

LIBRARY LINKED DATA

Pratt INFO-653

Knowledge Organization

Nov 28, 2023

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CONSIDERING ...

- As a <your role>...
 - How do you define linked data?
 - What do you expect from linked open data?

TOPICS

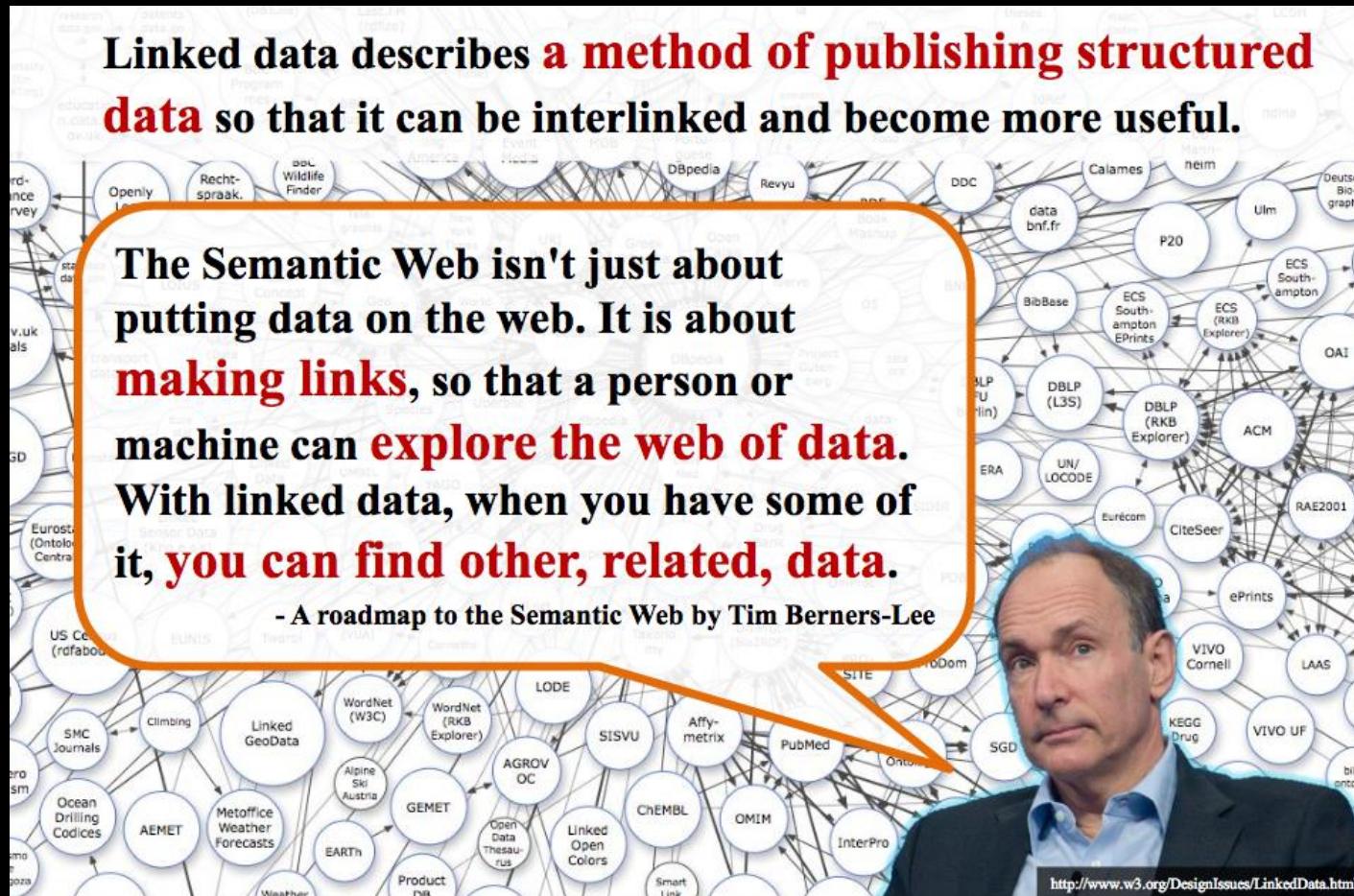
- Linked data
 - History, semantics, syntax, serializations
 - URIs vs dereferenceable URIs
- Library community's LOD projects
 - IFLA LRM, RDA/RDF (Official RDA), BIBFRAME
 - BIBFRAME Implementations (Sinopia (PCC Libraries), Share-VDE, Sweden, Hungary)
 - Thesauri, vocabularies, ontologies (FAST, VIAF, authority files (LoC, DNB's GND), MeSH, Getty vocabularies)
- Linked open data platform
 - Wikidata

Linked Data

THINGS TO CONSIDER

- What is Linked data and why?
- What is Resource Description Framework (RDF)?
- What is a Uniform Resource Identifier (URI)?
- What is a dereferenceable (RDF) URI?
- What skills will be needed?

WHY LINKED DATA



LINKED DATA PRINCIPLES

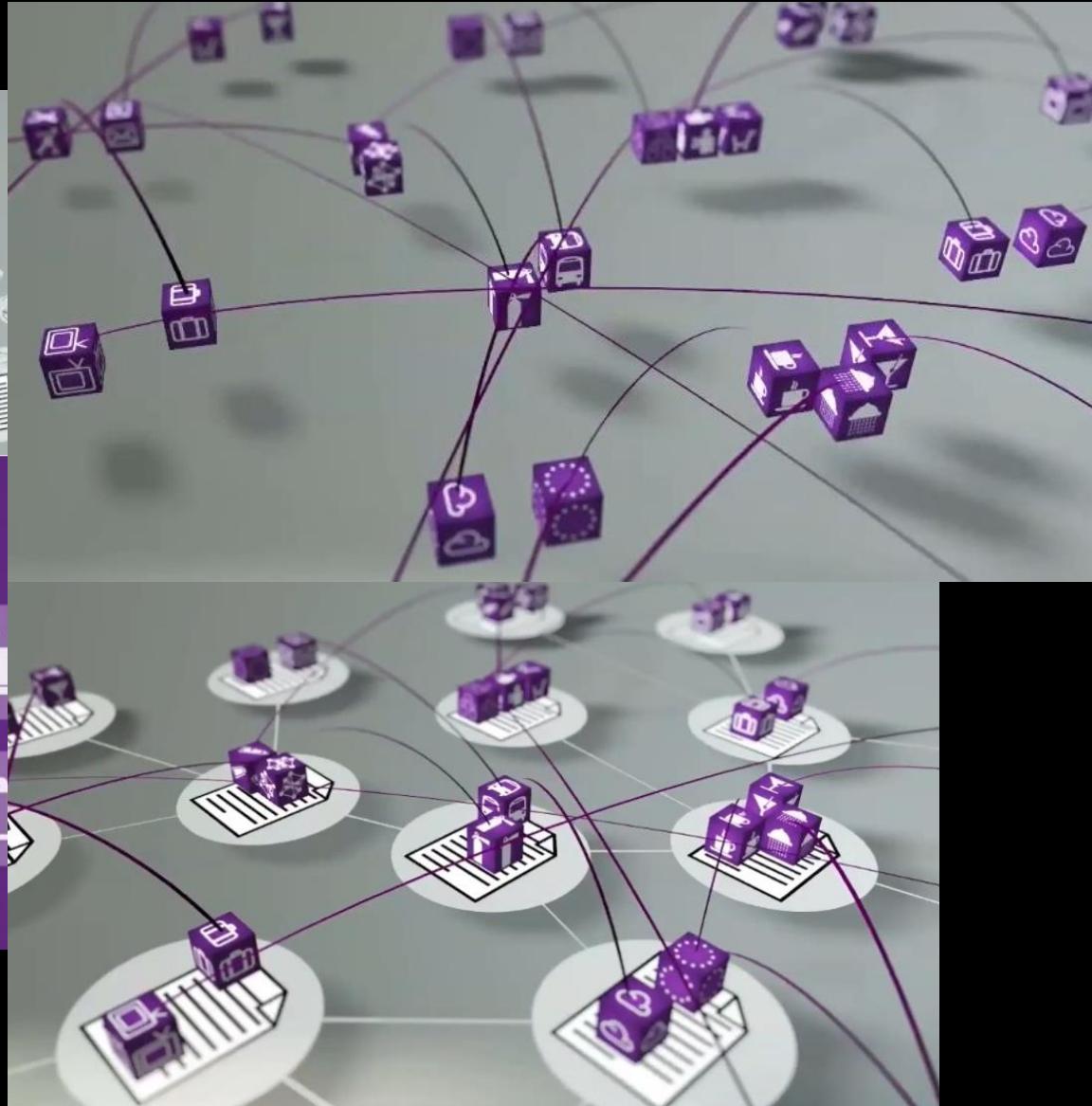
- Use URIs for names for THINGS
- Use HTTP URIs for lookup
- Use open standards (e.g. RDF) in non-proprietary formats
- Include links to other URIs



