining Classes

To define that **C** (a resource) is an RDFS `class`, write:

**C** `rdf:type rdfs:Class`

with `rdfs` defined as <http://www.w3.org/2000/01/rdf-schema#>

## Example

`ex:Novel rdf:type rdfs:Class`

## Turtle

In Turtle, `rdf:type` can be abbreviated as `a`

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## Instances

To define that **I** (a resource) is an instance of **C** (a class), write:

**I** `rdf:type C`

(or a instead of `rdf:type` in Turtle.)

## Example

`<http://...isbn/000651409X> rdf:type ex:Novel`

## Note

This is just another triple, so we can read both *data* and *schema* at run-time!

→ Worksheet #2: Task 3

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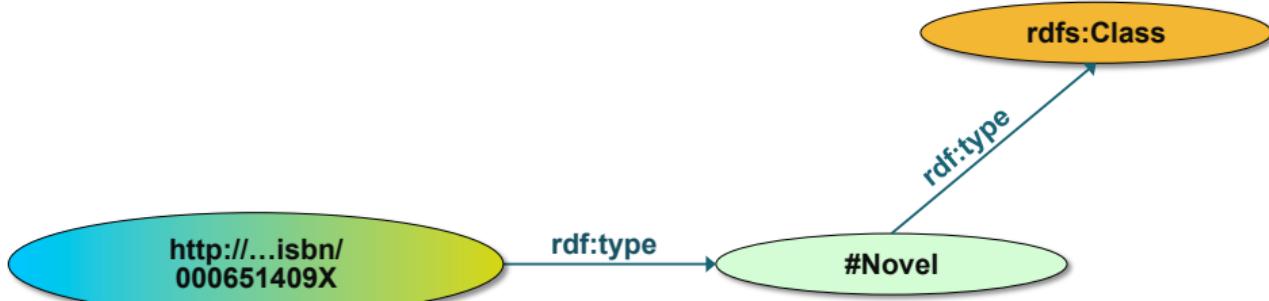
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# Classes, resources in RDF(S)



- ▶ RDFS defines the meaning of these terms
  - (these are all special URI-s, we just use the namespace abbreviation)

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## Human-Readable Content

By convention, always provide:

`rdfs:label` a human-readable label

`rdfs:comment` a short (one paragraph) description

using language tags for multiple languages.

## Examples ([dbpedia:The\\_Glass\\_Palace](#))

```
<http://dbpedia.org/resource/The\_Glass\_Palace>
    rdfs:label      "The Glass Palace"@en ,
                    "Le Palais des miroirs"@fr ;
    rdfs:comment    "The Glass Palace is a 2000 historical novel..."@en ,
                    "Le Palais des miroirs est un roman..."@fr ;
```

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→ **Worksheet #2: Task 4**

## Defining a subclass

To define that **C1** (a class) is a **subclass** of **C2** (a class), write:

**C1** *rdfs:subClassOf* **C2**

## Semantics

This states that all the instances of C1 are also instances of C2.

The *rdfs:subClassOf* property is **transitive**.

→ **Worksheet #2: Task 5**

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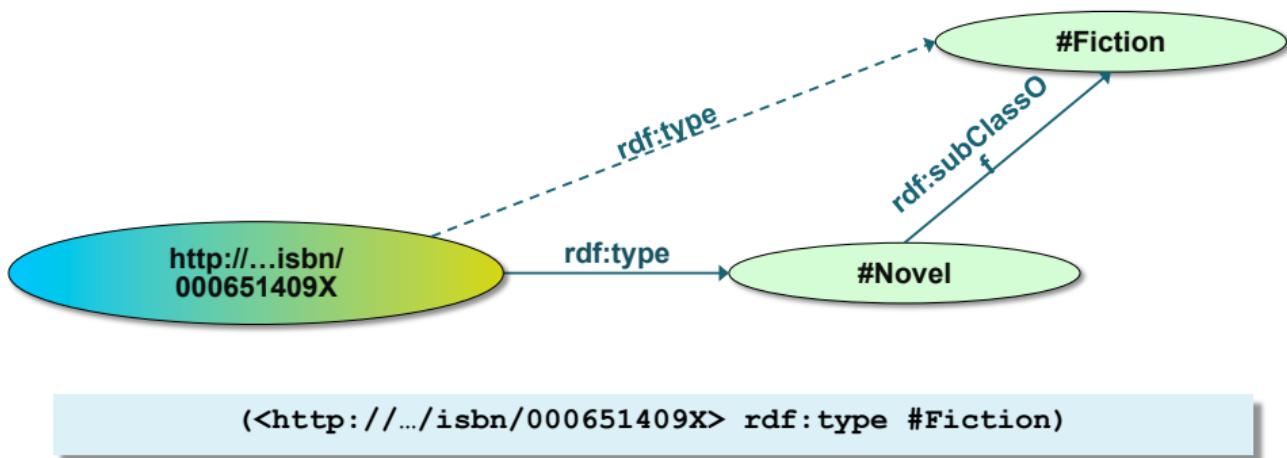
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# Inferred properties



- ▶ is not in the original RDF data...
- ▶ ...but can be inferred from the RDFS rules
- ▶ RDFS environments return that triple, too

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# Inference: let us be formal...

