

# Linked Data and Wikidata

PRATT COURSE 653

DEC 2, 2021

[bit.ly/Pratt653LOD202112](https://bit.ly/Pratt653LOD202112)

JACKIE SHIEH

# Your answer

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

# Topics

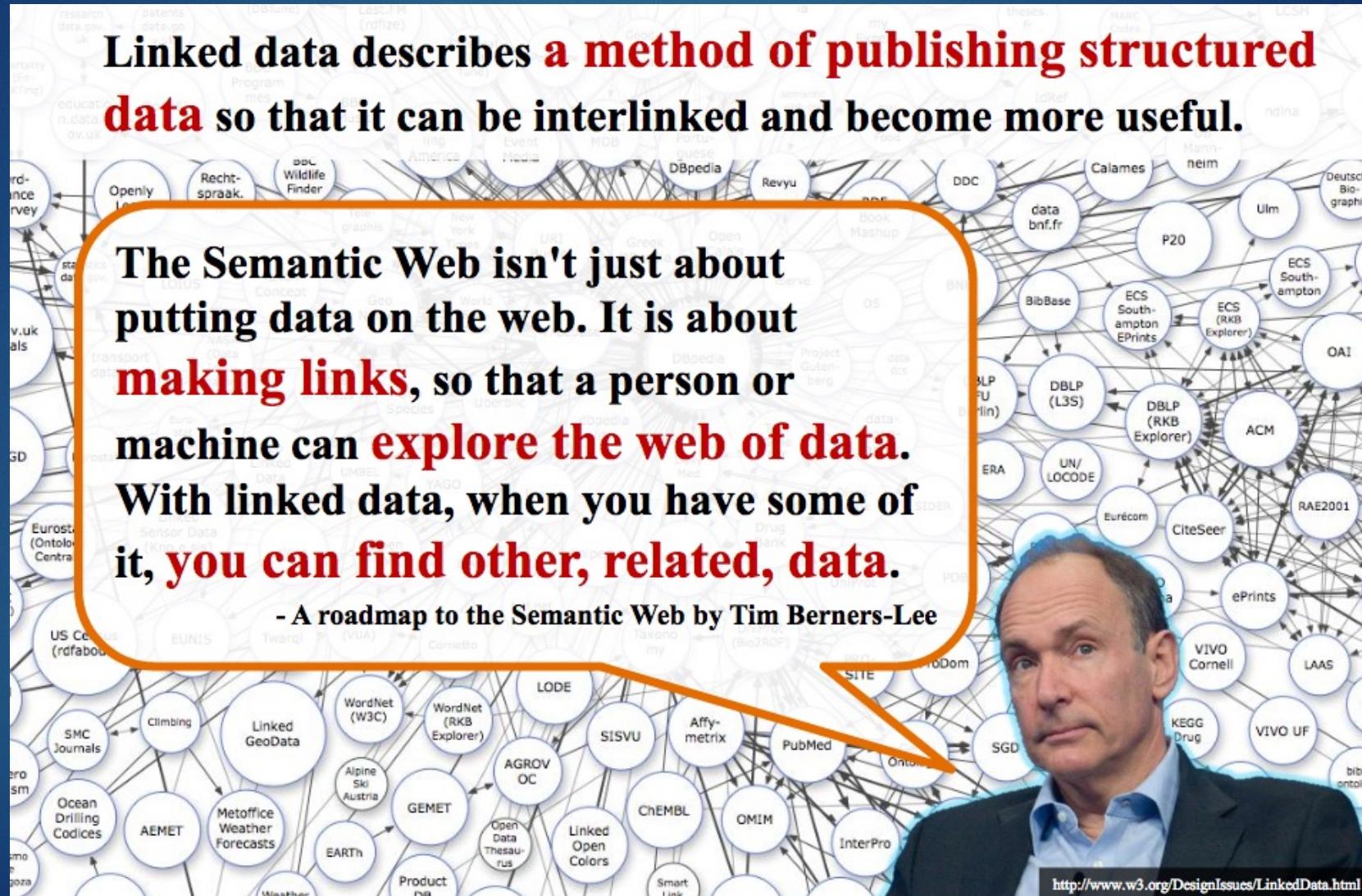
- Linked data
  - History, semantics, syntax, serializations
  - URIs vs dereferenceable URIs
- Library community's LOD projects
  - IFLA LRM, RDA/RDF, BIBFRAME
  - BIBFRAME Implementations (Sinopia (PCC Libraries), Share-VDE, Sweden, Hungary)
  - Thesauri, vocabularies, ontologies (FAST, VIAF, authority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