<http://w3.org/DesignIssues/LinkedData.html>

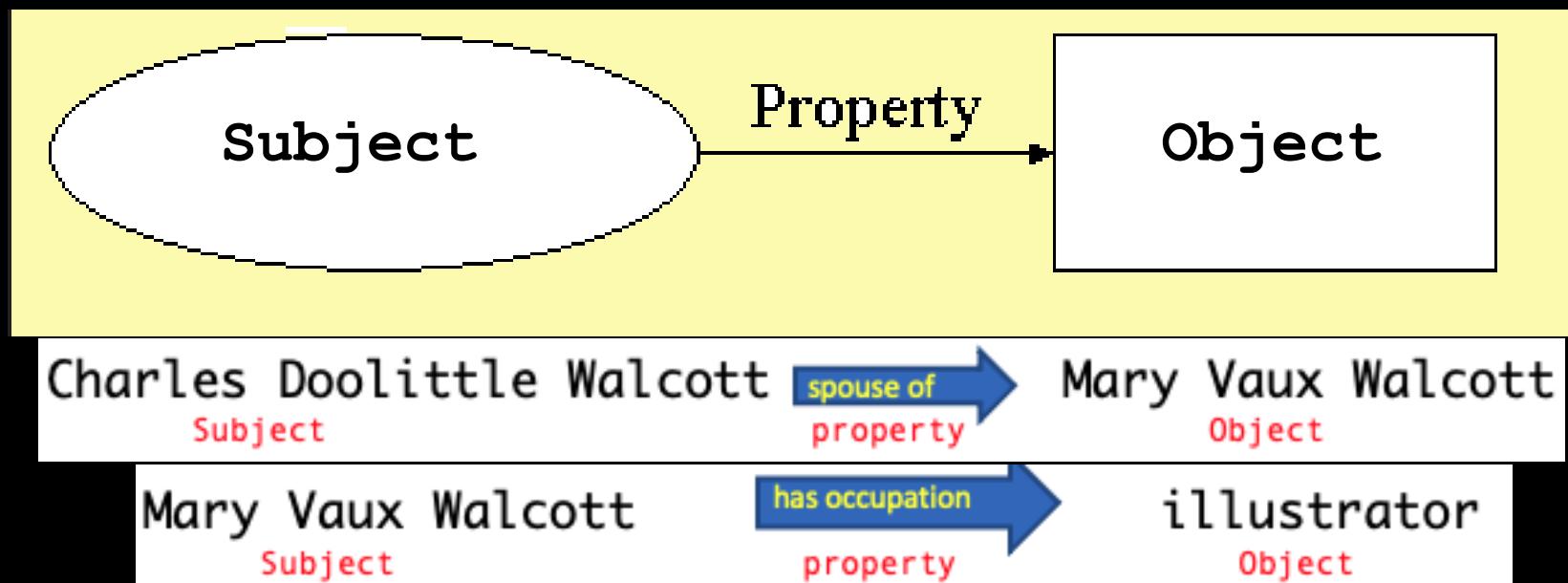
FIRST THINGS FIRST

8

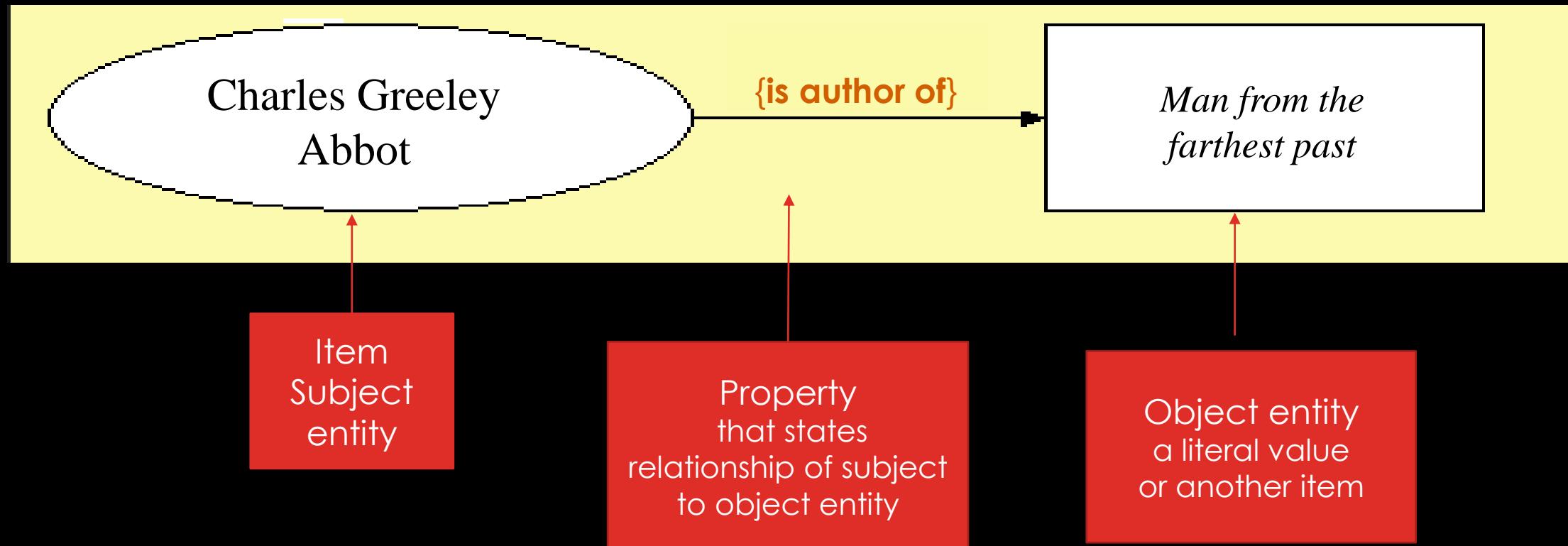


Images: <https://vimeo.com/42962819>

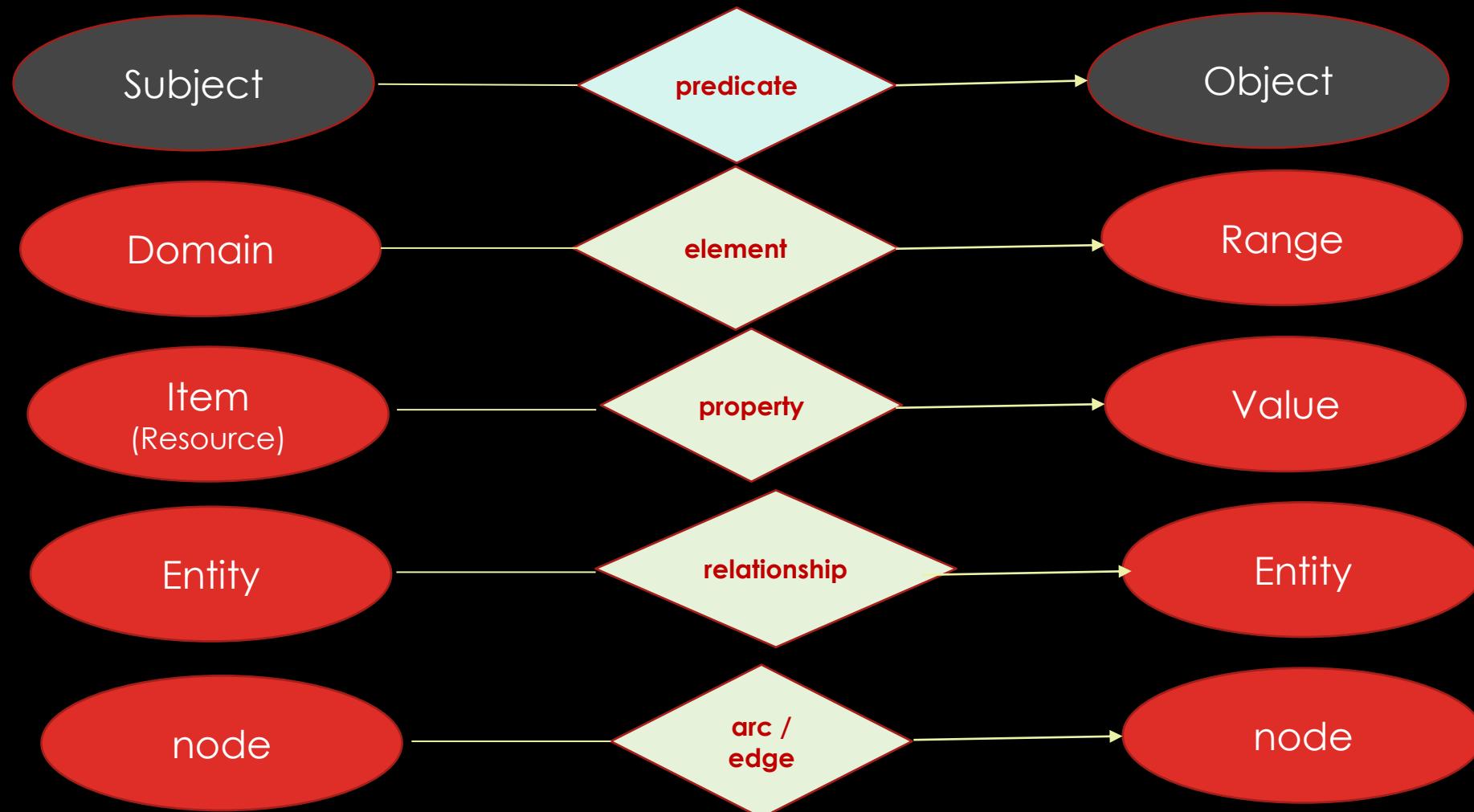
RESOURCE DESCRIPTION FRAMEWORK (RDF)



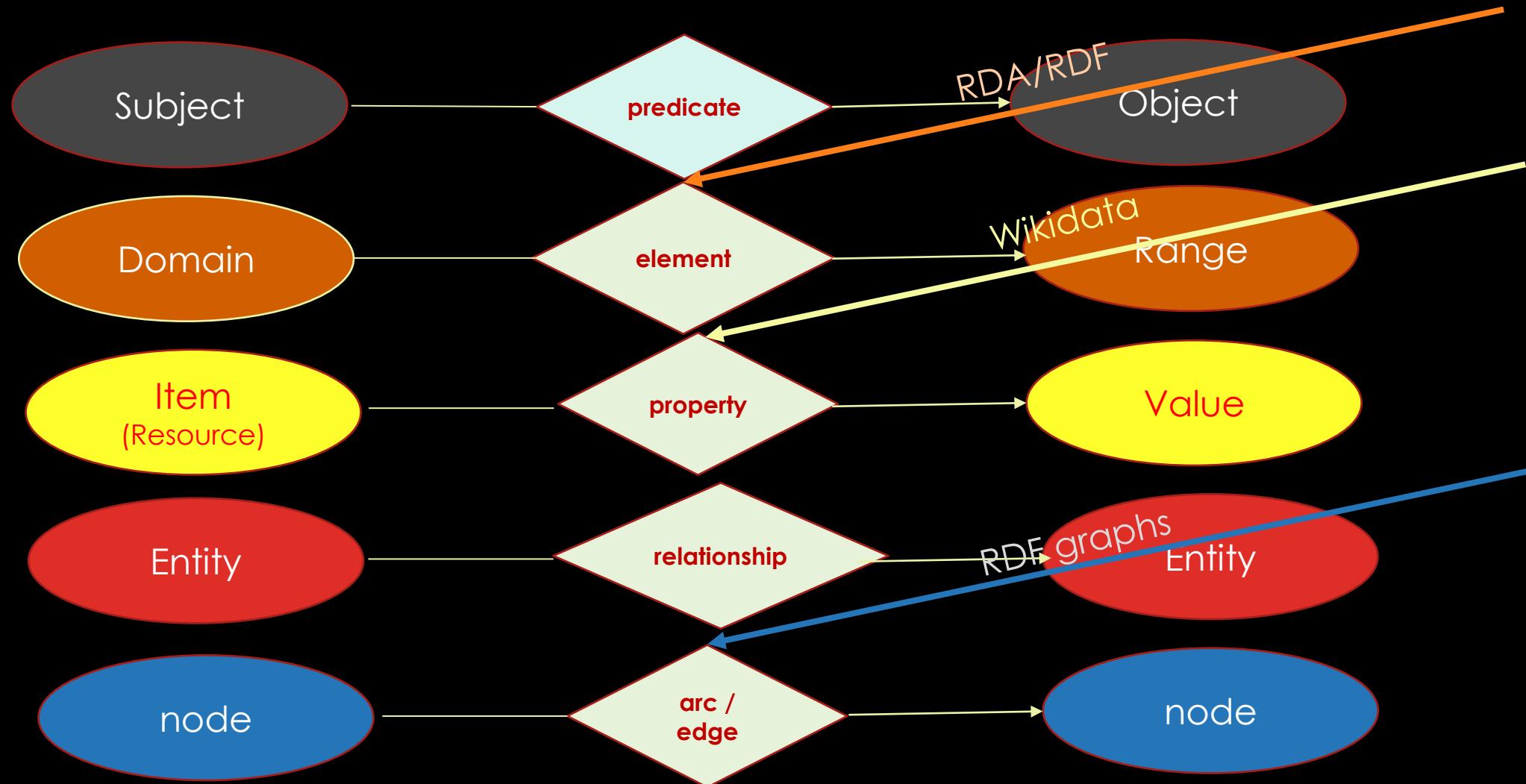
ENTITY STATEMENT



RDF APPLICATIONS



RDF APPLICATIONS



WHAT IS A UNIFORM RESOURCE IDENTIFIER (URI)

A Uniform Resource Identifier (URI) is a string of characters that unambiguously identifies a particular resource. To guarantee uniformity, all URIs follow a predefined set of syntax rules,^[1] but also maintain extensibility through a separately defined hierarchical naming scheme (e.g. <http://>).

scheme:[//authority(DNS)]path[?query][#fragment]

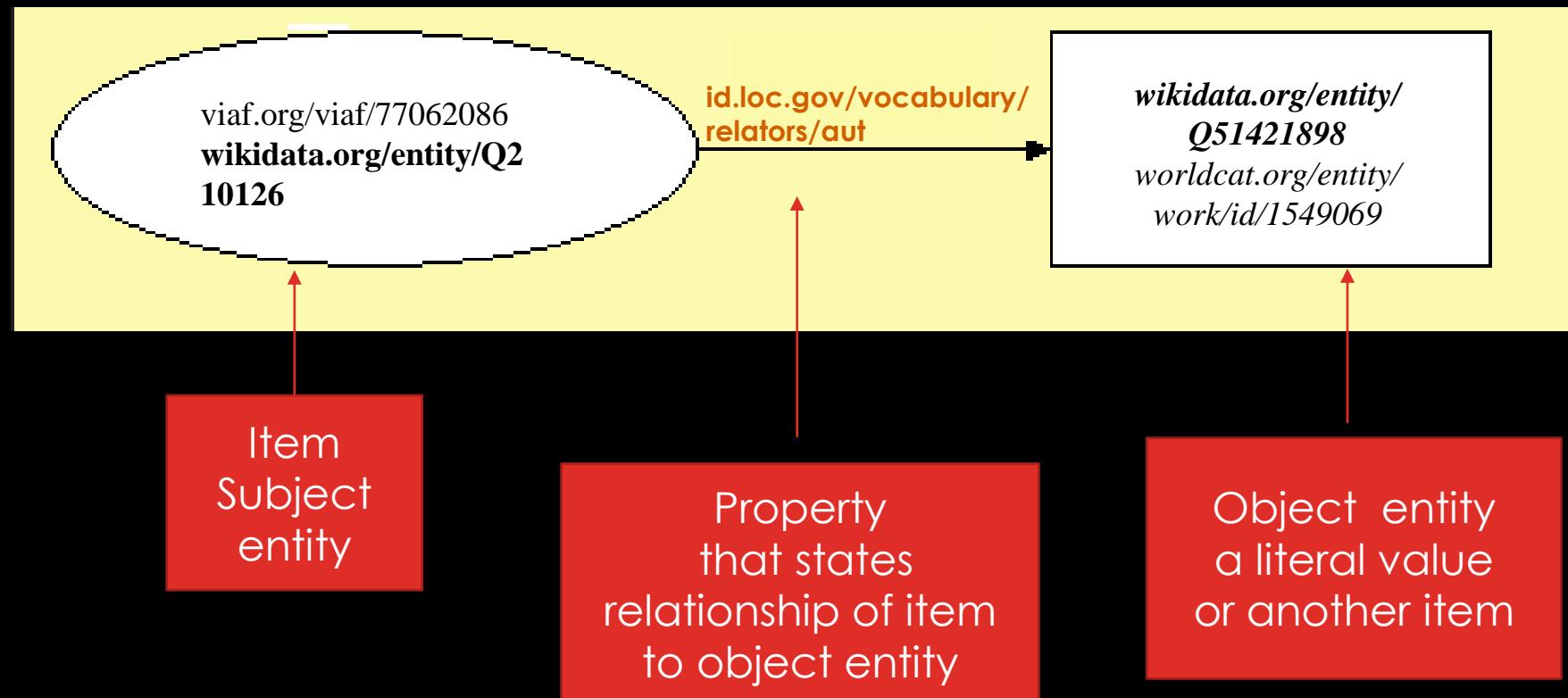
Types	Example
URN	<code>urn:isbn:0-476-27557-4</code>
URL	<code>https://www.pratt.edu</code>

DEREFERENCEABLE URI

Use Web protocols to retrieve a representation of the resource the URI identifies

Scheme/Protocol	Description
ftp	File Transfer Protocol
http/https	Hyper text transfer protocol (Secure)
mailto	Electronic mail address
ssh	Secure shell
tel	telephone
urn	Uniform Resource Names