- ▶ The RDF Semantics document has a list of (33) entailment rules:
  - “if such and such triples are in the graph, add this and this”
  - do that recursively until the graph does not change
- ▶ The relevant rule for our example:

```
If:  
  uuu rdfs:subClassOf xxx .  
  vvv rdf:type uuu .  
Then add:  
  vvv rdf:type xxx .
```

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## Example

```
<studies at> <type> <Property>
```

## Defining a Property

To define that **P** (a resource) is a **property**, write:

**P** *rdf:type rdf:Property*

Properties are used to define **relations** between subject resources and object resources.

→ Worksheet #2: Task 7

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## Domain

To define a class **C** as the [domain](#) of a property **P**, write:

**P** [\*rdfs:domain\*](#) **C**

This states that resources denoted by the subjects of triples whose predicate is **P** are instances of the class **C**.

## Range

To define a class **C** as the [range](#) of a property **P**, write:

**P** [\*rdfs:range\*](#) **C**

This states that the resources denoted by the objects of triples whose predicate is **P** are instances of the class **C**.

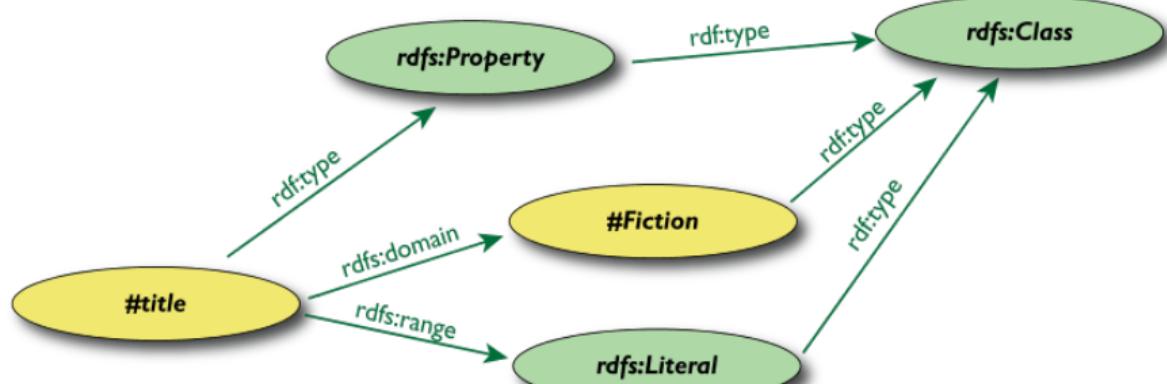
## Note

- Properties are also resources (named with URIs)
- So we define properties of properties using... RDF properties!
- Again, you'll get used to it. . .

→ **Worksheet #2: Task 8**

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# Property specification example

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# Property specification serialized

## ► In RDF/XML:

```
<rdf:Property rdf:ID="title">
  <rdfs:domain rdf:resource="#Fiction"/>
  <rdfs:range rdf:resource="http://...#Literal"/>
</rdf:Property>
```

## ► In Turtle:

```
:title
  rdf:type    rdf:Property;
  rdfs:domain :Fiction;
  rdfs:range  rdfs:Literal.
```

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## Defining a Subproperty

To define that **P1** (a property) is a **subproperty** of **P2** (a property), write:

**P1 rdfs:subPropertyOf P2**

With a subproperty, we can state that all resources related by one property are also related by another.

## Example

Like inheritance for classes, we can have inheritance for properties:

*<is father of> <subPropertyOf> <is parent of>*

## Some “helper” constructs

`rdfs:seeAlso` a property that links a resource to another for more information (can be in any format)

`rdfs:isDefinedBy` a property typically used to refer to a vocabulary (RDF Schema) defining the subject IRI

There are also some datastructures (bag, list etc.) – read more before using!