# Linked Data

# Rationales

- ▶ Why Linked data
- ▶ 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

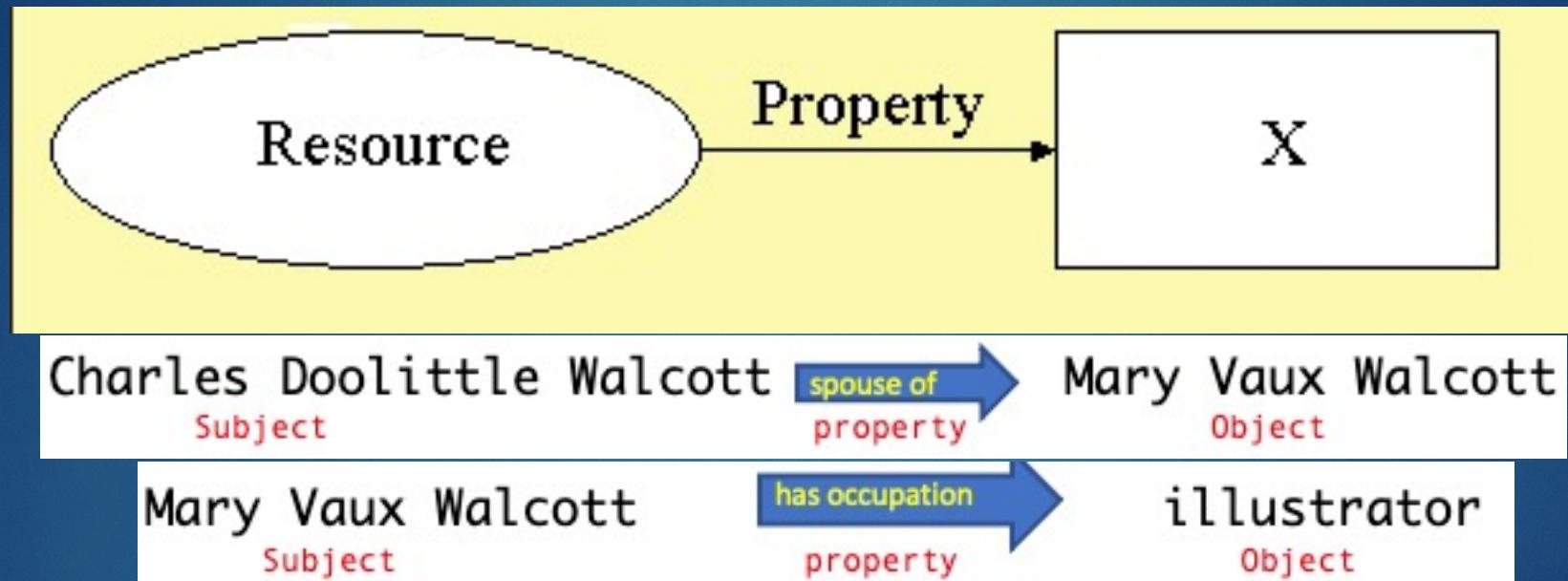


# Four Linked data principles

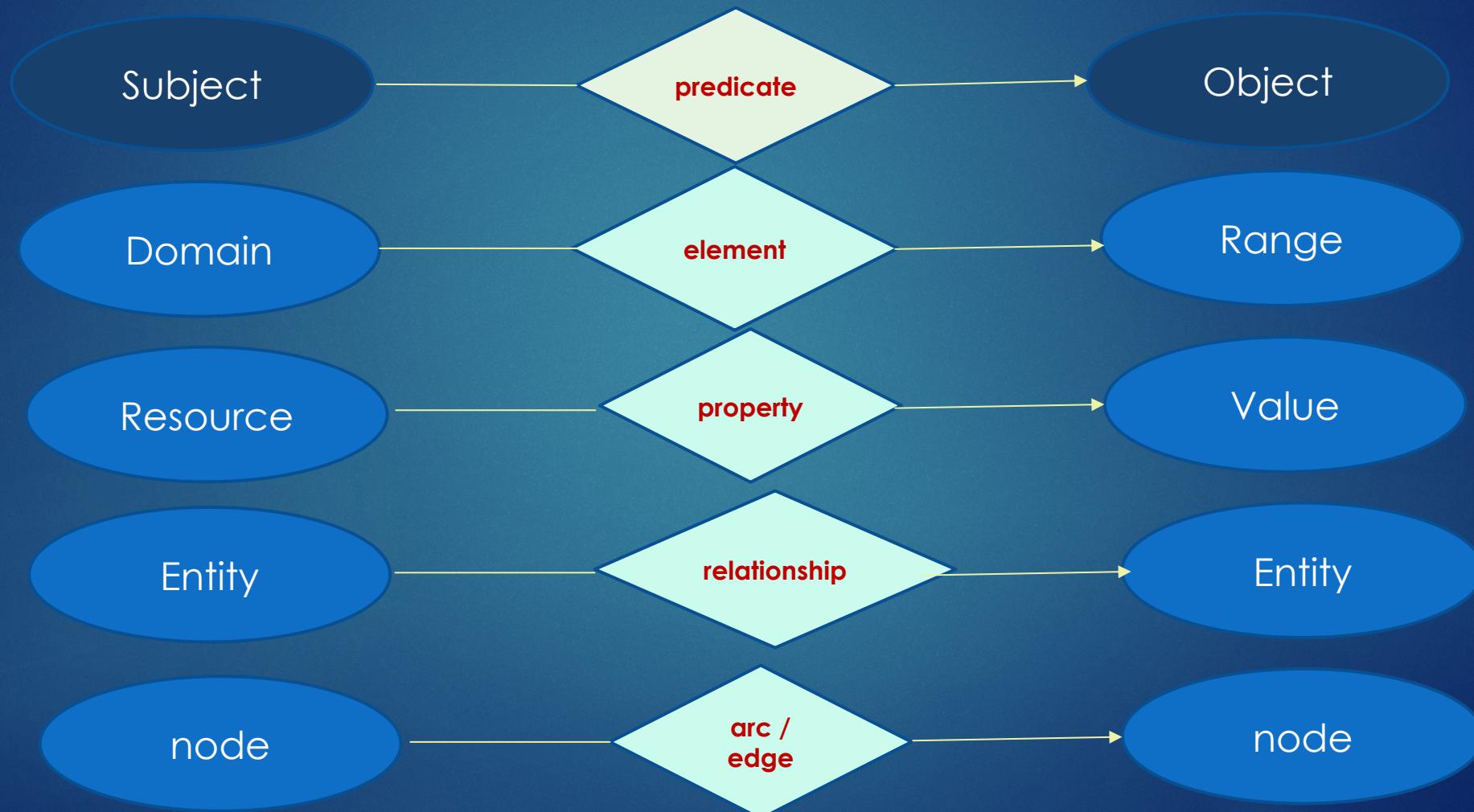
- ▶ Use URIs for names for THINGS
- ▶ Use HTTP URIs for lookup
- ▶ Use open standards (e.g. RDF) in non-proprietary formats
- ▶ Include links to other URIs



# ► What is Resource Description Framework (RDF)



# 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,<sup>[1]</sup> but also maintain **extensibility** through a separately defined **hierarchical naming scheme** (e.g. `http://`).

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

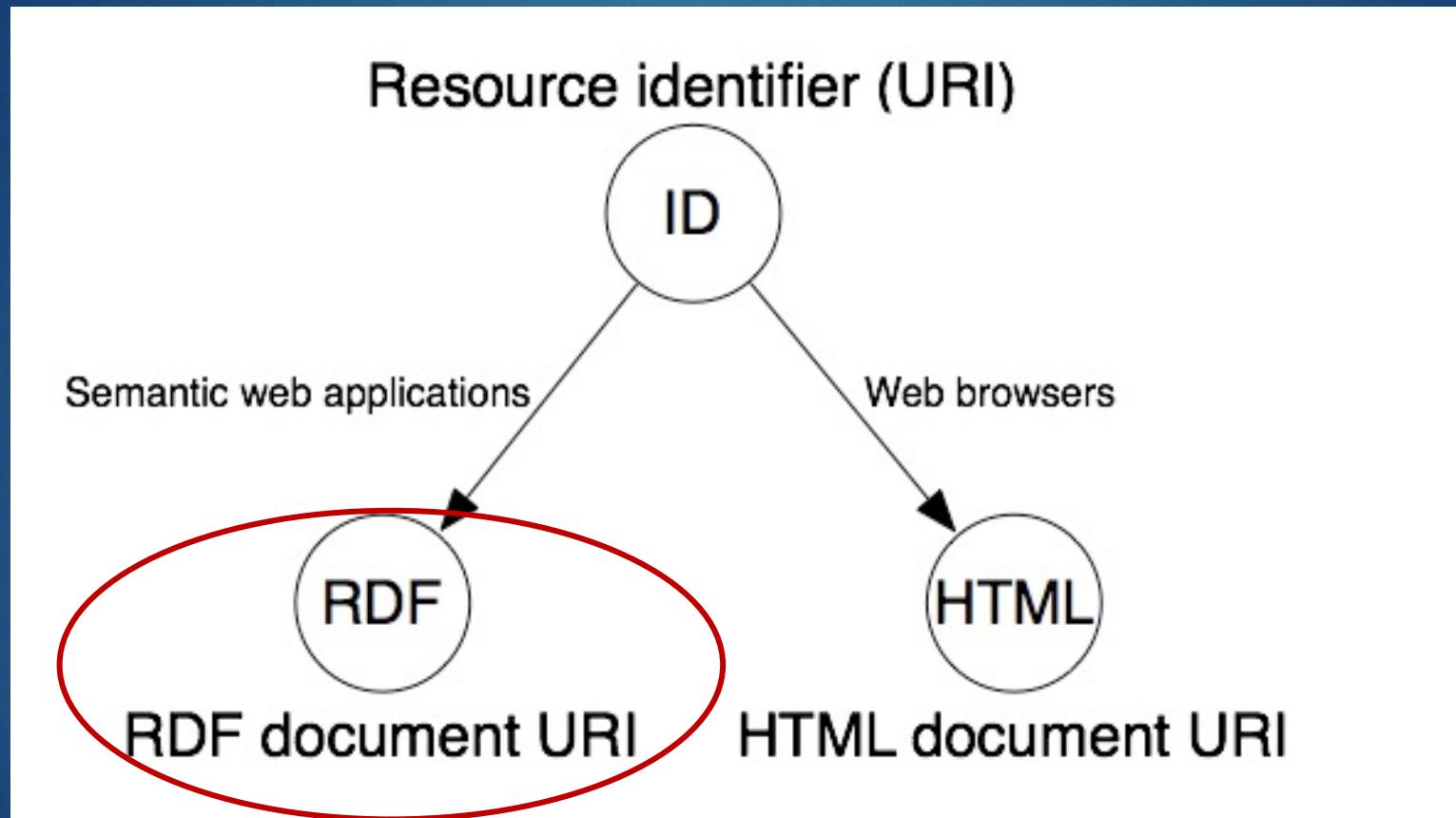
Types	Example
URN	<code>urn:isbn:0-476-27557-4</code>
URL	<code>https://www.pratt.edu</code>