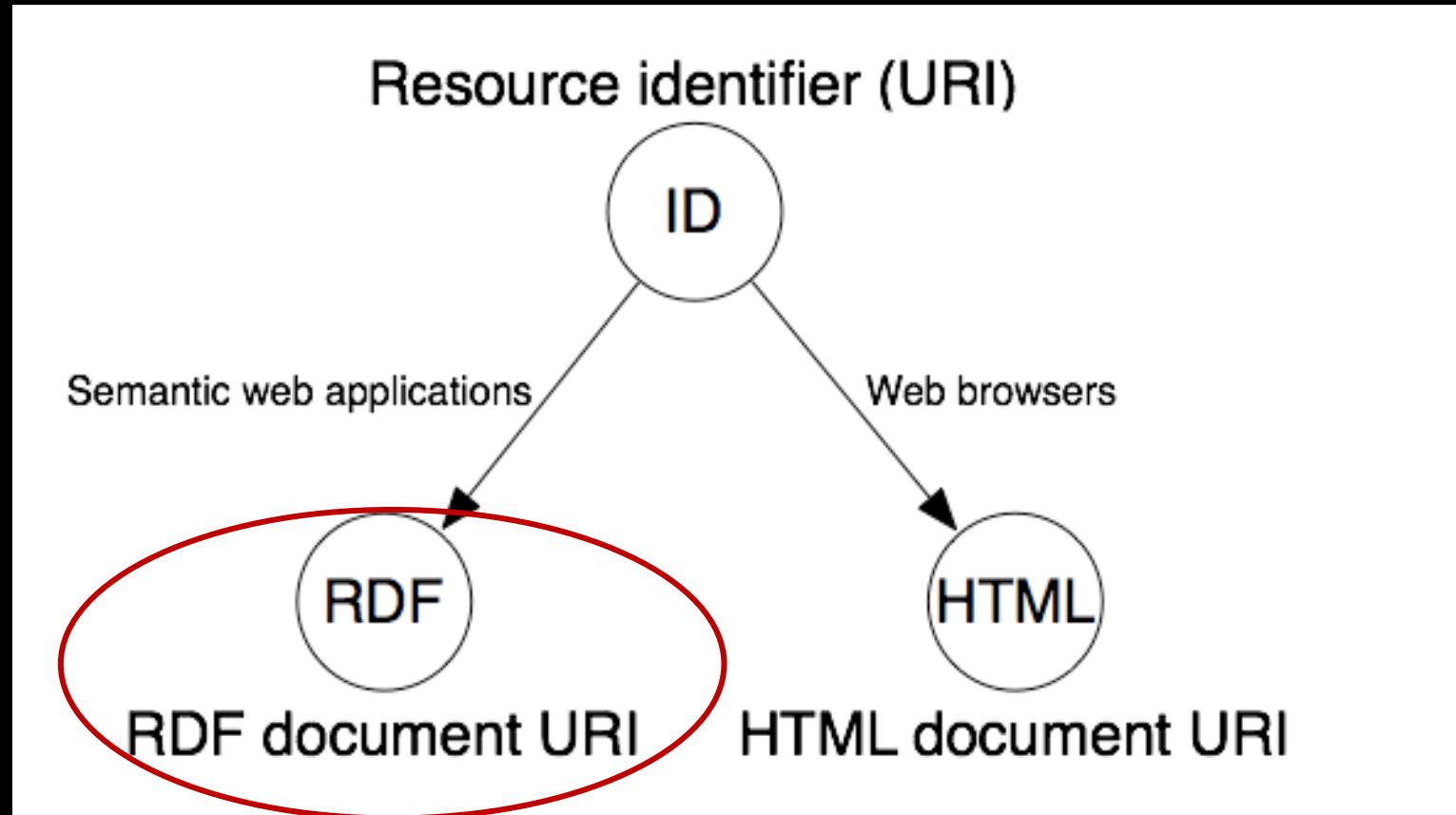
URI REPLACING LABEL



NOT ALL URIS ARE EQUAL

3XX: Request will complete after further action

301 (Redirect)
303 (See other)



URI INTERNATIONALIZED

<https://en.wiktionary.org/wiki/Πόδος>

<https://en.wiktionary.org/wiki/%E1%BF%AC%CF%8C%CE%B4%CE%BF%CF%82>

<https://zh.wiktionary.org/zh-hant/火票>

<https://zh.wiktionary.org/zh-hant/%E7%81%AB%E7%A5%A8>

RDF SERIALIZATIONS

- RDF/XML
- RDFa
- JSON-LD (JavaScript Object Notation Linked Data)
- N3 (Notation 3)
- TTL (*Turtle, Terse RDF Triple Language*)

EXERCISE: RDF URIS VS URLs

MARY VAUX WALCOTT

- LoC's Linked data service
<http://id.loc.gov/authorities/names/n86012335>
- VIAF
<http://viaf.org/viaf/43313923>
- BnF
<http://data.bnf.fr/17899334>
- DNB
<http://d-nb.info/gnd/1098348362>
- ▶ Wikidata
<http://wikidata.org/entity/Q6780882>
- ▶ Dbpedia
http://dbpedia.org/resource/Mary_Vaux_Walcott
- ▶ FAST
<http://id.worldcat.org/fast/195746>

KNOWLEDGE AND SKILLS

- Record- (cataloging) to entity-based (modelling) descriptive data
- Fundamentals of RDF and Linked data
- Management of identities and linking among them
- Ability to design, maintain, publish, and map RDF vocabularies and application profiles
- Ability to create, transform and interact with RDF data
- Ability to generate linked data applications

► CONSIDERING...

- Are you enthusiastic about the change?
- What is the RDF data model and components?
- Are you comfortable with the principles of things with URI?
- Can you shed light on a URI pointing to a thing and one pointing to a page about the thing?



Cataloging standards
in transition

Entity-Relationship

LIBRARY COMMUNITY'S EFFORTS

- IFLA's functional requirements data models
- Library of Congress's Bibliographic Framework (BIBFRAME)
- JSC's Resource Description & Access (RDA) 3-R project (restructure and redesign)
- LD4 projects

IFLA'S CONCEPTUAL MODELS

- 1998: Functional Requirements for Bibliographic Records (FRBR)
- 2009: Functional Requirements for Authority Data (FRAD)
- 2010: Functional Requirements for Subject Authority Data (FRSAD)

IFLA LIBRARY REFERENCE MODEL ENTITY RELATIONSHIP (LRMer)

Entity Hierarchy		
Top Level	Second Level	Third Level
LRM-E1 RES		
--	LRM-E2 Work	
--	LRM-E3 Expression	
--	LRM-E4 Manifestation	
--	LRM-E5 Item	
--	LRM-E6 Agent	
--	--	LRM-E7 Person
--	--	LRM-E8 Collective Agent
--	LRM-E9 Nomen	
--	LRM-E10 Place	
--	LRM-E11 Time-span	

OFFICIAL RDA ENTITY MODEL

RDA Entities

- RDA Entity
 - Note capital “E”
- Work
- Expression
- Manifestation
- Item
- Place
- Agent
- Person
- Collective Agent
- Corporate Body
- Family
- Nomen
- Timespan

- **entity subtype**
- **entity supertype**

RDA TERMINOLOGY:

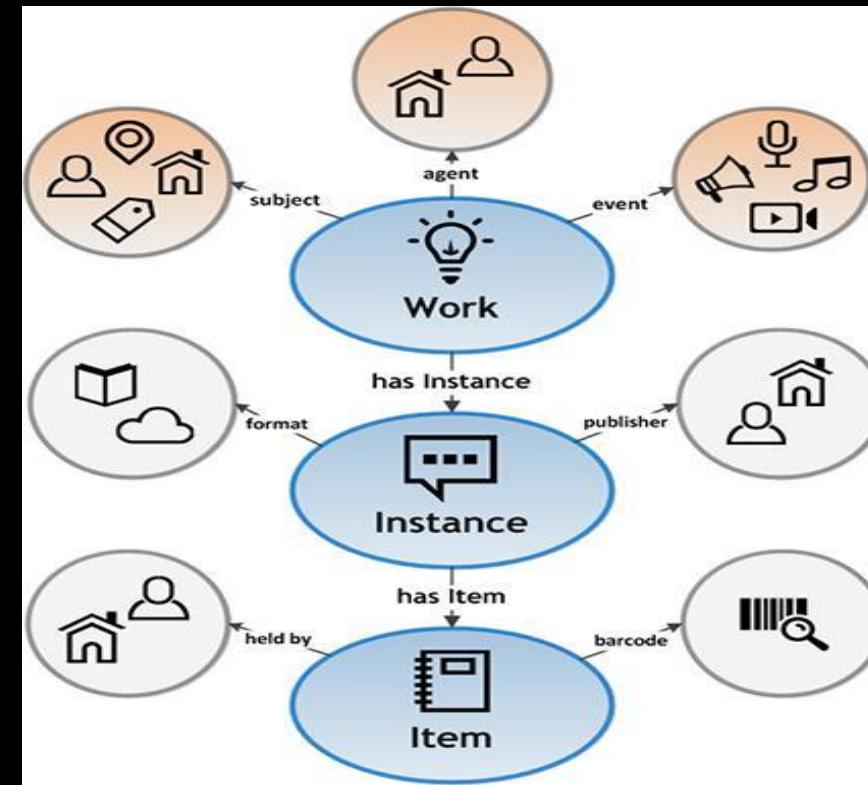
DOMAIN — ELEMENT — RANGE

- Domain—The RDA entity that is described by an element
- Range—The RDA entity that is the value of a relationship element
- Element—Every element in RDA has a Domain but only relationship elements have a Range

RDA RECORDING METHODS

- Unstructured texts
- Structured texts
- Identifiers
- IRI

BIBFRAME BIBLIOGRAPHIC DATA MODEL



<http://loc.gov/bibframe/docs/bibframe2-model.html>

LC BIBFRAME IMPLEMENTATION

- FY 2024: cataloging in BIBFRAME Editor in production
- Conversion processes in place
 - MARC2BIBFRAME
 - BIBFRAME2MARC

<https://www.bfwe.eu/attachments/bfwe23-mccallum.pdf>

OTHER BIBFRAME IMPLEMENTATIONS

- LD4 Sinopia
<http://sinopia.io>
- National Library of Sweden (BF +)
<http://tinyurl.com/SwedenBF>
- National Széchényi Library of Hungary
<https://www.linkedin.com/pulse/bibframe-library-hungarian-national-museum-adam-horvath>
- Share VDE (Virtual Discovery Environment)
<http://svde.org>

THESAURI & VOCABULARIES

- Identity services (LoC, DNB's GND, BnF's FNE)
- OCLC's FAST, VIAF, *Entities*, Classify, Identities, CONTENTdm
- NLM's MeSH
- Getty vocabularies (AAT, ULAN)
- Wiki projects
- Many more

ENTITY-RELATIONSHIP EXAMPLE

TEXT-CENTRIC SYSTEM

100 1_ |a Austen, Jane, |d 1775-1817

370 _ |a Steventon (Hampshire, England) |b Winchester (England) |c England |c Great Britain |e Bath (England) |2 naf

372 _ |a Fiction |2 lcsh

374 _ |a Authors |a Novelists |2 lcsh

375 _ |a female

377 _ |a eng

Pride and prejudice / Jane Austen.

Record info:

Main Author [Austen, Jane, 1775-1817.](#)

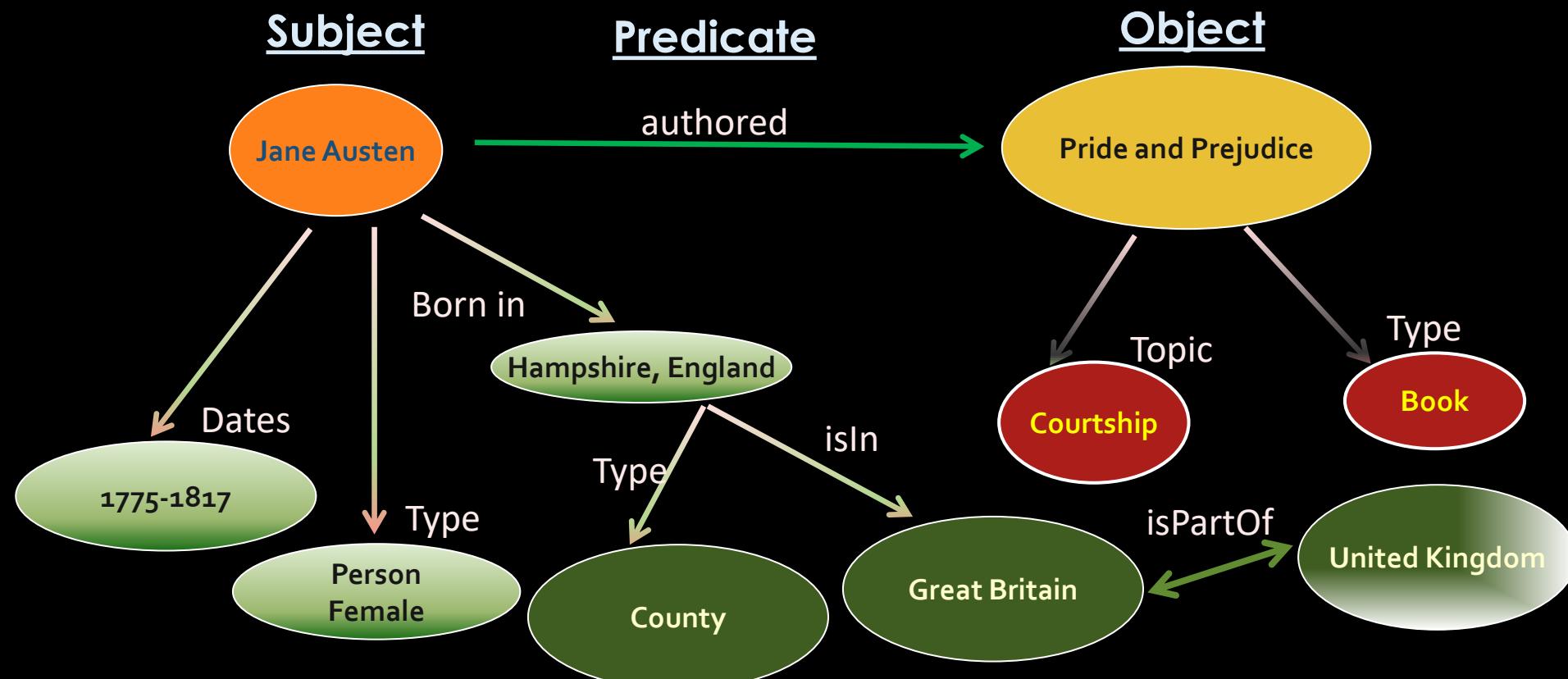
Published/Created 2007 - Ann Arbor, MI : Borders Classics,