# RDF Schema Constructs: Summary

René Witte



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Construct	Syntactic form	Description
<a href="#">Class</a> (a class)	<b>C</b> <code>rdf:type rdfs:Class</code>	<b>C</b> (a resource) is an RDF class
<a href="#">Property</a> (a class)	<b>P</b> <code>rdf:type rdf:Property</code>	<b>P</b> (a resource) is an RDF property
<a href="#">type</a> (a property)	<b>I</b> <code>rdf:type C</code>	<b>I</b> (a resource) is an instance of <b>C</b> (a class)
<a href="#">subClassOf</a> (a property)	<b>C1</b> <code>rdfs:subClassOf C2</code>	<b>C1</b> (a class) is a subclass of <b>C2</b> (a class)
<a href="#">subPropertyOf</a> (a property)	<b>P1</b> <code>rdfs:subPropertyOf P2</code>	<b>P1</b> (a property) is a sub-property of <b>P2</b> (a property)
<a href="#">domain</a> (a property)	<b>P</b> <code>rdfs:domain C</code>	domain of <b>P</b> (a property) is <b>C</b> (a class)
<a href="#">range</a> (a property)	<b>P</b> <code>rdfs:range C</code>	range of <b>P</b> (a property) is <b>C</b> (a class)

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## Goal: Knowledge Integration

Two major principles:

① Reuse of vocabularies

E.g., always use FOAF to describe names, emails, etc., instead of making up your own schema

② Make your data self-describing

Embed metadata using RDF to ensure data can be understood and processed independently.

Adhering to these principles supports interoperability and semantic understanding across different systems.

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## Provide useful information about new terms

For example, if we create our own proprietary term, like **SmallMediumEnterprise**, we could describe it as [HB11]:

```
1 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
2 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
3 @prefix owl: <http://www.w3.org/2002/07/owl#> .  
4 @prefix co: <http://biglynx.co.uk/vocab/sme#> .  
5  
6 <http://biglynx.co.uk/vocab/sme#SmallMediumEnterprise>  
7   rdfs:type rdfs:Class ;  
8   rdfs:label "Small or Medium-sized Enterprise" ;  
9   rdfs:subClassOf <http://dbpedia.org/ontology/Company> .  
10  rdfs:subClassOf <http://umbel.org/umbel/sc/Business> ;  
11  rdfs:subClassOf <http://sw.opencyc.org/concept/Mx4rvVjQNpwpEbGdrcN5Y29ycA> ;  
12  rdfs:subClassOf <http://rdf.freebase.com/ns/m/0qb7t> .
```

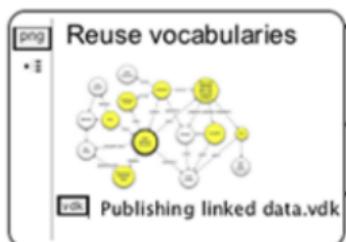
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# Reuse vocabularies whenever possible

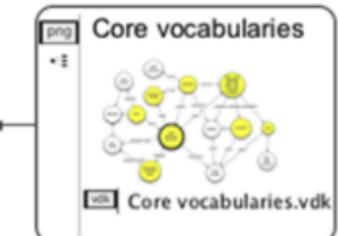
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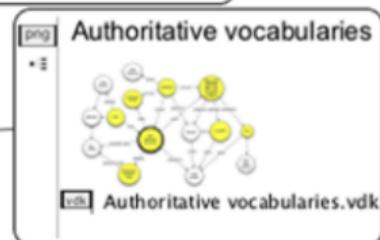
Use well-known and authoritative vocabularies to describe things whenever possible.



1 Describe common types of data by using terms from core vocabularies.



2 Use authoritative vocabularies for terms not defined by the core vocabularies.



3 Create your own vocabulary if necessary.

Use RDFS and OWL.  
 Be prepared to maintain it.

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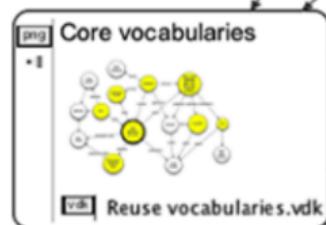
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# Core Vocabularies

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Use terms from these core vocabularies to describe commonly understood data.



- ? Naming things? ← Use rdfs:label, foaf:name, skos:prefLabel.
- ? Describing people? ← Use FOAF, vCard.
- ? Describing addresses? ← Use vCard.
- ? Describing projects? ← Use Description of a Project (DOAP).
- ? Describing web pages and other publications? ← Use dc:creator and dc:description.
- ? Describing an RDF vocabulary? ← Use a VoID description.
- ? Describing existing taxonomies? ← Use SKOS.

- See also
- Authoritative vocabularies.vdk
- Links to core vocabularies
- DOAP
  - Dublin Core
  - FOAF
  - SKOS
  - vCard
  - VoID

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# FOAF (Friend-of-a-Friend) Vocabulary