# ► What is a 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

# Not all URLs are equal



# RDF serializations

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

# ► Knowledge and skills

- ▶ Record- to entity-based 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

# ► Exercise: RDF URLs 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](http://dbpedia.org/resource/Mary_Vaux_Walcott)
- FAST
  - <http://id.worldcat.org/fast/195746>

► Exercise:

Name 2 principles of a linked data ecosystem

- HTTP URIs Web protocol
- Non-proprietary format



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 Records (FRSAR)

# ► IFLA Library Reference Model (LRM)

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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	

# ►RDA Entity model

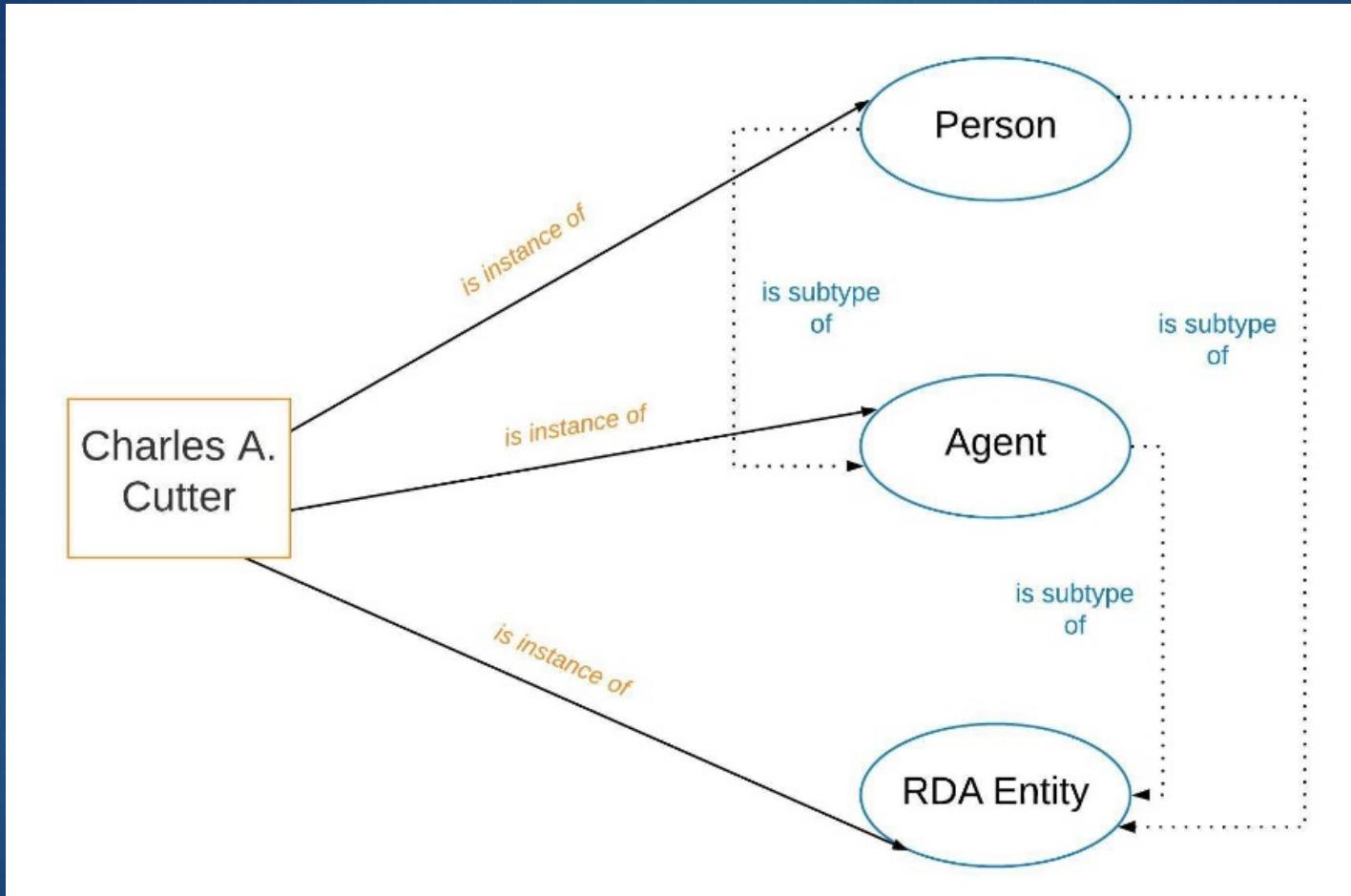
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## RDA Entities