Language English

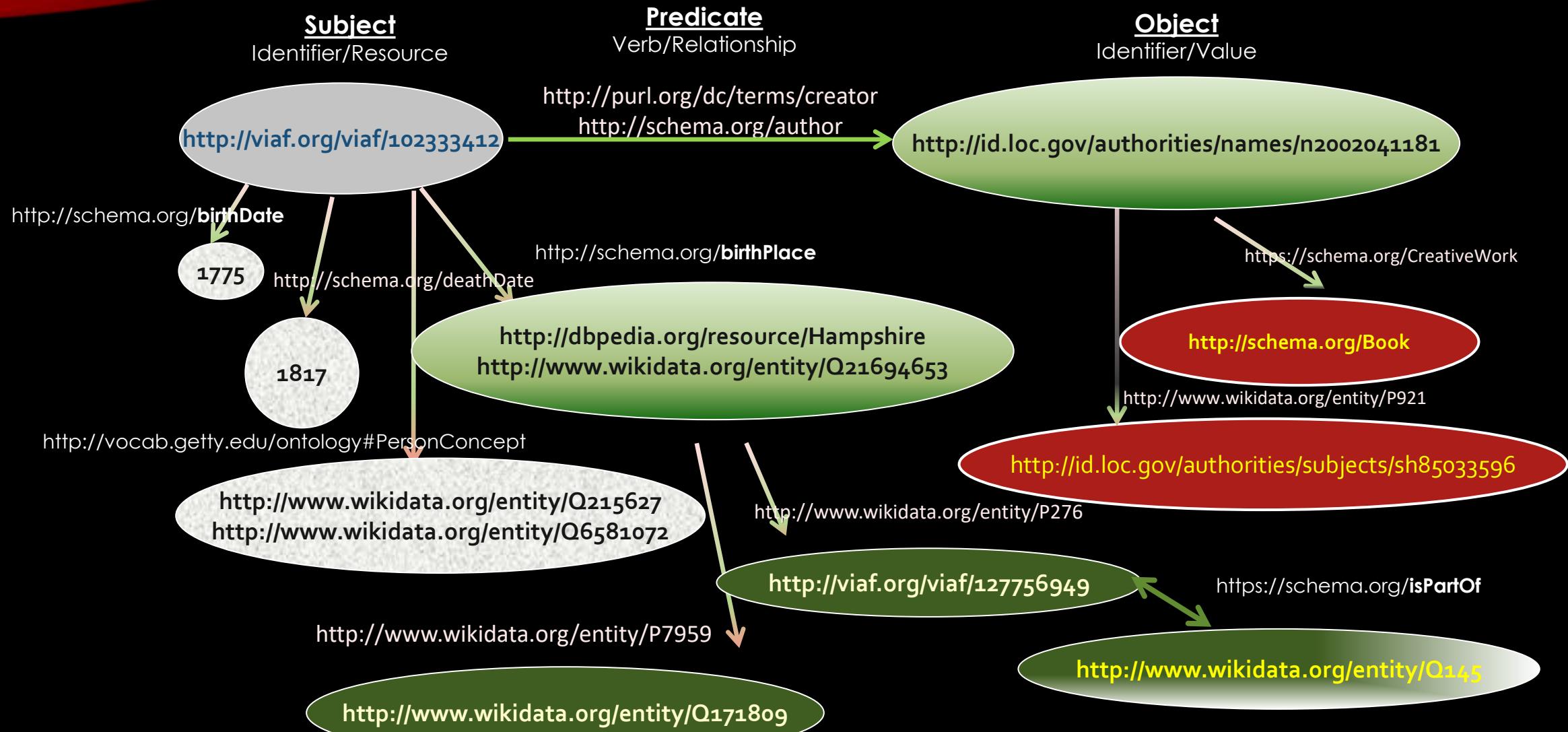
Subjects (LCSH) [Courtship -- Fiction.](#)

Show all 5

ENTITY-RELATIONSHIP



HTTP URIS



BIBFRAME EDITORS

- Marva
<https://bibframe.org/marva/editor/>
- Sinopia
<https://sinopia.io>

https://bibframe.org/marva/editor/edit/e2238735

The screenshot shows the SINOPIA - STAGE editor interface for a work record. The URL in the address bar is <https://bibframe.org/marva/editor/edit/e2238735>. The left sidebar has a 'Work' section with various checked items: Creator of Work, Title Information (Work Title, Variant Title), Form/Genre, Government publication, Date of Work, Place of Origin of the Work, (Geographic) Coverage of the Content, (Time) Coverage of the Content, Intended Audience, Other contributors, Notes about the Work, Dissertation, Contents, Summary, and Subject of the Work. The main workspace shows a 'Work' entity with the identifier </resources/works/72fff1f8-15ce-4ec7-a3a1-c4935ff65e96>. It displays the creator as 'Austen, Jane, 1775-1817', the title 'Pride and Prejudice', and the genre 'Fiction'. Below this, there are sections for 'Creator of Work' (Person search results for 'Austen, Jane, 1775-1817') and 'Title Information' (Work Title set to 'Pride and Prejudice'). A warning message states 'Unable to load the entire resource. The unused triples are listed below.' followed by a table of triples:

Subject	Predicate	Object
https://svde.org/Contribution_100/d4db35c3-5c9e-3674-898d-315b07362fb1	http://id.loc.gov/ontologies/bibframe/agent	https://svde.org/agents/281631290196733
https://svde.org/agents/281631290196733	http://www.w3.org/2000/01/rdf-schema#label	MacKaye, Mary Keith Medbery, 1845-1924.
https://svde.org/title_996/4ba4a9a4-8ec7-3457-96e4-3e6696a91967	http://www.w3.org/2000/01/rdf-schema#label	Pride and prejudice

The bottom navigation bar includes links for Dashboard, Editor, Resource Templates, Actions, Search, and Logout. The search bar contains the query 'SHAREVDE PCC Opus' and the term 'pride and prejudice'. There are 'Close' and 'Save' buttons at the bottom right.



DISCUSSION?

WIKI PLATFORM

COMMON TERMS

- **Wiki** – a collaborative platform for writing and publishing via a user agent (e.g., browser)
- **Wikipedia** – a collaboratively edited, multilingual, free Internet encyclopedia supported by the non-profit Wikimedia Foundation
- **Wikidata** – a *global database (repository), hosting structured data in triples*
- **Triple statement** – "this" "is" "that" (subject item (Q#))—property (P#)—object item (Q#))
- **Wikibase** – a software that powers Wikidata and supports structured data

COMMON TERMS (CONT.)

- **Data modeling** – analyze data requirements to support logic, structure, discoverability, context, etc.
- **Serialization** – flavors of data output formats (e.g., RDF/XML, JSON, TTL, N3, etc.)
- **Visualization** – visual forms of data representation (e.g., tables, charts, maps, etc.)
- **Node** – an active, physical device attached to a network, capable of transmitting data

WHY WIKI PLATFORM?

WHY LINK YOUR LIBRARY DATA WITH WIKIDATA?



- Wikimedia Movement Strategy: “A world in which every single human being can freely share in **the sum of all knowledge**”
- By 2030, Wikimedia will become the essential infrastructure of the ecosystem of free knowledge
- Wikidata already connects many controlled vocabularies, authority files, and ontologies used in the GLAM sector and beyond
- It is multilingual
- Wikidata as a hub to connect data between GLAM institutions

WIKIMEDIA FAMILY



meta.wikimedia.org/wiki/Wikimedia_movement#/media/File:Wikimedia_logo_family_complete-2021.svg



<http://wikipedia.org>

Online encyclopedia, a free content, multilingual online encyclopedia contributed by a community of volunteer on an open collaboration, wiki-based editing system, and supported by Wikidata



<http://commons.wikimedia.org>

a **media repository**, of freely available and reusable media files, in all languages, supporting all Wikimedia projects, e.g., Wikipedia, Wikivoyage, Wikisource, Wikiquote, Wiktionary, Wikinews, Wikibooks, and Wikispecies



<http://wikidata.org>

To collect world's knowledge in a structured manner to benefit all who seek knowledge

data repository that is open, free, collaborative, and multilingual, which collects structured data to support Wikipedia, Wikimedia Commons, and many other Wiki projects

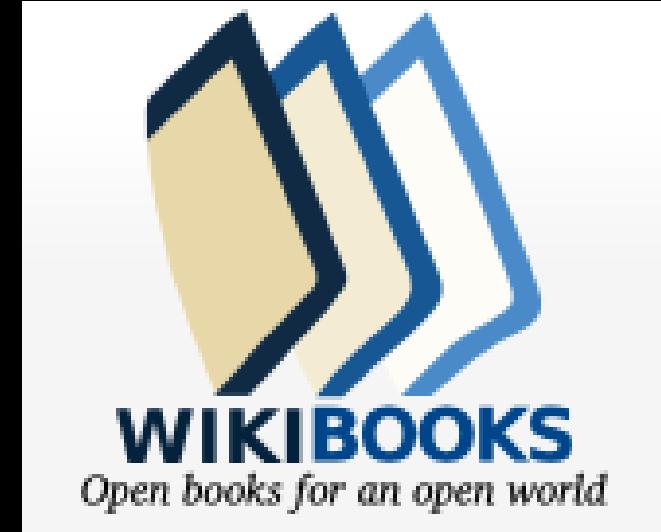
item	property	value
Marie Curie	field of work	chemistry
Q7186	P101	Q2329

an **online digital library** of multidisciplinary open-content ebook library in 72 languages, over 500K English texts among others, comics, and audio books



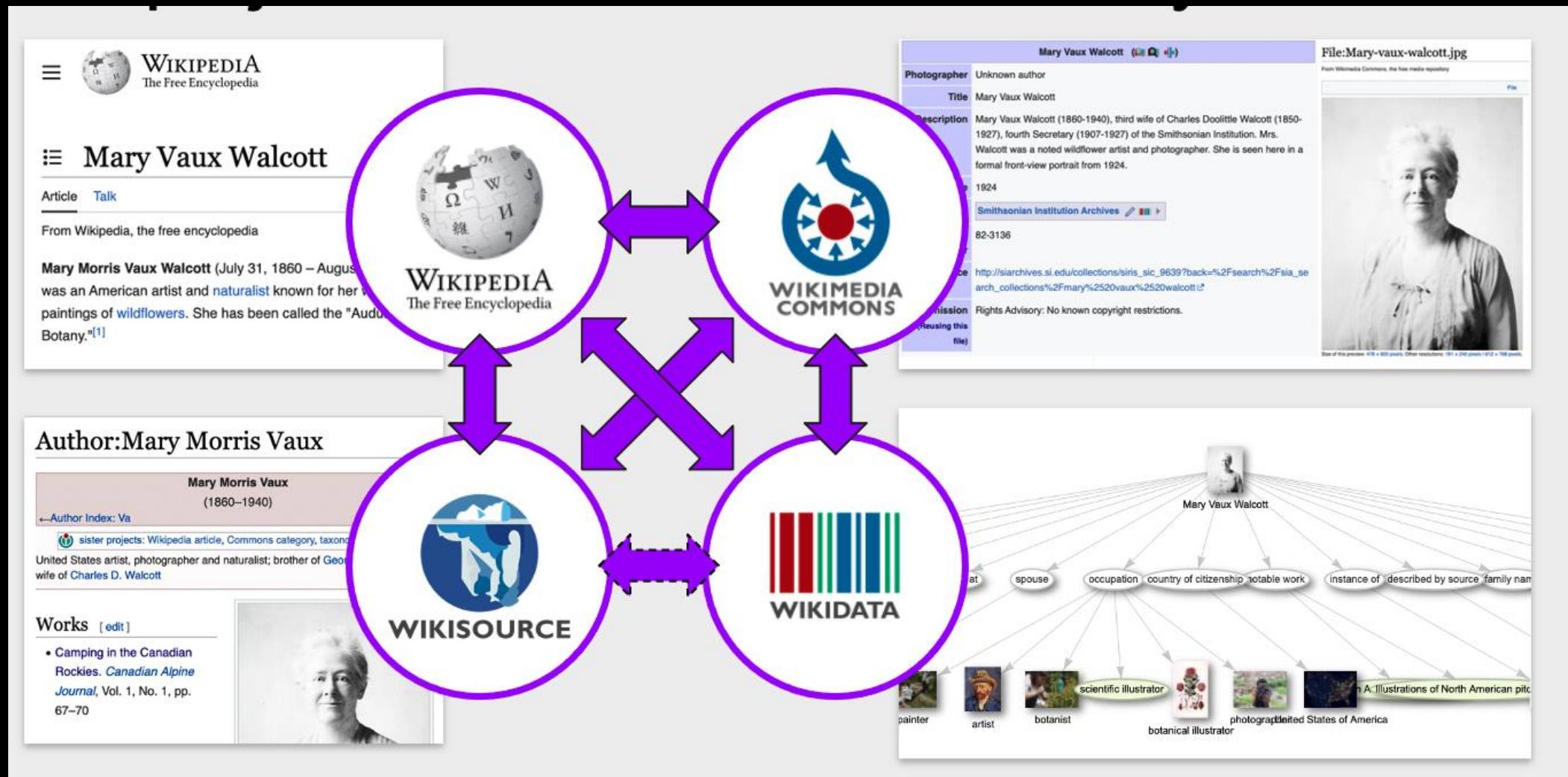
<http://wikisource.org>

a collection of open-content textbooks; including annotated texts, instructional guides, and manuals