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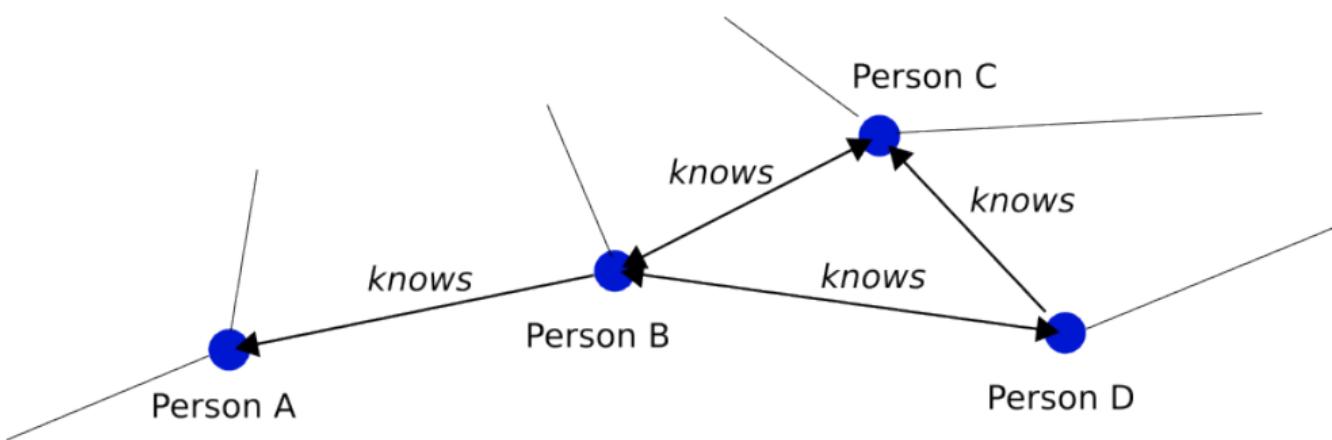
## FOAF

Model people and their connections in a social network.



```
@prefix foaf: <http://xmlns.com/foaf/0.1/>.
```

```
<http://example.org/joe> a foaf:Person ;  
    foaf:name "Joe_Doe" ;  
    foaf:mbox <mailto:joe.doe@example.com> .
```



→ Worksheet #2: Task 9

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# Dublin Core® Metadata Initiative

*Making it easier to find information.*

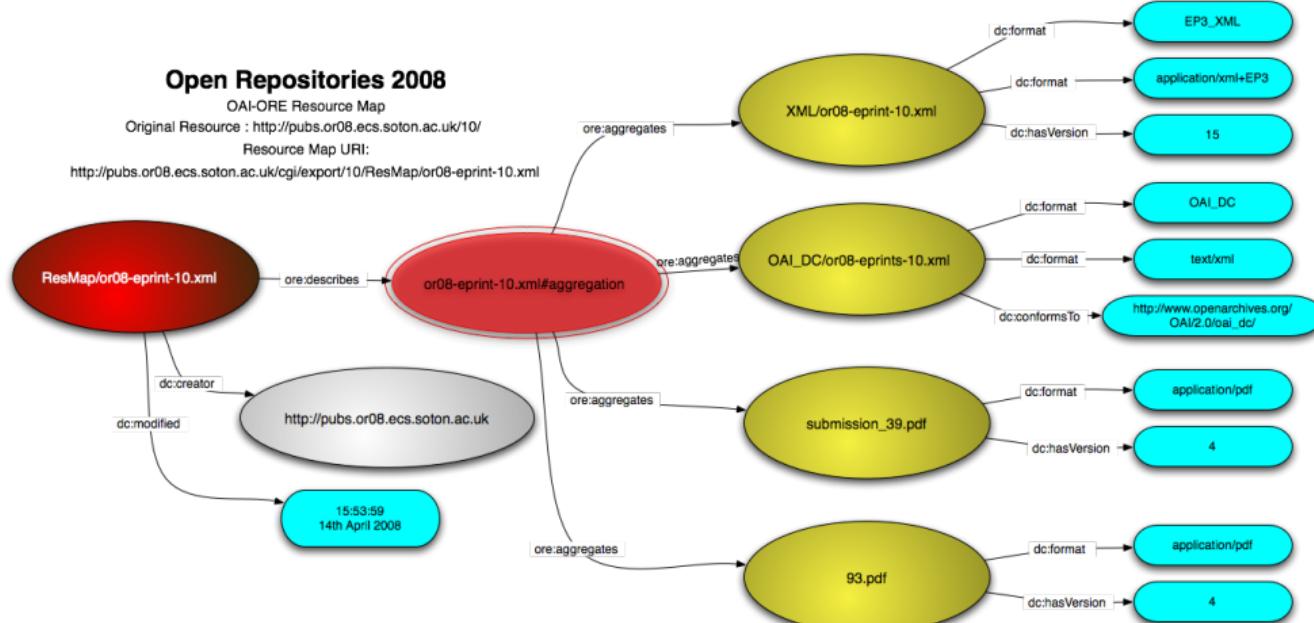
## Open Repositories 2008

OAI-ORE Resource Map

Original Resource : <http://pubs.or08.ecs.soton.ac.uk/10/>

Resource Map URI:

<http://pubs.or08.ecs.soton.ac.uk/cgi/export/10/ResMap/or08-eprint-10.xml>



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# Thesauri, glossaries (SKOS)