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

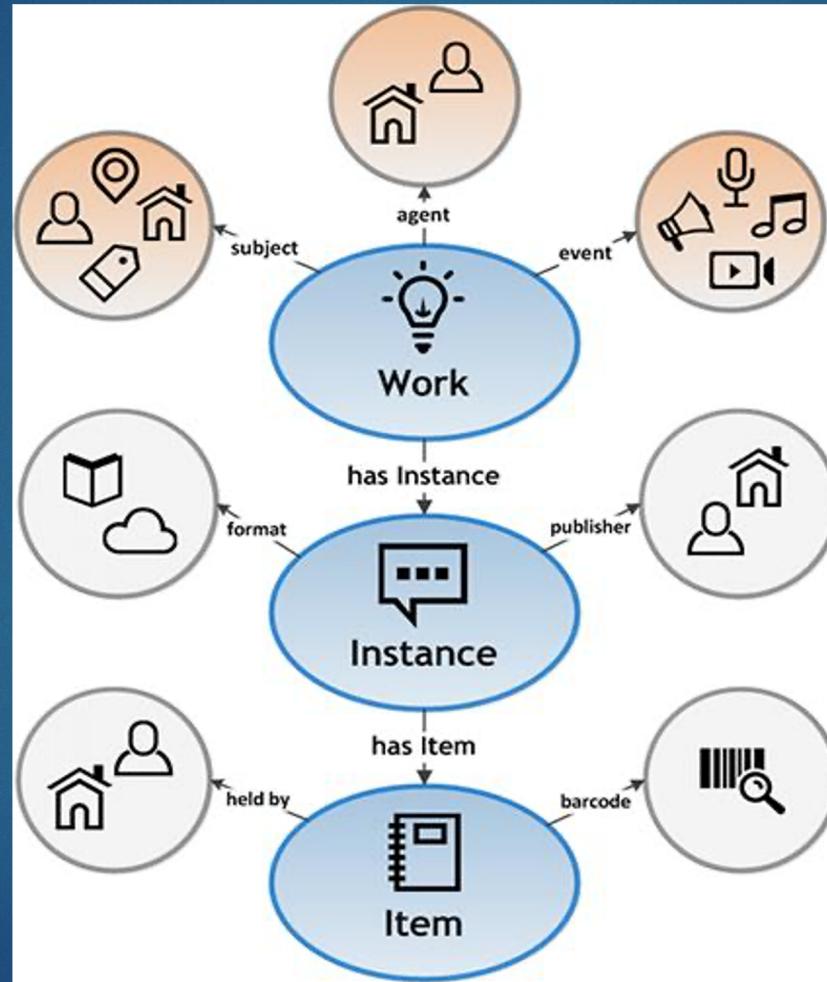
- **entity subtype**
- **entity supertype**

# ►RDA Entity Agent example



# ►BIBFRAME version 2 bib data model

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[loc.gov/bibframe/docs/bibframe2-model.html](http://loc.gov/bibframe/docs/bibframe2-model.html)

# ► LC BIBFRAME Implementation

- FY 2022: accommodates 350 catalogers cataloging in BIBFRAME Editor five days a week
- Conversion processes in place
  - MARC2BIBFRAME
  - BIBFRAME2MARC

# ► BIBFRAME implementations

- LD4 Sinopia  
[sinopia.io](http://sinopia.io)
- National Library of Sweden (BF +)  
[tinyurl.com/SwedenBF](http://tinyurl.com/SwedenBF)
- National Széchényi Library of Hungary
- Share VDE (virtual discovery environment)  
[svde.org](http://svde.org)

## ► Thesauri & vocabularies

- Identity services (LoC, DNB's GND, BnF's FNE)
- OCLC's FAST, VIAF, Classify, Identities, CONTENTdm
- NLM's MeSH
- Getty vocabularies (AAT, ULAN)
- etc.