<https://wikibooks.org>

INTERCONNECTIVITY

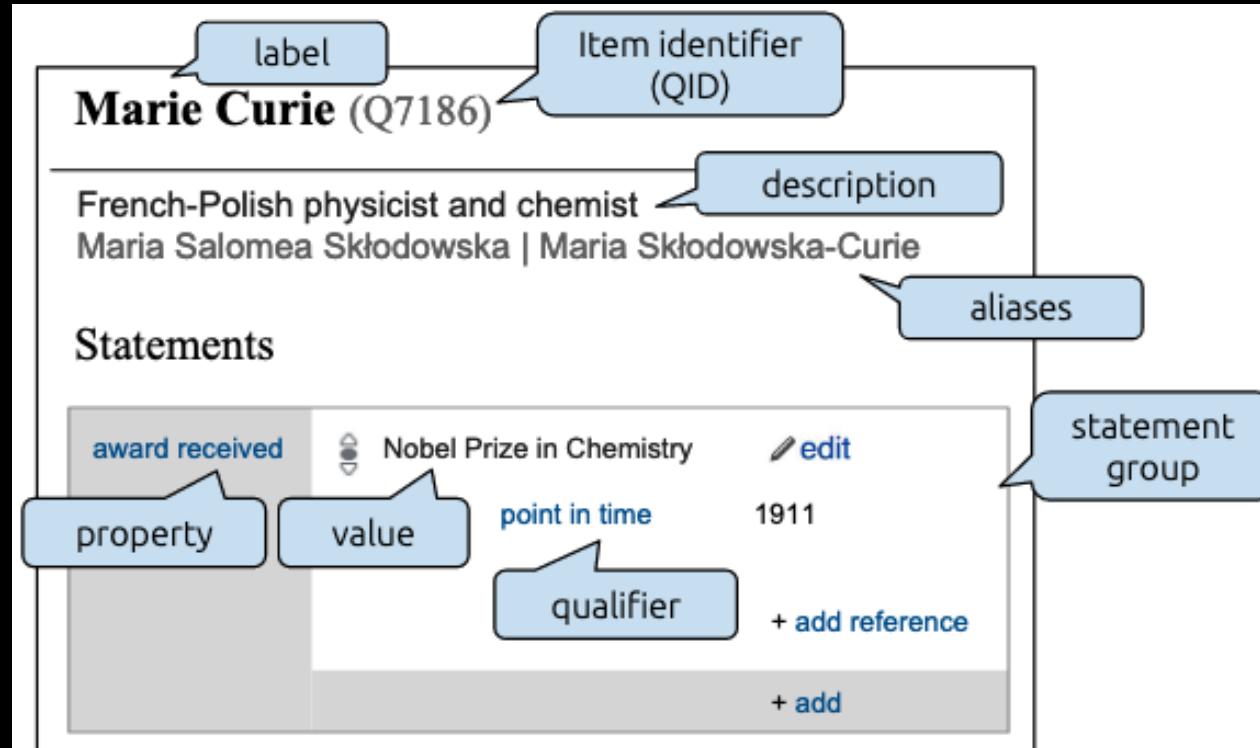


Wikidata

A Semantic Web realized

A central storage for Wikimedia sister projects

WIKIDATA ANATOMY AND USES



wikidata.org/wiki/WD:1

- Identifiers clearing house
- A repository connecting facts about people, places, things, and concepts
- A host for data reuse in other projects

ENTITY RELATIONSHIP



Man from the farthest past, by C W Bishop, Charles Greeley Abbo Ales Hrdlicka

[Smithsonian Libraries and Archives](#)

Object Details

Author

Bishop, Carl Whiting

Abbot, C. G (Charles Greeley) 1872-1973

Hrdlicka, Aleš 1869-1943

1930

https://si.edu/object/siris_sil_40341

Author:

Title:

Publisher:

Description:

Series:

Notes:

Bibliography Note:

Subject:

Genre:

Added Author:

Added Series:

Bishop, Carl Whiting, 1881-1942 author

Man from the farthest past / by Carl Whiting Bishop ... with the collaboration of Charles Greeley Abbot ... and Aleš Hrdlicka

[New York] [Smithsonian Institution series, Incorporated] 1930

6 preliminary leaves, iii, 375 pages color frontispiece, illustrations (including map)
100 plates (some color) on 65 leaves 25 cm

Smith. Sci. Seri. ; -- v. 7

On cover: Patrons edition

One of the plates accompanied by guard sheet with descriptive letterpress

Includes bibliographical references (pages 352-358)

Anthropology

Prehistoric peoples

Civilization -- History

Anthropology

Civilization

Prehistoric peoples

Anthropology

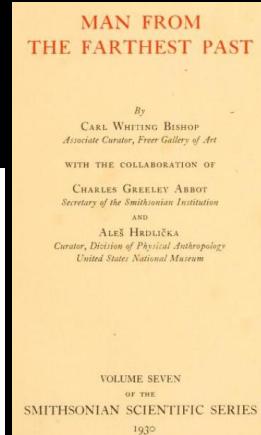
Civilization -- history

History

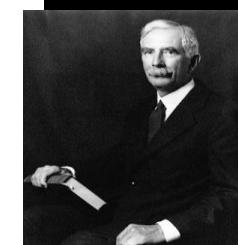
Abbot, C. G. (Charles Greeley) 1872-1973 author

Hrdlicka, Aleš 1869-1943 author

Smithsonian scientific series ; v. 7



<http://worldcat.org/entity/work/id/1549069>



Charles Greeley Abbot

<http://viaf.org/viaf/77062086>
<http://id.loc.gov/authorities/names/n50039868>

author [of]
<http://id.loc.gov/vocabulary/relators/aut>

NAME AUTHORITY DATA

LC control no.: n 50039868

LCCN Permalink: <https://lccn.loc.gov/n50039868>

Personal name heading: Abbot, C. G. (Charles Greeley), 1872-1973

Variant(s): Abbot, Charles Greeley, 1872-1973

Special note: Includes the old catalog headings: Abbot, Charles Greeley, 1872- ; Abbot, Charles Greeley.

Found in: The 1900 solar eclipse exped. of Astrophys. observ. of Smithson. Inst.

LCCN 04-33116: Smithsonian Astrophysical Observatory. The 1900 solar eclipse expedition
... 1904 (hdg.: Abbot, Charles Greeley; usage: C.G. Abbot)

LC data base, 7-20-87 (hdg.: Abbot, Charles Greeley, 1872- ; usage: C.G. Abbot)

LCCN 29-1821: Abbot, C.G. The sun, 1929: (hdg.: Abbot, Charles Greeley, 1872- ; usage:
Charles G. Abbot)

NUCMC data from Smithsonian Inst. Archives for Smithsonian Institution oral history project,
1974-1985 (Charles G. Abbot, 1872-1973; Smithsonian Institution secretary)

National Academy of Sciences, Biographical memoirs, WWW site, June 24, 2008: (b. May
31, 1872; d. Dec. 17, 1973)

NAME ENTITY IN RDF

```

<rdf:RDF>
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    <rdf:type rdf:resource="http://www.loc.gov/mads/rdf/v1#Authority"/>
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      <madsrdf:FullNameElement>
        <madsrdf:elementValue>Abbot, C. G.</madsrdf:elementValue>
      </madsrdf:FullNameElement>
      <madsrdf:FullNameElement>
        <madsrdf:elementValue>(Charles Greeley)</madsrdf:elementValue>
      </madsrdf:FullNameElement>
      <madsrdf:DateNameElement>
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      </madsrdf:DateNameElement>
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      <madsrdf:PersonalName>
        <rdf:type rdf:resource="http://www.loc.gov/mads/rdf/v1#Variant"/>
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    <madsrdf:isMemberOfMADSCollection rdf:resource="http://id.loc.gov/authorities/names/collection_NamesAuthorizedHeadings"/>
    <madsrdf:isMemberOfMADSCollection rdf:resource="http://id.loc.gov/authorities/names/collection_LCNAF"/>
    <madsrdf:hasExactExternalAuthority rdf:resource="http://viaf.org/viaf/sourceID/LC%7Cn++50039868#skos:Concept"/>
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    <madsrdf:identifiesRWO>
      <madsrdf:RWO rdf:about="http://id.loc.gov/wo/agents/n50039868">
        <rdf:type rdf:resource="http://id.loc.gov/ontologies/bibframe/Person"/>
        <rdf:type rdf:resource="http://xmlns.com/foaf/0.1/Person"/>
        <rdfs:label>Abbot, C. G. (Charles Greeley), 1872-1973</rdfs:label>
      </madsrdf:RWO>
    </madsrdf:identifiesRWO>
  </madsrdf:PersonalName>

```

<http://id.loc.gov/authorities/names/n50039868>

NAME ENTITY IN WIKIDATA

Charles Greeley Abbot (Q210126)

American astrophysicist and the 5th Secretary of the Smithsonian
C. G. (Charles Greeley) Abbot | C. G. Abbot

Enter a schema to check Automatically check schema

► Recoin: Most relevant properties which are absent

▼ In more languages

Language	Label	Description	Also known as
English	Charles Greeley Abbot	American astrophysicist and the 5th Secretary of the Smithsonian	C. G. (Charles Greeley) A... C. G. Abbot
Spanish	Charles Greeley Abbot	No description defined	

All entered languages

Statements

instance of	human
	<input type="button" value="edit"/> + add value
► 2 references	

notable work

- Man from the farthest past edit
- Great inventions edit

archives at

- Smithsonian Institution Archives edit
- 1 reference + add value

position held

- Secretary of the Smithsonian edit
- start time 1928
- end time 1944
- series ordinal 5
- 1 reference + add value

<http://wikidata.org/entity/Q210126>

WORK AND PERSON IN WIKIDATA

Man from the farthest past (Q51421898)

[New York, Smithsonian Institution series, inc.] 1930. | Patrons edition. Smithsonian Institution

[View Book](#)

Other properties

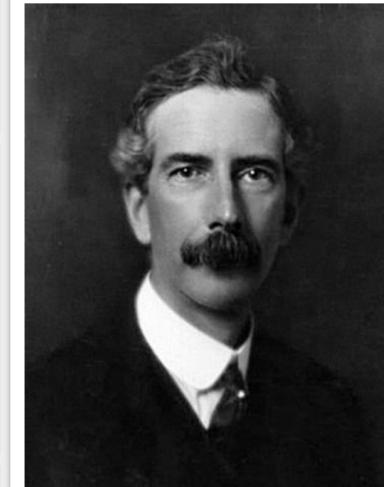
title	Man from the farthest past [en]
part of the series	Smithsonian Scientific Series a twelve volume collection set on the history and Smithsonian Institution (1929-1949) series ordinal : 7
instance of	publication content made available to the general public
author	Charles Greeley Abbot American astrophysicist and the 5th Secretary of the Smithsonian Institution stated as : Abbot, C. G. (Charles Greeley), 1872-1973
	Aleš Hrdlička Czech-American anthropologist stated as : Hrdlicka, Ales, 1869-1943
	Carl Whiting Bishop American archeologist stated as : Bishop, Carl Whiting, 1881-1942
publication date	1930
full work available at URL	https://library.si.edu/digital-library/book/manfromfarthestp07bish

Charles Greeley Abbot

Q210126

American astrophysicist and the 5th Secretary of the Smithsonian

https://en.wikipedia.org/wiki/Charles_Greeley_Abbot:
Charles Greeley Abbot (May 31, 1872 – December 17, 1973) was an American astrophysicist and the fifth secretary of the Smithsonian Institution, serving from 1928 until 1944. Abbot went from being director of the Smithsonian Astrophysical Observatory, to becoming Assistant Secretary, and then Secretary of the Smithsonian Institution over the course of his career. As an astrophysicist, he researched the solar constant, research that led him to invent the solar cooker, solar boiler, solar still, and other patented solar energy inventions.