Photo credit "scarletgreen", Flickr

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# SKOS

---

- ▶ Represent and share classifications, glossaries, thesauri, etc
  - for example:
    - Dewey Decimal Classification, Art and Architecture Thesaurus, ACM classification of keywords and terms...
    - classification/formalization of Web 2.0 type tags
- ▶ Define classes and properties to add those structures to an RDF universe
  - allow for a quick port of this traditional data, combine it with other data

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# Example: the term “Fiction”, as defined by the Library of Congress

René Witte



Authorities & Vocabularies (Library of Congress): Fiction

http://id.loc.gov/authorities/sh85048050

Netvibes Feedly Social Private Mailing lists SW Python RDFa It! Bookmarks Add Zemanta bitly To Mendeley TinyURL To Faviki Dokuwiki

LIBRARY OF CONGRESS ASK A LIBRARIAN DIGITAL COLLECTIONS LIBRARY CATALOGS

The Library of Congress > Authorities & Vocabularies > Fiction

## Authorities & Vocabularies

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### Search

Enter search terms...

[Details](#) [Visualize](#)

### Fiction

**URI:** <<http://id.loc.gov/authorities/sh85048050#concept>>

**Type:** Topical Term

**Alternate Labels:** Fiction--Philosophy; Metafiction; Novellas (Short novels); Novels; Stories

**Broader Terms:**

- [Literature](#)
- [Prose literature](#)

**Narrower Terms:**

- [Adventure stories](#)
- [Allegories](#)
- [Alternative histories \(Fiction\)](#)
- [Bildungsromans](#)
- [Biographical fiction](#)

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The screenshot shows a web browser window with the URL <http://id.loc.gov/authorities/sh85048050>. The page title is "Authorities & Vocabularies (Library of Congress): Fiction". The main content area is titled "Authorities & Vocabularies" and shows the term "Fiction" highlighted with a red oval. Below it, the term's URI is listed as [<http://id.loc.gov/authorities/sh85048050#concept>](http://id.loc.gov/authorities/sh85048050#concept). The term is categorized as a "Topical Term". It has several "Alternate Labels": "Fiction--Philosophy; Metafiction; Novellas (Short novels); Novels; Stories". Under "Broader Terms", there are two items: "Literature" and "Prose literature". Under "Narrower Terms", there are five items: "Adventure stories", "Allegories", "Alternative histories (Fiction)", "Bildungsromans", and "Biographical fiction". At the bottom of the page, there are links for "Details" and "Visualize".