# Exercise

String-based → Entity-centric description

# ►Text-centric system

## □ 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](#)

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

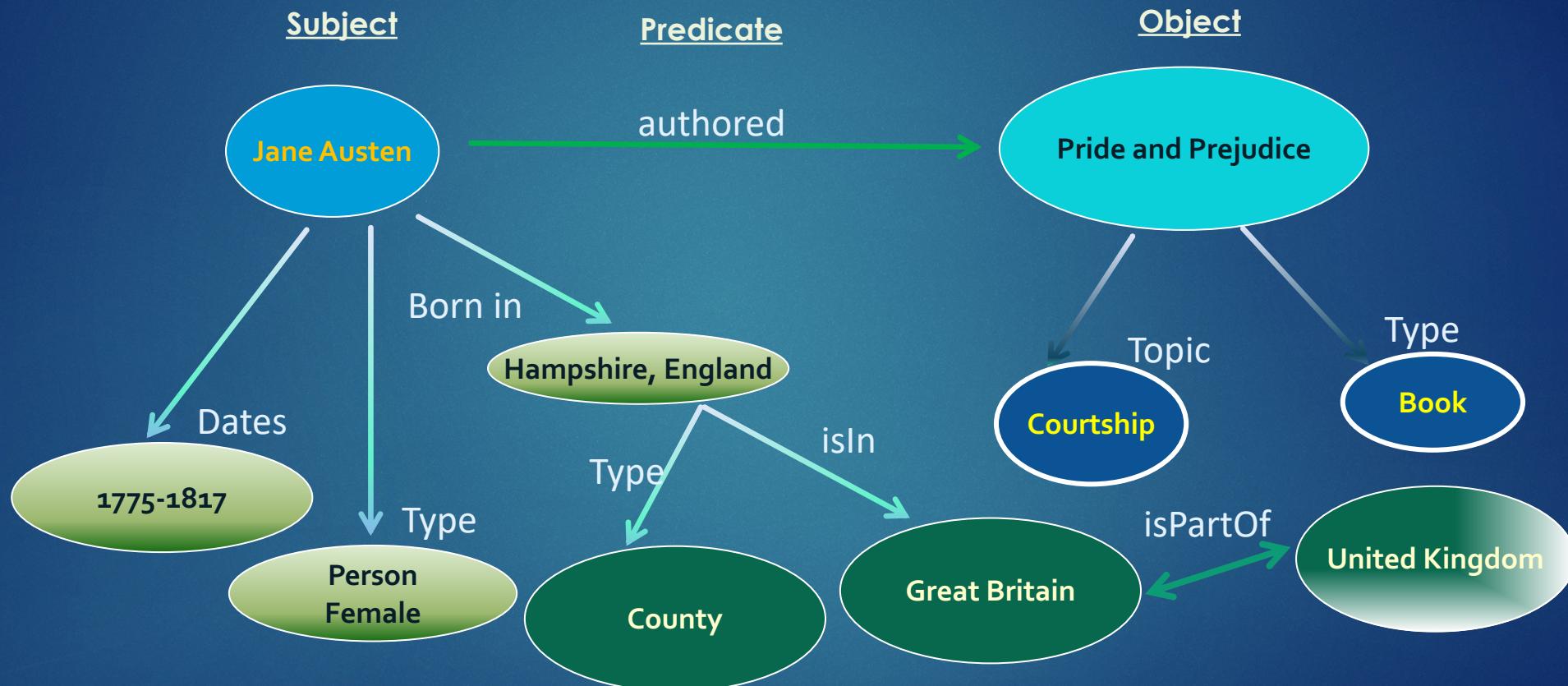
372 \_ |a Fiction |2 lcsh

374 \_ |a Authors |a Novelists |2 lcsh

375 \_ |a female

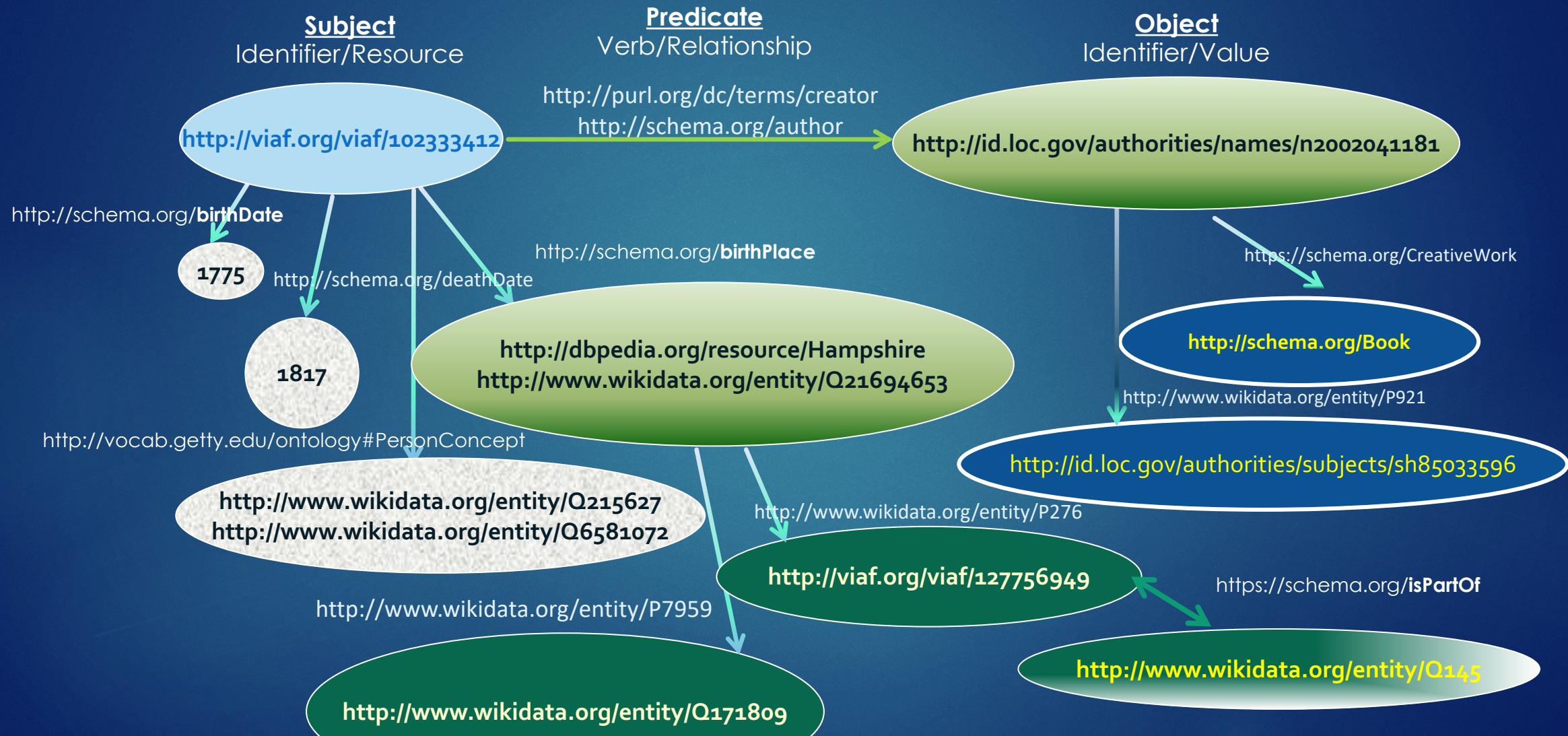
377 \_ |a eng

# Entity-Relationship



# HTTP URIs

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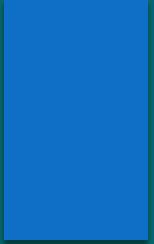


► Exercise:

Locate RDF URI for your choice of a triple statement

- Person
- Work
- Location
- Concept

# Question?



# Wiki platform

# Wiki: What is it?

- ▶ 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 drives Wikidata, which supports structured data
- ▶ **Data modeling** – analyze data requirements to support logic, structure, discoverability, context, etc.

# Wikimedia family

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[meta.wikimedia.org/wiki/Wikimedia\\_movement#/media/File:Wikimedia\\_logo\\_family\\_complete-2021.svg](https://meta.wikimedia.org/wiki/Wikimedia_movement#/media/File:Wikimedia_logo_family_complete-2021.svg)



**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



[commons.wikimedia.org](https://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



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



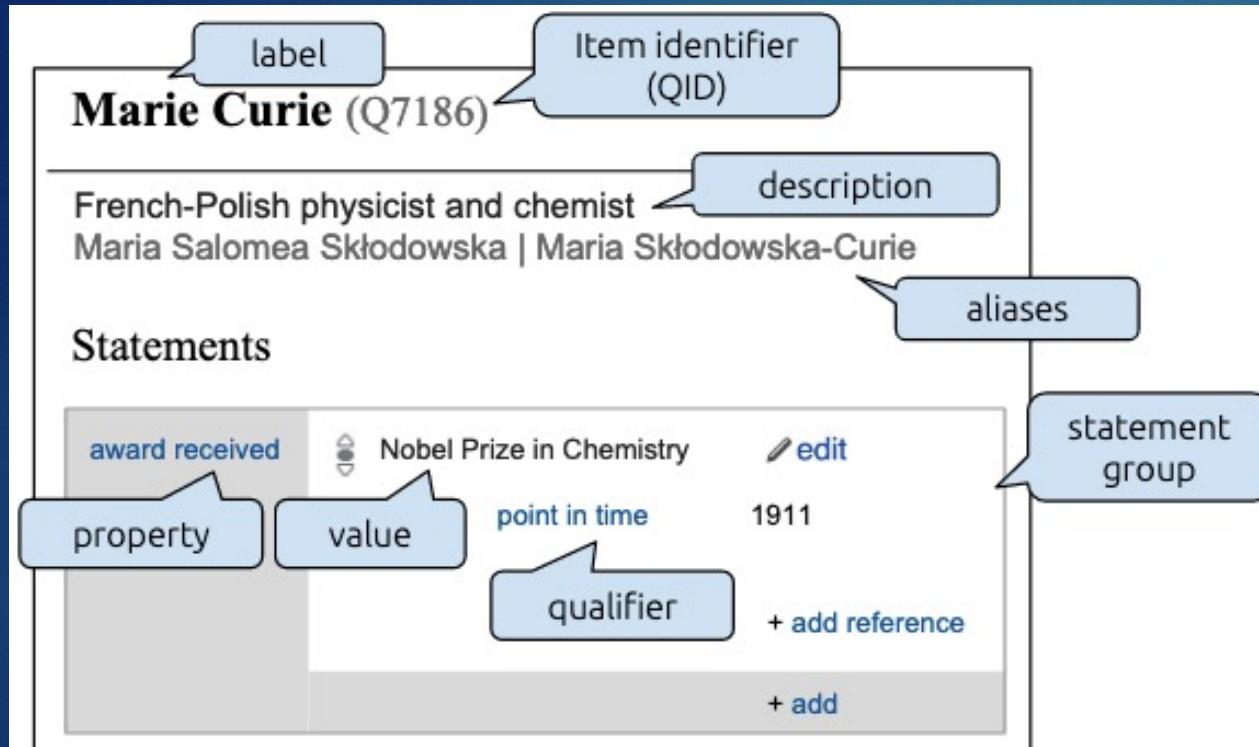
[wikisource.org](http://wikisource.org)