[1/2]

instance of human

given name Charles
series ordinal 1

family name Abbott

name in native language Charles Greeley Abbot [English]

sex or gender male

country of citizenship United States of America

residence Washington, D.C.

date of birth May 31, 1872

place of birth Wilton

date of death December 17, 1973

References

American National Biography ID	1302322
BAnQ author ID	ncf10783586
BHL creator ID	12901 named as Abbot, C. G. (Charles Greeley) 1872-1973 204481
Bibliothèque nationale de France ID	112334332
Biographical Encyclopedia of Astronomers ID	4

WIKIDATA BASICS

ITEM – PROPERTY - VALUE

Q numbers – item

- Can be created by anyone
- Can correspond to an object or concept
- Examples:
 - Q1 – universe
 - Q2 – earth
 - Q5 – human
 - Q7377 – mammal
 - Q16983719 – Pratt Institute School of Information

P numbers – property

- Controlled vocabulary
- Created by community through consensus
- Examples:
 - P31 – instance of
 - P279 – subclass of
 - P21 – sex or gender
 - P214 – VIAF ID
 - P265 – coordinate location

TOOLS AND APIs

WIKIDATA TOOLS

- Mix'n'Match
- Cradle
- Scholia (& AuthorDisambiguator)
- Listeria
- TABernacle
- InteGraality
- QuickStatements
- OpenRefine
- Wikipedia/Wikidata Google spreadsheet (browser add-on)
- Entity explosion (browser add-on)
- User widgets

<http://wikidata.org/wiki/Wikidata:Tools>

MIX-N-MATCH

This tool can list entries of some external databases, and allows users to match them against Wikidata items. Think 'red link lists on steroids'. See the manual or [watch a video](#) for a how-to. For an alternative, see [OpenRefine](#). You can [suggest](#), [import](#), or [scrape](#) new catalogs. See also: [AC properties without Mix'n'match](#).

Group	Catalogs
	8
Cinema	49
Genealogy	12
Music	11
Software	15
Wolfram Language entity	85
Archives	28
Art	126
Authority control	6

CRADLE

Tool to create new
Wikidata items from a
form

<http://cradle.toolforge.org/#/subject/artist>

https://cradle.toolforge.org/#/subject/artist_(in_library_collection,_short_description)

artist (in library collection, short description)

Labels*	Language Text	[+]
Aliases	Language Text	[+]
Descriptions	Language Text	[+]
instance of*	human	[+]
image	commonsMedia	[+]
sex or gender	female	[+]
country of citizenship	[Search]	[+]
name in native language	lan ₁ monolingualtext	[+]
date of birth	time	[+]
date of death	time	[+]
occupation	visual artist	[+]
movement	[Search]	[+]

Dolores Piperno (Q5289551)

Dolores Piperno is an American archaeologist specializing in archaeobotany. She is a senior scientist emeritus of the Smithsonian Tropical Research Institute in Balboa, Panama and the Smithsonian National Museum of Natural History, Washington. ([Read more on English Wikipedia](#))

 <https://orcid.org/0000-0002-0584-3133>

Table of Contents

- [List of publications](#)
 - [Number of publications per year](#)
 - [Number of pages per year](#)
- [Topics](#)
 - [Topic scores](#)
 - [Topics of authored works](#)
 - [Topics-works matrix](#)
- [Venue statistics](#)
- [Review statistics](#)
- [Co-author graph](#)
- [Co-author map](#)
- [Other locations](#)
- [Timeline](#)
- [Academic tree](#)
- [Citation statistics](#)
 - [Most cited works](#)
 - [Citations by year](#)
 - [Citing authors](#)
- [Associated images](#)
- [Events](#)

<http://scholia.toolforge.org/author/Q5289551>

SCHOLIA

NATURAL
HISTORY

Dolores Piperno

Senior Scientist Emerita

<http://naturalhistory.si.edu/staff/dolores-piperno>



Department / Division

[Anthropology](#)

Research Interests

The archaeobotany, archaeology, and human ecology of the lowland American tropics together with the biogeographical and climatological history of the tropical biome. A main focus of my career is the origins of agriculture through investigations of phytoliths, starch

LISTERIA

Tool to generate wiki tables from SPARQL queries and keep data synchronized with Wikidata repository

<http://wikidata.org/wiki/WD:Listeria>

Generating List: Chinese emperors								
name	image	description	date of birth	date of death	occupation	country of citizenship	item	
Zhuanxu		Emperor of China	No/unknown value -26th century	No/unknown value -25th century				Q198180
Daughter of Emperor Xiaoming of Northern Wei		Northern Wei empress	0528-02-12	No/unknown value	politician			Q10889741
Emperor Ping of Han		emperor of the Han Dynasty	-0009	0006-02-03	monarch	Western Han		Q7244
Wang Mang		Han dynasty official and founding Emperor of the Xin Dynasty (c.45 BC-23 AD)	-0045	0023-10-06	sovereign	Han dynasty Xin dynasty		Q7250

https://wikidata.org/wikidata/Wikidata:WikiProject_PCC_Wikidata_Pilot/Smithsonian_Libraries/Projects/Chinese_Portraits/Tasks/Listeria

TABERNACLE

Tool for browsing and editing Wikidata, a sister project of Wikipedia, that aids users in data entry and data remixing

<http://wikidata.org/wiki/Wikidata:TABernacle>

#	Item	instance of	Label	Description	Alias(es)
1	Emperor Zhi Q1207922	human	en Emperor Zhi	en	en *
2	King Yi of Zhou Q1208109	human	en King Yi of Zhou	en King of China	en
3	King Yi of Zhou Q1208124	human	en King Yi of Zhou	en King of Zhou Dynasty	en
4	Fuchai Q1269349	human	en Fuchai	en Chinese king	en King Fuchai of Wu en Fucha
5	Fu Liang Q1270073	human	en Fu Liang	en Chinese official (374-426)	en
6	Liang Shidu Q1272181	human	en Liang Shidu	en Chinese general	en
7	Emperor Taizu of Later Liang Q1275305	human ► References/qualifiers	en Emperor Taizu of Later Liang	en Liang Dynasty emperor	en Zhu Huang en Zhu Quanzhong
8	King Zhao of Zhou Q1275781	human ► References/qualifiers	en King Zhao of Zhou	en King of the Chinese Zhou Dynasty	en Zhou Zhaowang
9	Emperor Xuan of Western Liang Q1285740	human ► References/qualifiers	en Emperor Xuan of Western Liang	en Western Liang emperor	en Xiao Qie en Xiao Cha en Lisun en Zhong Zong en Xuan Di en Xiao Cha(Liangxuanhuangdi)

<https://tinyurl.com/slaChineseEmperors>

WIKIDATA “INTEGRAALITY”

[Wikidata:GLAM/Smithsonian Institution/Reports/SAAM/tabs](#) This table describes the completeness of properties in Wikidata for SAAM objects. A good reference for item structure for visual works: [Wikidata:WikiProject_Visual_arts/Item_structure](#).

[all entities](#) | [count](#) | [all groupings](#) | [without grouping property](#) | [below threshold \(1\)](#) | Grouping by [instance of \(P31\)](#)

[Manually update](#)

Top groupings (Minimum 1 items)		Top Properties (used at least 0 times per grouping)								
Name	Count	image (P18)	inception (P571)	height (P2048)	width (P2049)	creator (P170)	copyright status (P6216)	inventory number (P217)	described at URL (P973)	
painting (Q3305213)	8405	43.36% (3644)	92.31% (7759)	89.32% (7507)	89.32% (7507)	99.89% (8396)	42.42% (3565)	100.0% (8405)	0.25% (21)	
watercolor painting (Q18761202)	392	65.82% (258)	98.47% (386)	99.49% (390)	99.49% (390)	100.0% (392)	100.0% (392)	100.0% (392)	0% (0)	
print (Q11060274)	6	16.67% (1)	100.0% (6)	50.0% (3)	50.0% (3)	100.0% (6)	0% (0)	100.0% (6)	0% (0)	
sculpture (Q860881)	4	100.0% (4)	100.0% (4)	50.0% (2)	25.0% (1)	100.0% (4)	0% (0)	75.0% (3)	0% (0)	

wikidata.org/wiki/Wikidata:GLAM/Smithsonian_Institution/Reports/SAAM/Object_ID_completeness

QUICKSTATEMENTS

Tool to edit Wikidata items, based on a simple set of text commands:

V1

CSV

<http://quickstatements.toolforge.org/#/>

The screenshot shows the QuickStatements V2 interface with two separate command batches.

Batch 1 (Wikidata):

```

CREATE
LAST Len "Alfred Leslie"
LAST Den "American artist known for figurative artworks"
LAST P31 Q5
LAST P21 Q6581097
LAST P569 +1927-10-29T00:00:00Z/11 S854 "http://www.artnet.com/artists/alfred-leslie/" S813
+2020-09-01T00:00:00Z/11
LAST P19 Q18426
LAST P20 Q7565985
LAST P6379 Q1192305
LAST P1795 "2894"
CREATE
LAST Len "Allan Janus"
LAST Den "American artist, active in Kensington, Maryland, USA"

```

Batch 2 (SII Wikibase):

```

qid,Len,Den,P17,P208,P65,P135
,"Louis Pasteur","French chemist and microbiologist","""Q529""",Q18,Q138,Q71
,"Nicolaus Copernicus","Renaissance-era mathematician, astronomer, and clergyman who formulated the heliocentric model of the Universe","""Q529""",Q18,Q138,Q71
,"André-Marie Ampère","French physicist and mathematician","""Q529""",Q18,Q138,Q71
,"Alessandro Volta","Italian physicist, chemist, and pioneer of electricity and power","""Q529""",Q18,Q138,Q71
,"Aristotle","ancient Greek philosopher","""Q529""",Q18,Q138,Q71
,"Isaac Newton","British physicist and mathematician","""Q529""",Q18,Q138,Q71

```

OPENREFINE

<http://openrefine.org>

All	chemical elem
1.	hydrogen Choose new match
2.	helium Choose new match
3.	lithium Choose new match
4.	beryllium Choose new match
5.	boron Choose new match
6.	carbon Choose new match
7.	nitrogen Choose new match
8.	oxygen Choose new match
9.	fluorine Choose new match
10.	neon Choose new match
11.	sodium Choose new match
12.	magnesium Choose new match
13.	aluminum Choose new match
14.	silicon Choose new match
15.	francium Choose new match
16.	phosphorus Choose new match
17.	iron Choose new match
18.	sulfur Choose new match
19.	chlorine Choose new match
20.	argon Choose new match
21.	potassium Choose new match
22.	calcium Choose new match
23.	lead Choose new match

<https://www.wikidata.org/wiki/Wikidata:Tools/OpenRefine>

BROWSER EXTENSIONS

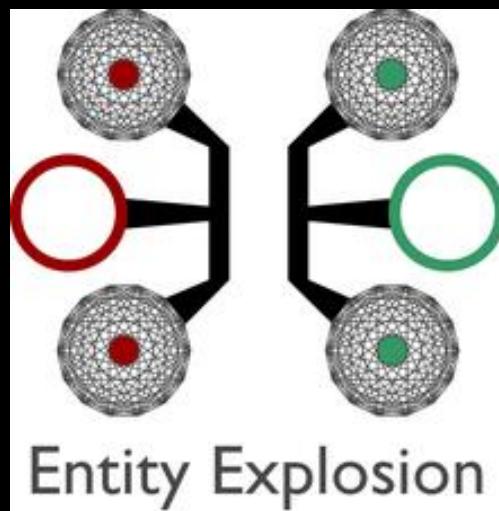
BROWSER EXTENSION: WIKIPEDIA/WIKIDATA TOOLS

A screenshot of a spreadsheet application interface, likely Google Sheets, showing the 'Extensions' menu open. A red arrow points from the text 'Wikipedia and Wikidata Tools' in the list to the menu item in the spreadsheet window.

The spreadsheet window shows a table with two columns: 'DisplayName' and 'Description'. The first row contains 'Len' and 'Den'. The 'Extensions' menu is open, displaying a list of tools. The 'Wikipedia and Wikidata Tools' option is highlighted in the list.

- ✓ WIKIARTICLESAROUND
- WIKICATEGORIES
- WIKICATEGORYMEMBERS
- WIKICOMMONSLINK
- WIKIDATADESCRIPTIONS
- WIKIDATAFACTS
- WIKIDATALABELS
- WIKIDATALOOKUP
- WIKIDATAQID
- WIKIDATASEARCH
- WIKIEXPAND
- WIKIGEOCOORDINATES
- WIKIINBOUNDLINKS
- WIKILINKSEARCH
- WIKIMUTUALLLINKS
- WIKIOUTBOUNDLINKS
- WIKIPAGEEDITS
- WIKIPAGEVIEWS
- WIKIQUARRY
- WIKISEARCH

BROWSER EXTENSION: ENTITY EXPLOSION



https://open.spotify.com/artist/0Sadg1vgvaPqGTOjxu0N6c

lengua
[es] español

entidad
Girls' Generation (Q20153)