# Thesauri have identical structures...

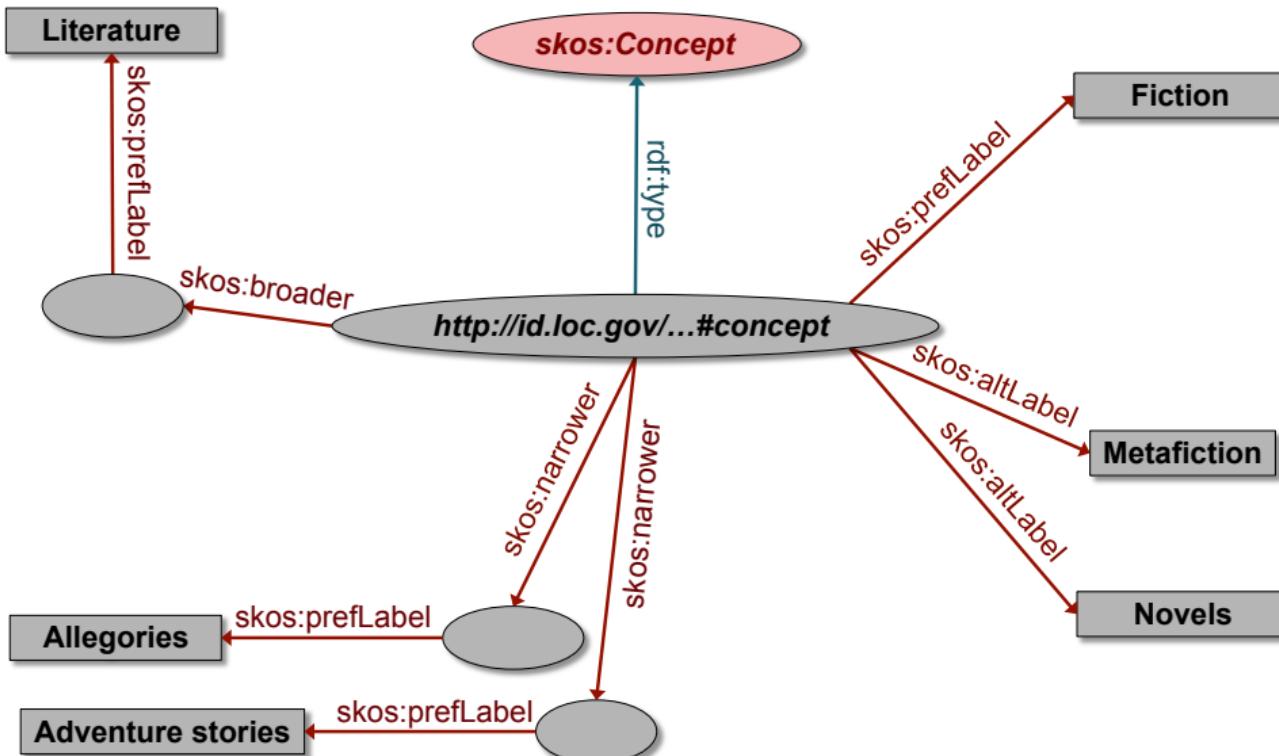
---

- ▶ The structure of the LOC page is fairly typical
  - label, alternate label, narrower, broader, ...
  - there is even an ISO standard for these
- ▶ SKOS provides a basic structure to create an RDF representation of these

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# LOC's “Fiction” in SKOS/RDF

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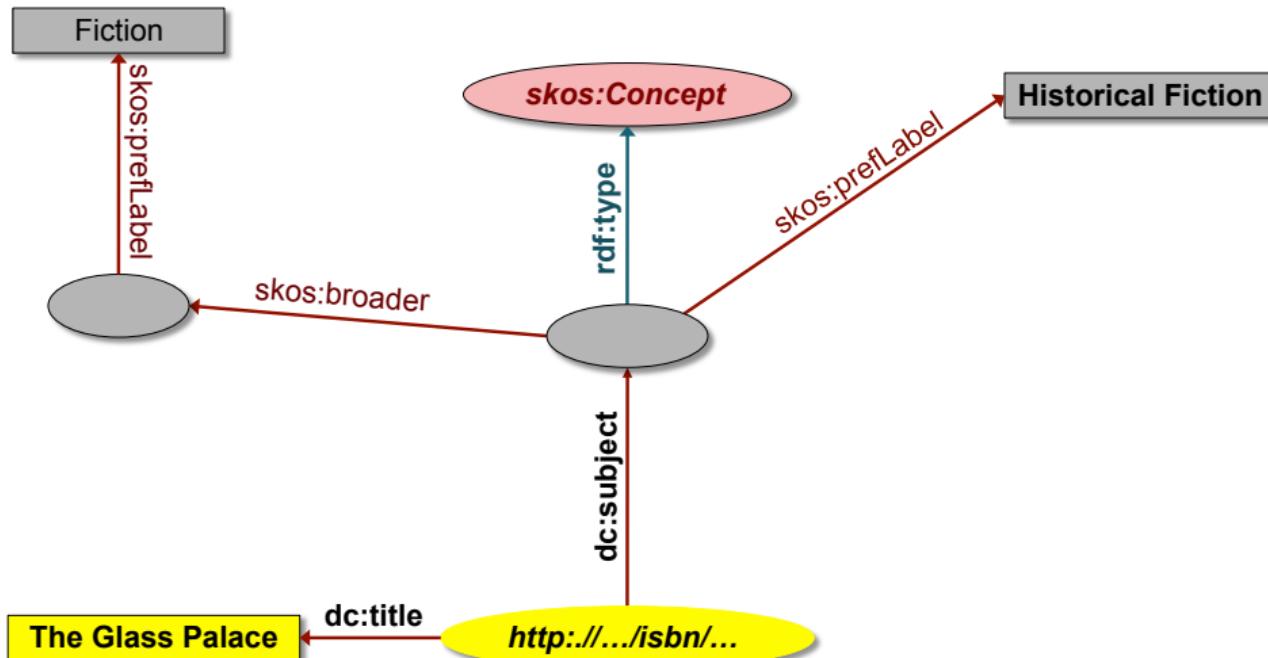
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# Same serialized

```
<http://.../isbn/000651409X>
  dc:title "The Glass Palace"@en;
  dc:subject <http://id.loc.gov/authorities/sh85061165#concept>;
  ...

<http://id.loc.gov/authorities/sh85061165#concept>
  a      skos:Concept;
  skos:prefLabel "Historical Fiction"@en;
  skos:broader <http://id.loc.gov/authorities/sh85048050#concept>;
  ...

<http://id.loc.gov/authorities/sh85048050#concept>
  a      skos:Concept;
  skos:prefLabel "Fiction"@en;
  skos:narrower <http://id.loc.gov/authorities/sh85061165#concept>;
  ...
```

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# SKOS terms overview

## ► Classes and Properties:

- Basic description (Concept, ConceptScheme,...)
- Labeling (prefLabel, altLabel,...)
- Documentation (definition, historyNote,...)
- Semantic relations (broader, narrower, related,...)
- Collections (Collection, OrderedCollection,...)
- Concept mappings (broadMatch, narrowMatch,...)