# Wikidata

A repository of structured data

A central storage for Wikimedia sister projects

# Wikidata anatomy and uses



[wikidata.org/wiki/WD:1](https://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

Hrdlička, Aleš 1869-1943

1930

#### 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 Hrdlička

[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

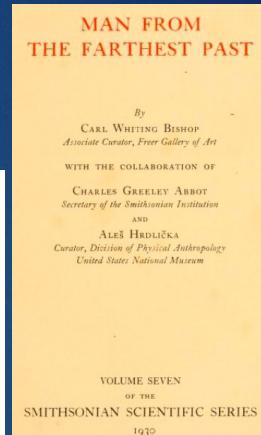
Civilization -- history

History

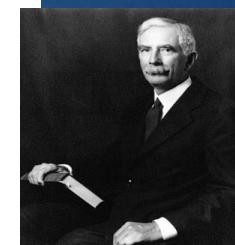
Abbot, C. G. (Charles Greeley) 1872-1973 author

Hrdlička, Aleš 1869-1943 author

Smithsonian scientific series ; v. 7



[worldcat.org/entity/work/id/1549069](http://worldcat.org/entity/work/id/1549069)



Charles Greeley Abbot  
[viaf.org/viaf/77062086](http://viaf.org/viaf/77062086)

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[id.loc.gov/authorities/names/n500398](http://id.loc.gov/authorities/names/n500398)

author [of]  
[id.loc.gov/vocabulary/relators/aut](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)

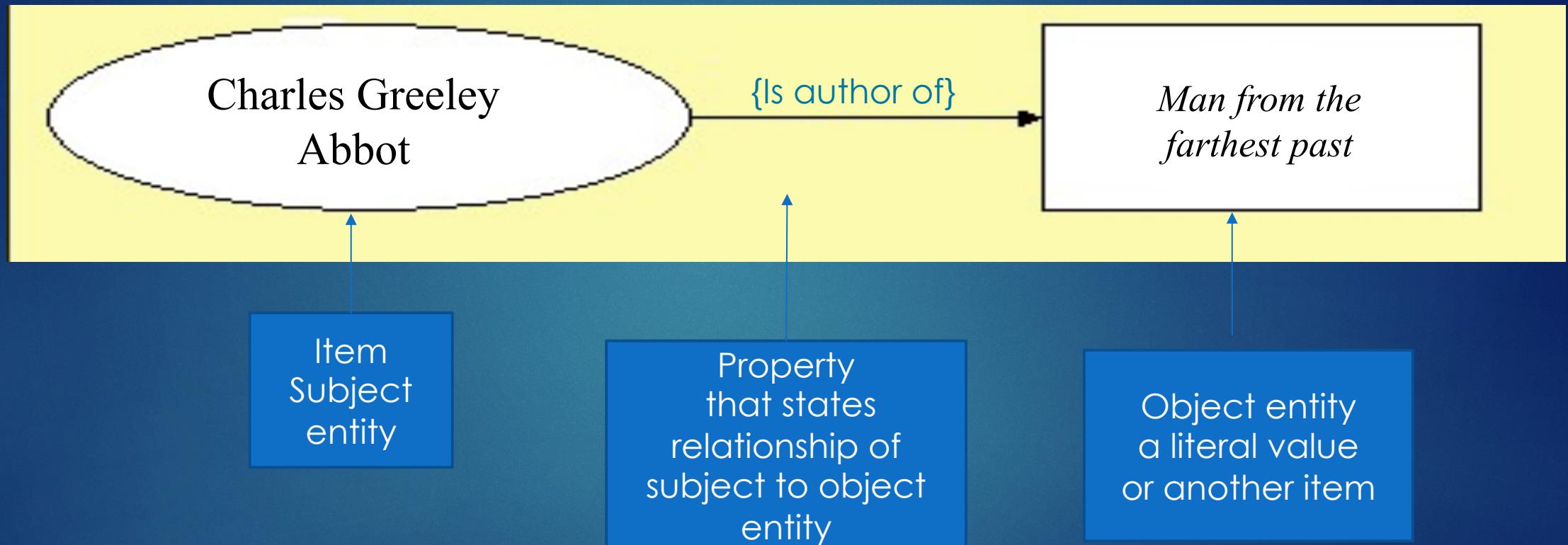
LC data base, 7-20-87 (hdg.: Abbot, Charles Greeley, 1872- ; usage: C.G. Abbot)

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

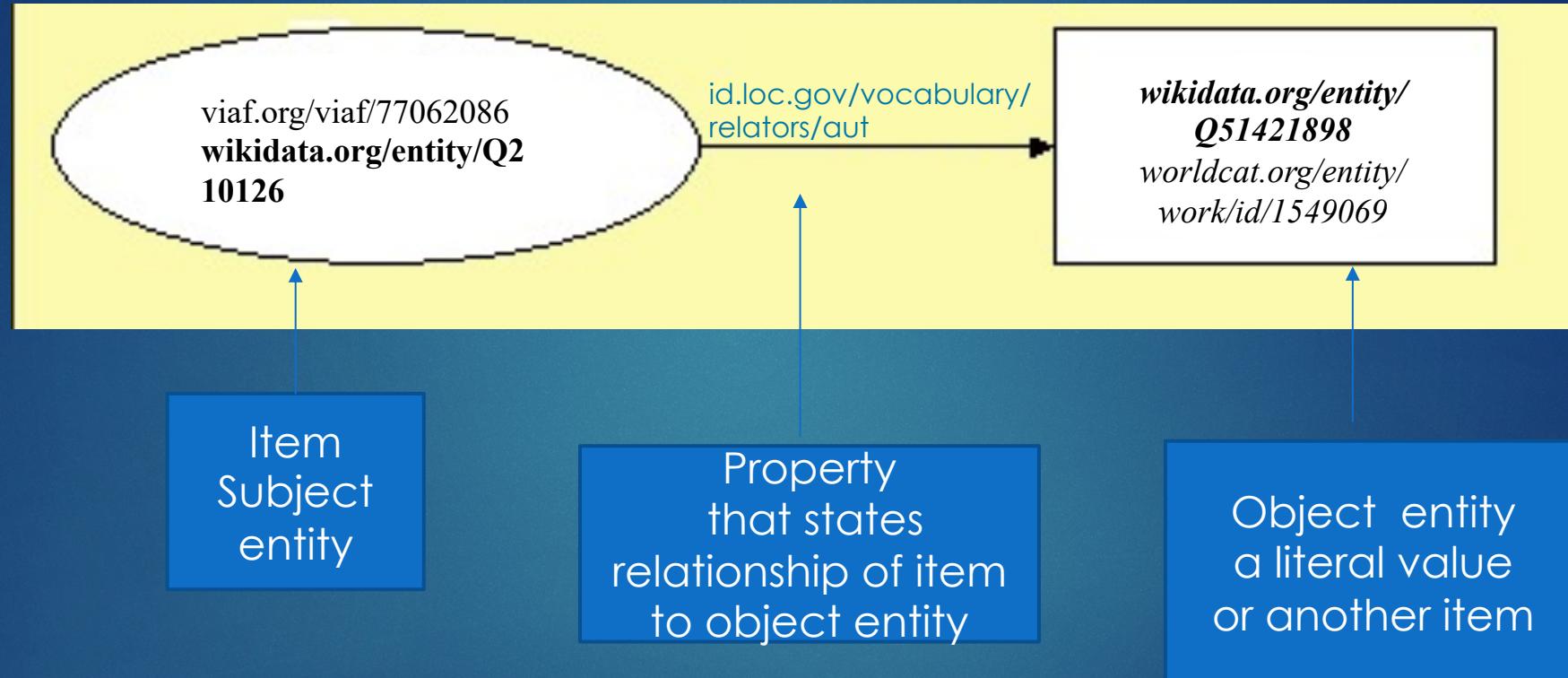
NUCMC data from Smithsonian Inst. Archives for Smithsonian Institution oral history project,  
1974-1985 (Charles G. Abbot, 1872-1973; Smithsonian Institution secretary)