Girls' Generation
grupo musical femenino surcoreano

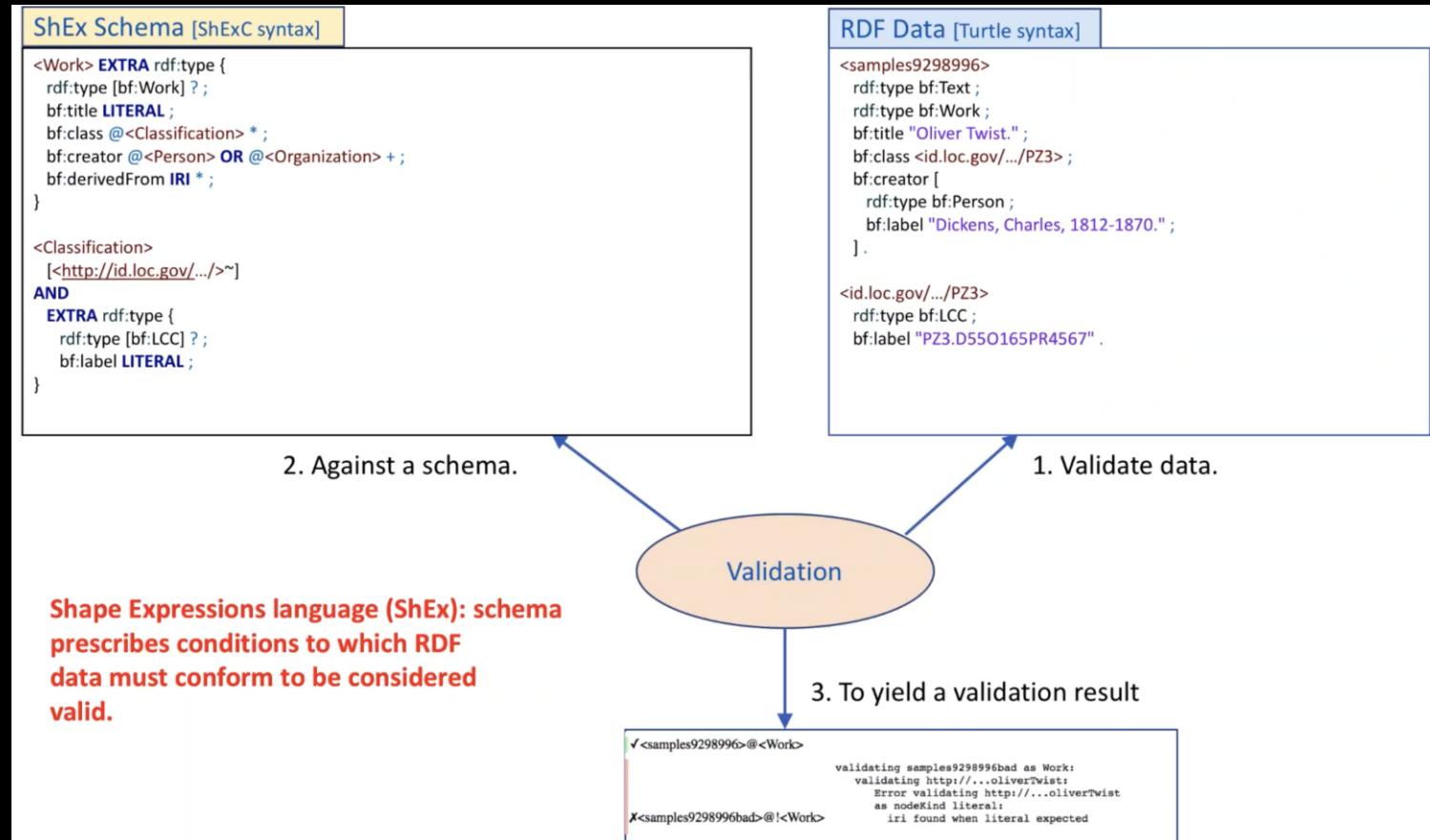
Wikidata: Q20153
Wikimedia Commons: Girls' Generation
Wikipedia: Girls' Generation

categoría de miembros: Categoría:Miembros de Girls' Generation
categoría principal del tema: Categoría:Girls' Generation
compuesto por: Taeyeon
compuesto por: Sooyoung
compuesto por: Sunny
compuesto por: Jessica Jung
compuesto por: Tiffany Young
compuesto por: Seohyun
compuesto por: Hyoyeon
compuesto por: Kwon Yuri
compuesto por: Yoona



DATA QUALITY ASSURANCE

SCHEMAS (VIA SHAPE EXPRESSION)



https://www.wikidata.org/wiki/Wikidata:WikiProject_Schemas
<http://shex.io/>

DATA REUSE

PRESENTING WIKIDATA KNOWLEDGE



DATA REPRESENTATIONS

- As graphs

<https://w.wiki/4LTg>

- In map

<https://w.wiki/42WB>

- Tabular form

<https://w.wiki/3Kem>

- Tree view

<https://tinyurl.com/2o56ga3u>

WIKIDATA DISPLAY OPTIONS

76

Navigation ▾ Wiki tools ▾ Page tools ▾

Charles Greeley Abbot (Q210126)

American astrophysicist and the 5th Secretary of the Smithsonian

C. G. (Charles Greeley) Abbot | C. G. Abbot

Enter a schema to check Automatically check schema

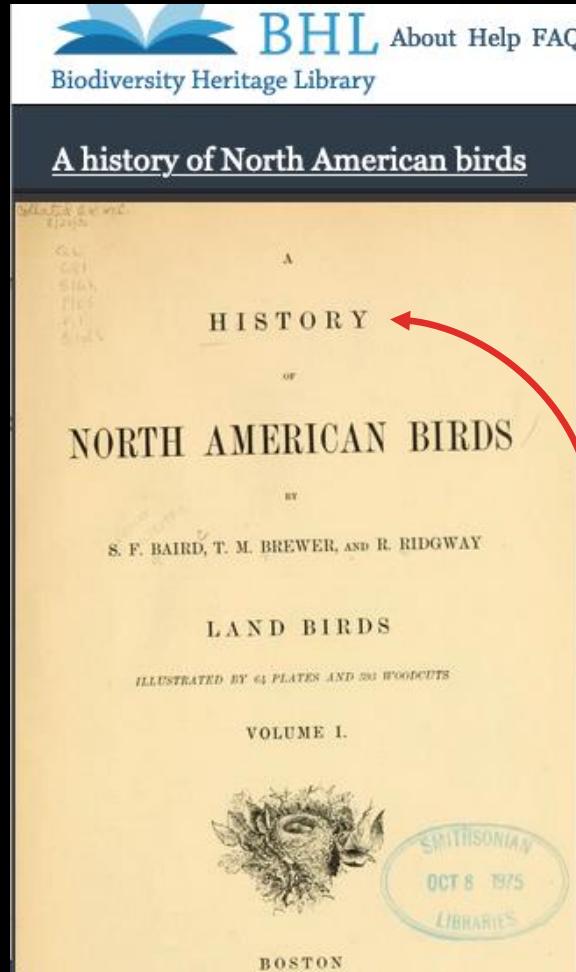
Recoin: Most relevant properties which are absent

In more languages

Language	Label	Description	Also known as
English	Charles Greeley Abbot	American astrophysicist and the 5th Secretary of the Smithsonian	C. G. (Charles Greeley) A... C. G. Abbot
Spanish	Charles Greeley Abbot	No description defined	

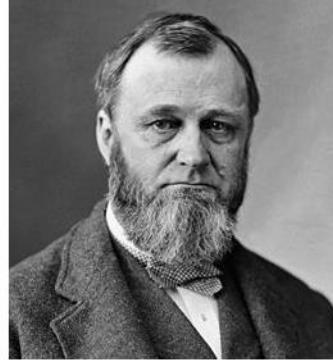
Search Item Start Properties Classes Rules About

Statements	
Own statements	
writing language	English (West Germanic language originating in England)
place of death	Washington, D.C. (capital city of the United States)
languages spoken, written or signed	English (West Germanic language originating in England)



INTER- & INTRA- LINKS: AUTHOR TO WORK

educated at	Dickinson College college in Pennsylvania
family name	Baird family name
given name	Spencer unisex given name series ordinal : 1
Fullerton	given name series ordinal : 2
notable work	A history of North American birds Natural History Illustrations 1889 b The water birds of North America Outlines of American ornithology Book Report upon the invertebrate animal life and physical features of the region sci Catalogue of North American birds, chiefly in the Museum of the Smithsonian Institution Washington :Smithsonian Institution,1858. Smithsonian Libraries View Book



Spencer Fullerton Baird (Q14049)

Spencer Baird | Baird | Spencer F. Baird | Baird, SF | Спенсер Бэрд | スペンサー・フラトン・ペアード | Спенсер Фуллертон Бэрд | 斯賓塞·富勒頓·貝爾德 | سپنسر فولرتون بیرد | אסינדר פולרטון בירד | Спенсер Фуллертон Бейрд

American naturalist, ornithologist, ichthyologist, museum curator, and the 2nd Secretary of the Smithsonian

Spencer Fullerton Baird was a US-American naturalist, curator, ornithologist, zoologist, ichthyologist, and university teacher. He was born on February 3, 1823 in Reading to Lydia McFunn Baird. He studied at Dickinson College. His field of work included ornithology, ichthyology, and herpetology.

WIKIPEDIA ARTICLE WITH WIKIDATA



<http://wikipedia.org/wiki/WP:MBABEL>

CROTO

Croto

Cosmos
Callisto
Lab

smithsonian

Language English Images/page 20 → Reading mode

4354 Results

Rooftops Alice Pike Barney - Smithsonian American Art Museum

A View of Venice Thomas Moran - Smithsonian American Art Museum

Edge of a Stream Eliphalet Frazer Andrews - Smithsonian American Art Museum

James Smithson Henri-Joseph Johns - National Portrait Gallery

<http://zone47.com/croto/?s=smithsonian>

WADE: WIKI ART DEPICTION EXPLORER

Two Comanche Girls (Q20441431)

Label from: English (en)

[view on Wikidata](#) [skip this photo](#) [browse paintings](#)

artist: George Catlin (Q455133)

collection: Smithsonian American Art Museum (Q1192305)

location: Smithsonian American Art Museum (Q1192305)

country of origin: United States of America (Q30)

material used: oil paint (Q296955) canvas (Q4259259)

Smithsonian American Art Museum ID: 4421

information from the Smithsonian American Art Museum catalog

description: The scene, painted by George Catlin at a Comanche village in 1834, shows "the wigwam of the Chief, his dogs, and his five children." The artist also described the village as "six or eight hundred skin-covered lodges, made of poles and buffalo skins, in the manner precisely as those of the Sioux and other Missouri tribes . . . This village with its thousands of wild inmates, with horses and dogs, and wild sports and domestic occupations, presents a most curious scene; and the manners and looks of the people, a rich subject for the brush and the pen." (Catlin, Letters and Notes, vol. 2, no. 42, 1841, reprint 1973, and 1848 Catalogue, Catlin's Indian Gallery, SAAM online exhibition)

keywords [Ethnic – Indian – Comanche](#) [Children](#) [Architecture Exterior – domestic – teepee](#)

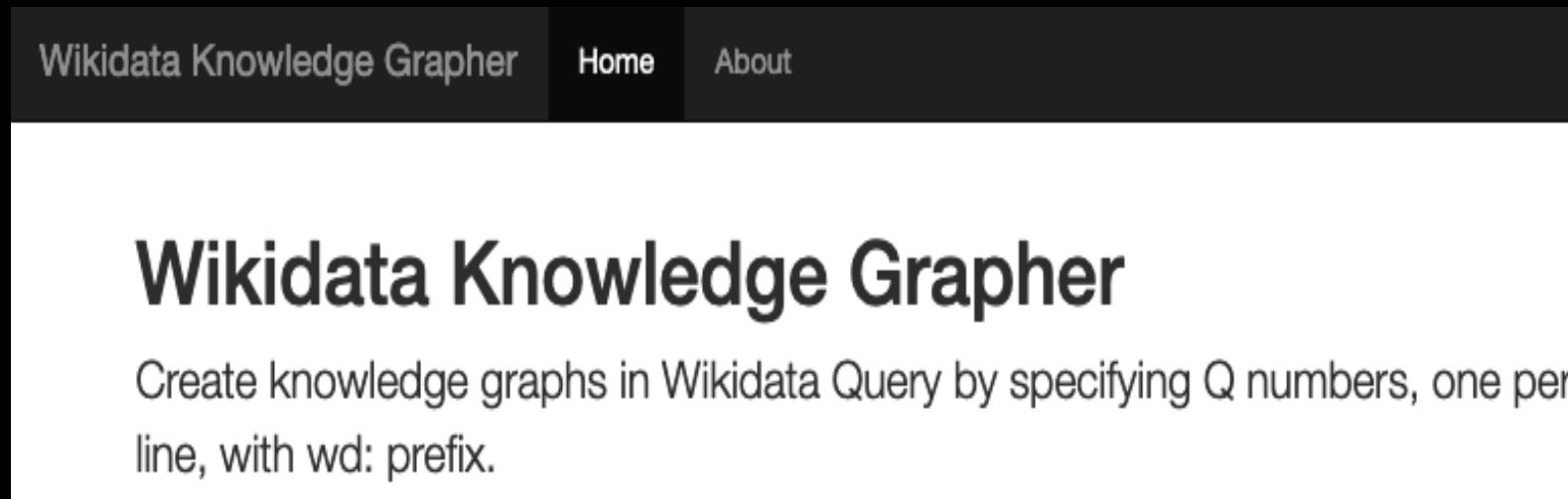
what can you see in this painting?

<http://art.wikidata.link/item/Q20441431>



wikidata.org/wikidata.org/wiki/Wikidata:WikiProject_Wiki_Art_Depiction_Explorer

DATA VISUALIZATION



The screenshot shows a dark-themed web application interface. At the top, there is a navigation bar with three items: "Wikidata Knowledge Grapher" (highlighted in white), "Home", and "About". Below the navigation bar, the main content area has a white background. The title "Wikidata Knowledge Grapher" is displayed in a large, bold, black font. Below the title, a descriptive text reads: "Create knowledge graphs in Wikidata Query by specifying Q numbers, one per line, with wd: prefix.".

http://knowledgegrapher.toolforge.org

Ex: [https://w.wiki/4U\\$o](https://w.wiki/4U$o) ; Ex: <https://w.wiki/4VFU>

INVENTAIRE

← → ⌂ ⌂ https://inventaire.io/entity/wd:Q8265 ☆ 🐶 📮 ⟲ ⟳ ⌚

inv Search English ▾

All	Work	Author	Series	Publisher	Collection	Subject
All	User	Group				

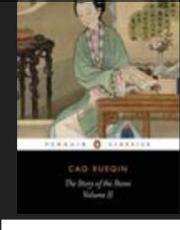
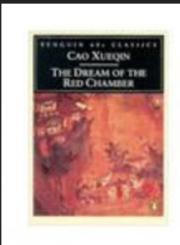




photo credits: Wikimedia Commons

Dream of the Red Chamber

wd:Q8265

Dream of the Red Chamber, also called The Story of the Stone, or Hongloumeng (traditional Chinese: 紅樓夢; simplified Chinese: 红楼梦; pinyin: Hónglóumèng), composed by Cao Xueqin, is one of China's Four Great Classical Novels. It was written some time in the middle of the 18th ...