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# Importance of SKOS

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- ▶ SKOS provides a simple bridge between the “print world” and the (Semantic) Web
- ▶ Thesauri, glossaries, etc, from the library community can be made available
  - LOC is a good example
- ▶ SKOS can also be used to organize, eg, tags, annotate other vocabularies, ...

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# Importance of SKOS

- ▶ Anybody in the World can refer to common concepts
  - they mean the same for everybody
- ▶ Applications may exploit the relationships among concepts
  - eg, SPARQL queries may be issued on the library data+LOC

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# More authoritative vocabularies

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Use these authoritative vocabularies to describe data you couldn't describe with the core vocabularies.

## Authoritative vocabularies



## Reuse vocabularies.vdk

### See also

## Core vocabularies.vdk

- Specifying the geographical location of something? ← Use Geo.
- Describing citations and bibliographic references? ← Use BIBO.
- Describing copyright licenses? ← Use the Creative Commons Rights Expression Language
- Describing a place? ← Use GeoNames.
- Describing product, price, or company data? ← Use Good Relations.
- Describing web resources that are compound digital objects? ← Use Object Reuse and Exchange.
- Describing information about an online community? ← Use SIOC.

### Links to authoritative vocabularies

- BIBO
- Creative Commons Rights Expression Language.
- Geo
- GeoNames
- Good Relations
- Object Reuse and Exchange
- SIOC

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# Typical usage of structured data

the artist movie – Google Search

[https://www.google.nl/#hl=en&sugexp=frgbld&gs\\_nf=1&cp=11&gs\\_id=50&xhr=t&q=the+artist+movie+database](https://www.google.nl/#hl=en&sugexp=frgbld&gs_nf=1&cp=11&gs_id=50&xhr=t&q=the+artist+movie+database)

Delicious LocalData TR 2012 My Mercurial Private Mailing lists Social SW Python RDFa It! Bookmarks To... Web Data Inspector

**Everything**

**The Artist** showtimes for Amsterdam

Pathé Tuschinski - Reguliersbreestraat 26-34, Amsterdam - Map  
11:50 - 14:05 - 19:10

Filmtheater "De Uitkijk" - Prinsengracht 452, Amsterdam - Map  
12:15 - 19:00 - 21:15

Filmtheater Rialto - Ceintuurbaan 338, Amsterdam - Map  
12:45

+ Show more theaters

**The Artist** (2011) - IMDb  
[www.imdb.com/title/tt165542/](http://www.imdb.com/title/tt165542/)  
Silent movie star George Valentin bemoans the coming era of talking ... Still of Jean Dujardin and Missi Pyle in **The Artist** Still of Bérénice Bejo in **The Artist** Reem ...  
→ Full cast and crew - **The Artist** Trailer (Official ... - Bérénice Bejo - Jean Dujardin

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**The Artist** (film) - Wikipedia, the free encyclopedia  
[en.wikipedia.org/wiki/The\\_Artist\\_\(film\)](http://en.wikipedia.org/wiki/The_Artist_(film))  
**The Artist** is a 2011 French romantic comedy drama in the style of a black-and-white silent film written and directed by Michel Hazanavicius, starring Jean ...  
→ Jean Dujardin - Bérénice Bejo - Uggie - Diegesis

**The Artist** Trailer 2011 HD - YouTube  
[www.youtube.com/watch?v=O8K9AzcSQJE](http://www.youtube.com/watch?v=O8K9AzcSQJE)  
 25 Aug 2011 - 3 min · Uploaded by TrailersApplecom  
I love how George Clooney, and Brad Pitt, lost the Best actor catogory to this film. It just shows that there is ...  
More videos for the artist movie \*

**Oscar 2012: The Artist, review - Telegraph**  
[www.telegraph.co.uk/Culture/Film/Film\\_reviews/news/7777777/Oscar-2012-The-Artist-review.html](http://www.telegraph.co.uk/Culture/Film/Film_reviews/news/7777777/Oscar-2012-The-Artist-review.html)  
★★★★★ Review by Robbie Collin  
27 Feb 2012 – **The Artist**, the final film to be released in 2011 and also the most heart-swellingly joyful movie is a silent movie, screened in black and white and ...

**The Artist** is the perfect film about Hollywood | Harvey Freeman

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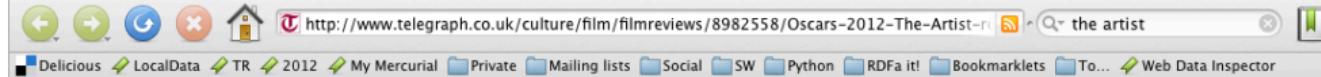
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# The Telegraph

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## Oscars 2012: The Artist, review

The Artist, an utterly beguiling silent, black-and-white celebration of early Hollywood won Best Picture at the Oscars 2012.