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

# An entity statement



# URI replacing label



# Work and person in Wikidata

## Man from the farthest past (Q51421898)

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

[View Book](#)

### Other properties

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

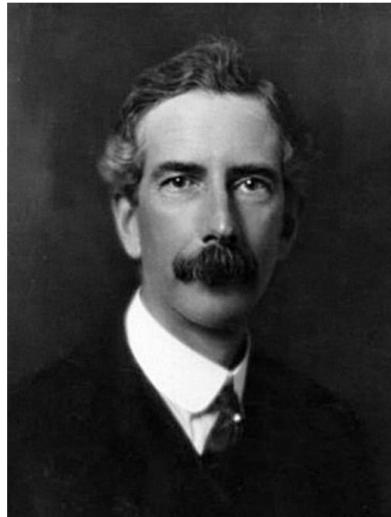
## Charles Greeley Abbot

Q210126

American astrophysicist and the 5th Secretary of the Smithsonian

[https://en.wikipedia.org/wiki/Charles\\_Greeley\\_Abbot](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. (C. G. Abbot)
204481	
Bibliothèque nationale de France ID	112334332
Biographical Encyclopedia of Astronomers ID	4

# 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

[wikidata.org/wiki/Wikidata:Tools](https://wikidata.org/wiki/Wikidata:Tools)

# Wikidata “Mix-n-Match”

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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](#).

## Catalog groups

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

## Search catalogs

Start typing here

## Latest catalogs

- [AllGame genres](#) video games genres in the AllGame database
- [AllGame platforms](#) video game platforms in the AllGame database
- [gamegear.jp](#) video games in the gamegear.jp database
- [IRIS SSSUP authors](#) identifier for an author in IRIS SSSUP, the open-repository of Sant'Anna Advanced Studies
- [IRIS Unipi authors](#) identifier for an author in ARPI, the open-repository of the University of Parma
- [Frick Art Reference Library Sitters File \(Married Name Clean-Up Project\)](#)
- [Smithsonian Art & Artist Files Collection \(AAPG\)](#) Names of artists that have artist files at the Smithsonian American Art and Portrait Gallery Library
- [Nintendo64EVER](#) video games in the Nintendo64EVER database database of Nintendo 64
- [N64-database](#) video games in the N64-database database of Nintendo 64 video games
- [SBN authors](#) identifier issued by National Library Service (SBN) of Italy

[mix-n-match.toolforge.org/#/catalog/4640](https://mix-n-match.toolforge.org/#/catalog/4640)

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# Wikidata “Cradle”

Tool to create new  
Wikidata items from a form

[cradle.toolforge.org/#/subject/artist](https://cradle.toolforge.org/#/subject/artist)

https://cradle.toolforge.org/#/subject/artist\_(in\_library\_collection,\_short\_description)

80%

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	<input type="text"/>	+
name in native language	lan <sub>1</sub> monolingualtext	+
date of birth	time	+
date of death	time	+
occupation	visual artist	+
movement	<input type="text"/>	+

author

## 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](#))

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

### Table of Contents

- [List of publications](#)
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  - [Number of pages per year](#)
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  - [Topics of authored works](#)
  - [Topics-works matrix](#)
- [Venue statistics](#)
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- [Co-author graph](#)
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[scholia.toolforge.org/author/Q5289551](http://scholia.toolforge.org/author/Q5289551)

# Wikidata “Scholia”

## Dolores Piperno

Senior Scientist Emerita

[naturalhistory.si.edu/staff/dolores-piperno](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

# Wikidata “Listeria”

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

[wikidata.org/wiki/WD:Listeria](https://wikidata.org/wiki/WD:Listeria)

Generating List: Chinese emperors								
name	image	description	date of birth	date of death	occupation	country of citizenship	item	
Zhuanyu		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

# Wikidata “TABernacle”

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

[wikidata.org/wiki/Wikidata:TABernacle](https://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)

# 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 (Q860861)	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](https://wikidata.org/wiki/Wikidata:GLAM/Smithsonian_Institution/Reports/SAAM/Object_ID_completeness)

# Wikidata “QuickStatements”

Tool to edit Wikidata items,  
based on a simple set of text  
commands, V1 or CSV.

[quickstatements.toolforge.org/#/](http://quickstatements.toolforge.org/#/)

The screenshot displays the QuickStatements interface on a web browser. The top navigation bar includes links for "New batch", "Last batches", "Chat", "Git", and "Help". A message at the top states: "This is a new interface for QuickStatements V2. Just in case, the old interface is [here](#)".

The left pane contains three input fields:

- "batch number" (with a "Select" button)
- "user name" (with a "Select" button)
- "temp. batch ID" (with a "Discard" button)

The right pane shows a command history and a new batch creation form for Wikidata. The commands listed are:

```

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"

```

The bottom part of the right pane shows a new batch creation form for "SI Wikibase" with a "Create" button.

# OpenRefine

[openrefine.org](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

[wikidata.org/wiki/File:GIF\\_screencast\\_of\\_data\\_extension\\_on\\_OpenRefine\\_with\\_Wikidata.gif#file](https://wikidata.org/wiki/File:GIF_screencast_of_data_extension_on_OpenRefine_with_Wikidata.gif#file)

# Browser extension: Wikipedia/Wikidata

A screenshot of a Google Sheets spreadsheet. The spreadsheet has two columns labeled A and B. Row 1 contains the headers 'DisplayName' and 'Description'. Row 2 contains the values 'Len' and 'Den'. The 'Extensions' menu is open, showing a list of available add-ons: Add-ons, Macros, Apps Script, AppSheet, MatchMARC, and Wikipedia and Wikidata Tools. A blue arrow points from the bottom right towards the 'Wikipedia and Wikidata Tools' option.