English (100%)
 Deutsch (99%)
 Français (95%)
 Svenska (95%)
 Italiano (91%)
 Bahasa Indonesia (86%)
 Español (82%)
 العربية (78%)
 Nederlands (71%)
 Dansk (69%)
 Русский (67%)
 Türkçe (65%)

<http://inventaire.io/entity/wd:Q8265>

HISTROPIEDIA

Secretaries of the Smithsonian Institution

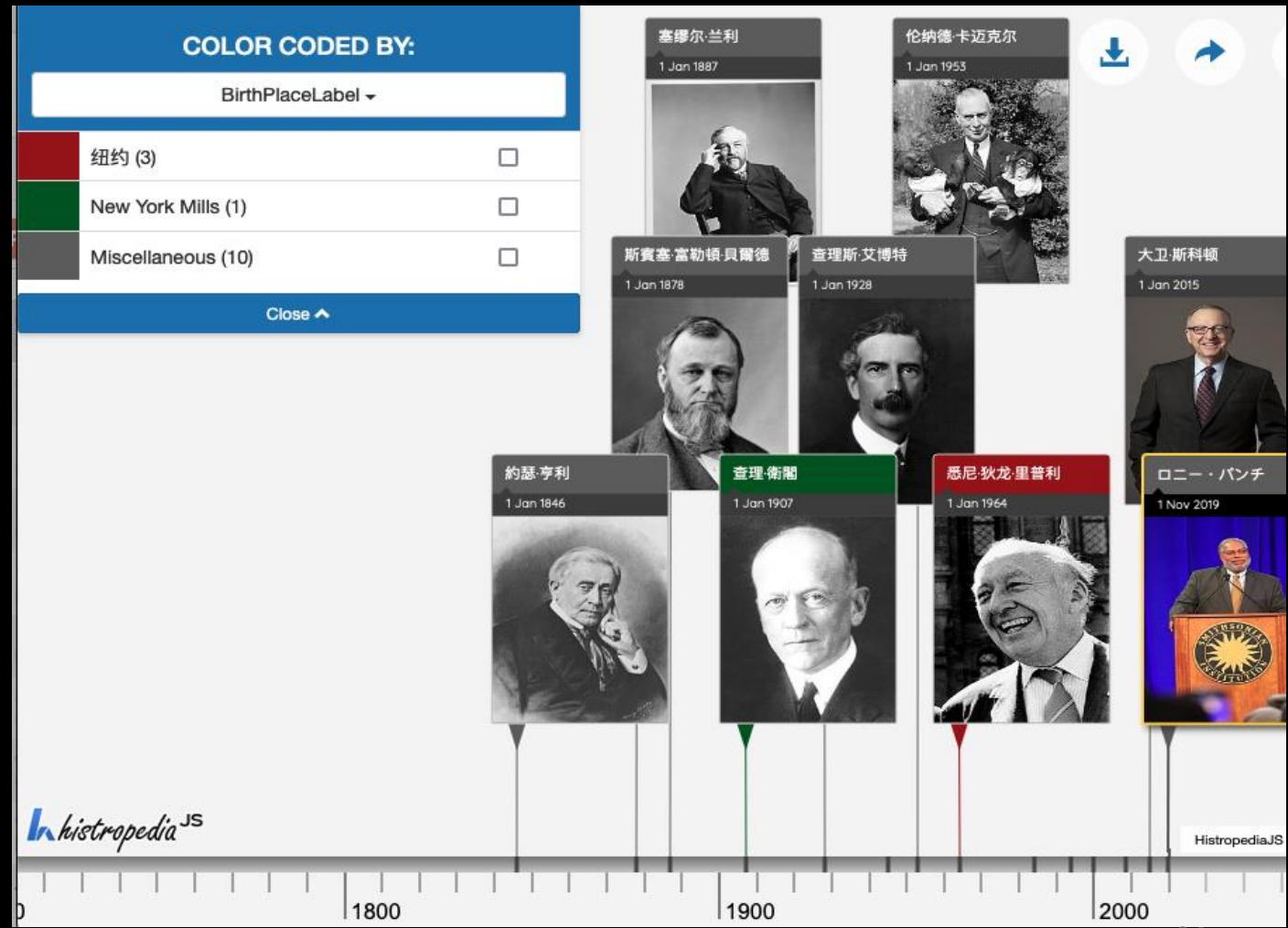
<https://w.wiki/3wmq>

Data representation via Histropedia

<http://tinyurl.com/SIsecretaries>

<http://tinyurl.com/SIsecretariesBydates>

<http://tinyurl.com/SIsecretariesLang>



“DASHBOARD”: COVID-19

COVIWD

COVIWD: COVID-19 WIKIDATA DASHBOARD

COVID19

The [COVID-19 pandemic](#) is an ongoing pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The outbreak was first found in Wuhan, China, in December 2019, and was called a pandemic by the World Health Organization (WHO) on 11 March 2020. COVIWD (COVID-19 Wikidata Dashboard) provides a one-stop information/visualization service for COVID-19-related topics. The live data for this dashboard comes from [Wikidata](#), a free but quality, collaborative knowledge graph. The information presented here in this dashboard is not to be considered medical advice and is not intended to replace consultation with a qualified medical professional. A paper (in English) describing the data & query model and development of COVIWD is available at [this link](#). For any feedback, please feel free to contact [Fariz Darari](#).

<http://coviwd.org>

COVID19 Map



WEB SERVICES

- Library of Congress
- iNaturalist
- IMDB
- GeoName
- Spotify
- etc.
- Abbot, C.G. (Charles Greeley)
<http://id.loc.gov/authorities/names/n50039868>
- Yellow-legged Gull
<http://inaturalist.org/taxa/59202>
- James Norton
<http://imdb.com/name/nm3584268>
- Tokyo Prefecture
<http://geonames.org/1850144>
- Girls' Generation (Korean girl pop music group)
<http://open.spotify.com/artist/0Sadg1vgvaPqGTOjxu0N6c>

EMBEDDED IN LIBRARY CATALOG

- Smithsonian library BF discovery portal
- Cornell library New catalog
- Mich State library catalog
- U-W Madison library catalog
- Yale LUX collection
- C. G. Abbot
<https://smithsonian.svde.org/agents/881654265711649>
- “*Two*” (scroll to click <Highlight the DISCOGS data>)
<http://newcatalog.library.cornell.edu/catalog/8058246>
- “*Comparison of ...*” (scroll to click icon <*i*> link for <Subjects>)
<http://d.lib.msu.edu/etd/3746/>
- “*Mark Twain*” (scroll to view <Information from the Web>)
<http://search.library.wisc.edu/catalog/9911042395202121>
- “*The Great wave*”
<https://lux.collections.yale.edu/view/object/9e77d0f8-b0ac-402c-bfe3-3b8121ae9f58>

WANT MORE?
THE POSSIBILITY IS ENDLESS...

Check out

<http://thinking.is.ed.ac.uk/wikidata-workshop/structured-linked-open-data/>

CONSIDERING ...

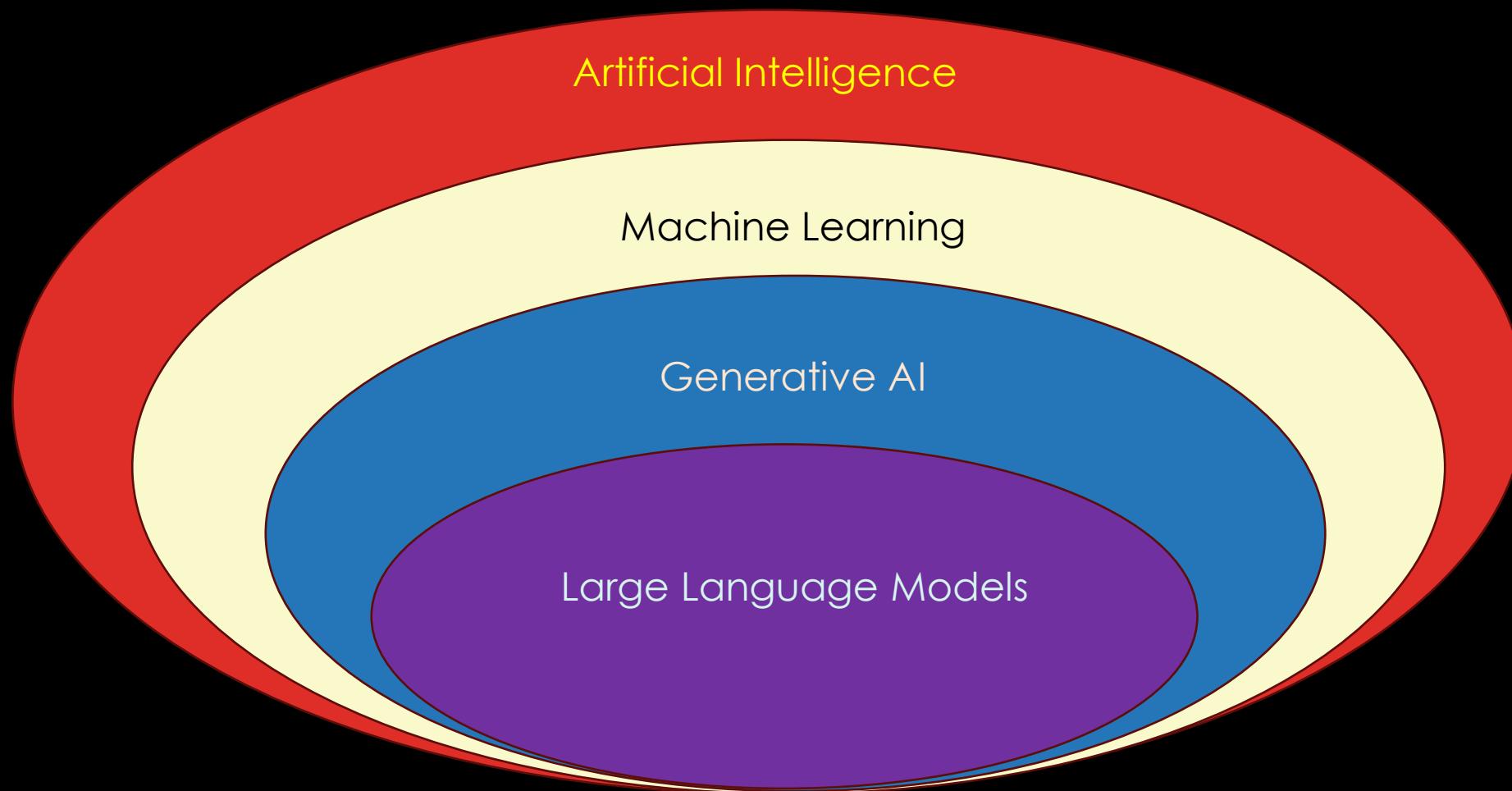
- Why should you care?
- How will linked data relate to my work?
- How will linked data help describing collections
- How will linked data apply controlled vocabularies
- What can I do with linked data NOW?
- What tools or skills are available at my fingertips?



NEW KID ON THE BLOCK...

OPEN AI

ANY LOD RELATIONSHIP? AI, ML, GenAI, LLM...



QUESTIONS...

- Are policies and/or procedures in place concerning the impact of the use of LLM or other tools?
- What level of capacity does the institution have in place to educate staff and users about such tools?
- What role do you perceive LLM playing in the life of libraries and their users?

“The worth and importance of the Institution is not to be estimated by what it accumulates within the walls of its building, but by what it **sends forth** to the world.”

—Joseph Henry, 1852

First Secretary of the Smithsonian Institution (1846-1878)



RESOURCES

- *23 Linked data things*
<https://minitex.umn.edu/services/digital-initiatives-metadata/23-linked-data-things>
- *Linked data implementations*
<http://oclc.org/content/dam/research/events/2018smith-yoshimura-Linked-data-implementations-who-what-why-SWIB18.pptx>
- *IFLA/LRM and RDA training*
<http://www.loc.gov/catworkshop/RDA2020/>
- *LD4PE : Exploring Linked data*
http://explore.dublincore.net/competency_index/d2695955/s2696018/s2696061/s2742457/
- *Next-generation metadata and the semantic continuum*
<http://hangingtogether.org/next-generation-metadata-and-the-semantic-continuum/>
- *Formulating and Obtaining URLs*
http://loc.gov/aba/pcc/bibframe/TaskGroups/formulate_obtain_URI_guide.pdf
- *URI FAQs: PCC URI Task Group on URLs in MARC*
https://loc.gov/aba/pcc/bibframe/TaskGroups/URI_FAQs.pdf

CONFERENCES

- **DublinCore**
<https://www.dublincore.org/conferences/>
- **LD4 Community**
<https://ld4.io>
- **Semantic Web in Libraries**
<https://swib.org/swib22/>
- **BIBFRAME Workshop in Europe**
<https://2022.bfwe.eu/>
- **WIKI DATA CON**
<http://wikidatacon.org>
- **WOLFcon**
<https://openlibraryfoundation.org/about/wolfcon/>

THANK YOU!

<https://bit.ly/Pratt653LOD2023>