★★★★★



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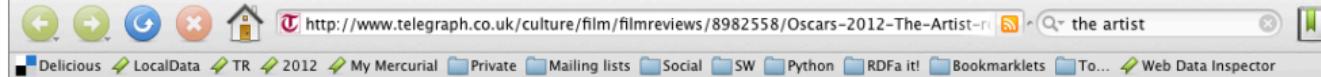
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Source of http://www.telegraph.co.uk/culture/film/filmreviews/8982558/Oscars-2012-The-Artist-review.html

Oscars 2012: The Artist, review – Telegraph

<http://www.telegraph.co.uk/culture/film/filmreviews/8982558/Oscars-2012-The-Artist-review.html>

The Telegraph

CULTURE TRAVEL LIFESTYLE FASHION TECH

Dating Offers Jobs

Monday 09 April 2012

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The Artist, review

**Osca**rs 2012: The Artist, review

**h1** itemprop="name">Oscars 2012: The Artist, review

**h2** itemprop="description">The Artist, an utterly beguiling silent, black-and-white celebration of early Hollywood won Best Picture at the Oscars. Hollywood won Best Picture at the Oscars 2012

**h2**

**div** class="rating" itemprop="reviewRating">**span** itemprop="ratingValue">1

**div** class="artIntro">**div** id="storyEmi... **div** class="slideshow ssIntro">**div** class="nextPrevLayer">**div** class="oneHalf gutter">**div** class="story">**div** class="cl">

The image shows a screenshot of a web browser displaying the Telegraph's review of "The Artist". The page includes the newspaper's masthead, navigation links for various sections like Culture, Travel, Lifestyle, Fashion, and Tech, and a sidebar for Dating, Offers, and Jobs. The main content is about the 2012 Oscar winner, with a large image of the film's lead actor, Jean Dujardin, in his iconic silent film costume. The page also features a green sidebar for INSEAD's Global Executive MBA program and a section for Telegraph tickets.

```

    <li class="first"><a href="/">Home</a><span>&raquo;</span></li>
    <li><a href="http://www.telegraph.co.uk/culture/">Culture</a><span>&raquo;</span></li>
        <li><a href="http://www.telegraph.co.uk/culture/film/">Film</a><span>&raquo;</span></li>
    <li class="styleSix"><a href="http://www.telegraph.co.uk/culture/film/filmreviews/">Film reviews</a></li>
</div>
<div class="cl"></div>

<!-- googleon: all -->
<div id="tmglBody" >
    <div class="access"><a name="article"></a></div>

    <div class="twoThirdsThird2 gutterUnder">
        <div class="twoThirds gutter" itemscope itemtype="http://schema.org/Review">
            <div class="storyHead">
                <h1 itemprop="name">Oscars 2012: The Artist, review</h1>
                <h2 itemprop="description">
                    The Artist, an utterly beguiling silent, black-and-white celebration of early Hollywood won Best Picture at the Oscars 2012.
                </h2>
                <div class="rating" itemprop="reviewRating" itemscope itemtype="http://schema.org/Rating">
                    <meta itemprop="worstRating" content = "0.5">
                    <meta itemprop="bestRating" content = "5">
                    <span itemprop="ratingValue" class="hidden">5</span>
                    
                </div>
                <div class="artIntro">
                    <div id="storyEmbSlide">
                        <div class="slideshow ssIntro">
                            <div class="nextPrevLayer">
                                <div class="ssImg">
                                    
                                <div class="artImageExtras" >
                                    <div class="imgCaptionCredit">
                                        <span class="caption">Bérénice Bejo as Rita in The Artist</span>
                                    </div>
                                </div>
                            </div>
                        </div>
                    </div>
                </div>
            </div>
        </div>
    <div class="oneHalf gutter">
        <div class="story">
            <div class="cl"></div>
        <!-- remove the whitespace added by escenic before end of </a> tag -->
    </div>
</div>

```

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# In a slightly more readable format...

```
<div itemscope itemtype="http://schema.org/Review">
  ...
  <h1 itemprop="name">Oscars 2012: The Artist, review</h1>
  <h2 itemprop="description">The Artist, an utterly beguiling...</h2>
  ...
  <span itemprop="ratingValue" class="hidden">5</span>
  ...
```

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# Yielding...

---

```
[ rdf:type schema:Review ,  
schema:name "Oscars 2012: The Artist, review" ,  
schema:description "The Artist, an utterly beguiling..." ,  
schema:ratingValue "5" ;  
...  
]
```

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## Required

- [Yu14, Chapter 4] (RDFS)
- [Yu14, Chapter 7] (FOAF)

## Supplemental

- [Wor14] (RDF Primer)
- [Yu14, Chapter 10] (Schema.org)
- [WZRH14, Chapters 2, 4] (RDF, FOAF)

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Springer-Verlag Berlin Heidelberg, 2nd edition, 2014.  
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