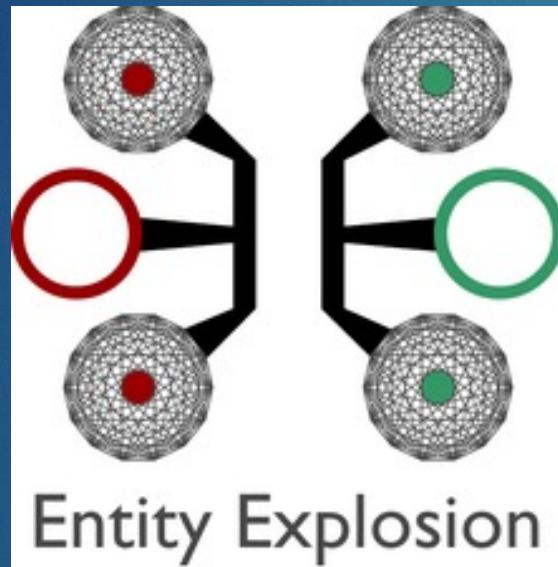
	A	B
1	DisplayName Len	Description Den
2		
3		
4		
5		
6		

File Edit View Insert Format Data Tools Extensions Help Last edit was on August 20, 2023, by [User]

Add-ons Macros Apps Script AppSheet MatchMARC Wikipedia and Wikidata Tools

# Browser extension: Entity Explosion

58



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

lengua  
[es] español

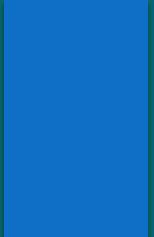
entidad  
Girls' Generation (Q20153)

**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](#)

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# Data reuse

## Presenting Wikidata knowledge

# Data representations

- ▶ As graphs

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

- ▶ As maps

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

- ▶ In tabular form

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

# Wikidata display options

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Navigation ▾ Wiki tools ▾ Page tools ▾

# Charles Greeley Abbot (Q210126)

Item Discussion ☆ History edit

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

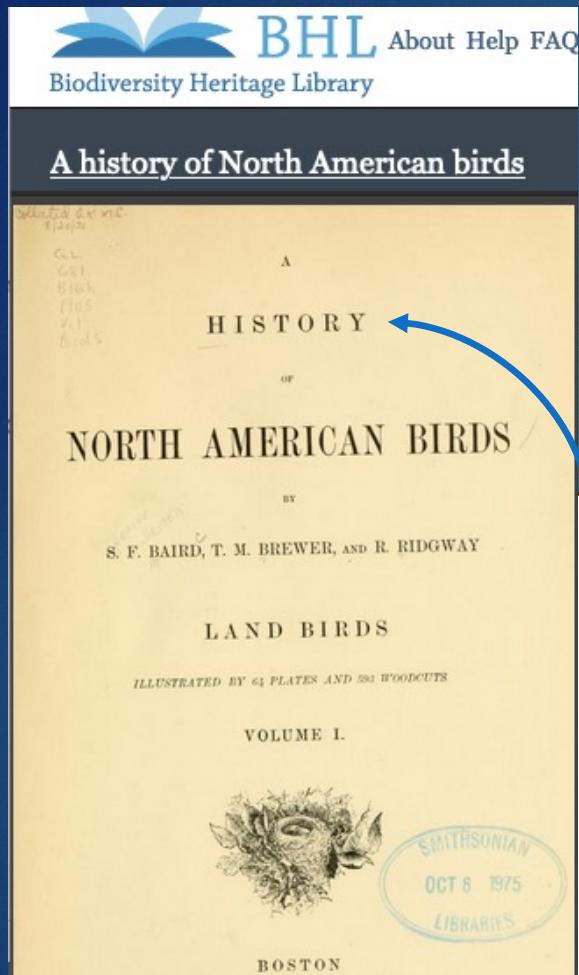
In more languages

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

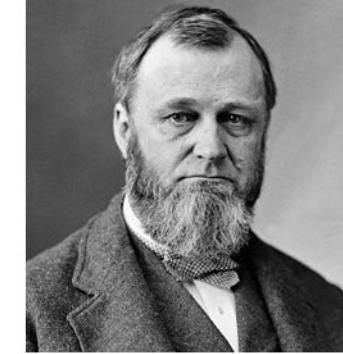
Reasonator

<h1>Charles Greeley Abbot (Q210126)</h1> <p>C. G. (Charles Greeley) Abbot   C. G. Abbot</p> <p>American astrophysicist and the 5th Secretary of the Smithsonian</p> <p><b>Instance of:</b> Charles Greeley Abbot is a(n) <a href="#">human</a></p> <table border="1"><thead><tr><th colspan="2">Statements</th></tr></thead><tbody><tr><th colspan="2">Own statements</th></tr><tr><td>writing language</td><td>English (West Germanic language originating in England)</td></tr><tr><td>place of death</td><td>Washington, D.C. (capital city of the United States)</td></tr><tr><td>languages spoken, written or signed</td><td>English (West Germanic language originating in England)</td></tr></tbody></table>	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)	
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)										



# Spencer Baird 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 href="#">A history of North American birds</a> <a href="#">Natural History Illustrations</a> 1889 b <a href="#">The water birds of North America</a> <a href="#">Outlines of American ornithology</a> <a href="#">Book</a> <a href="#">Report upon the invertebrate animals and physical features of the region</a> sci <a href="#">Catalogue of North American birds, chiefly in the Museum of the Smithsonian Institution Washington</a> <a href="#">:Smithsonian Institution,1858.</a>   Smithsonian Libraries View Book
	<a href="#">A history of North American birds</a> <a href="#">Book</a> <a href="#">View Book</a> <a href="#">1874]</a>   Smithsonian Libraries View <a href="#">with an account of the</a>



Spencer Fullerton Baird (Q14049)

Spencer Baird | Baird | Spencer F. Baird | Baird, SF | Спенсер Бэрд | スペンサー・フルトン・ペアード | Спенсер Фуллертон Бэрд | 斯賓塞·富勒頓·貝爾德 | سپنسر فولرتون بیرد | Спенсер Фуллертон Бейрд | ספנסר פולרטון בראָד

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

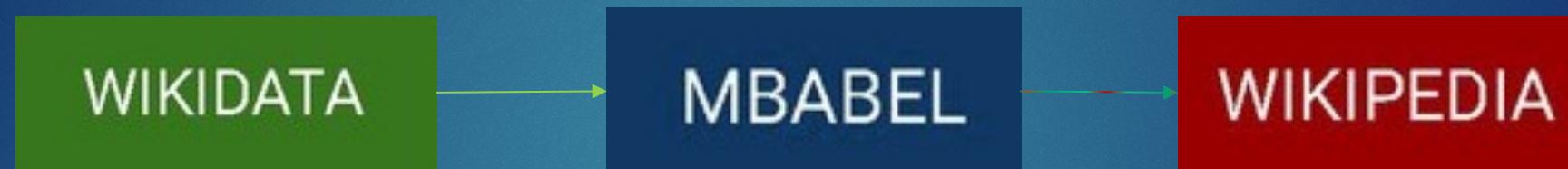
**Spencer Fullerton Baird** was a US-American naturalist, curator, ornithologist, zoologist, ichthyologist, and university teacher.

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.

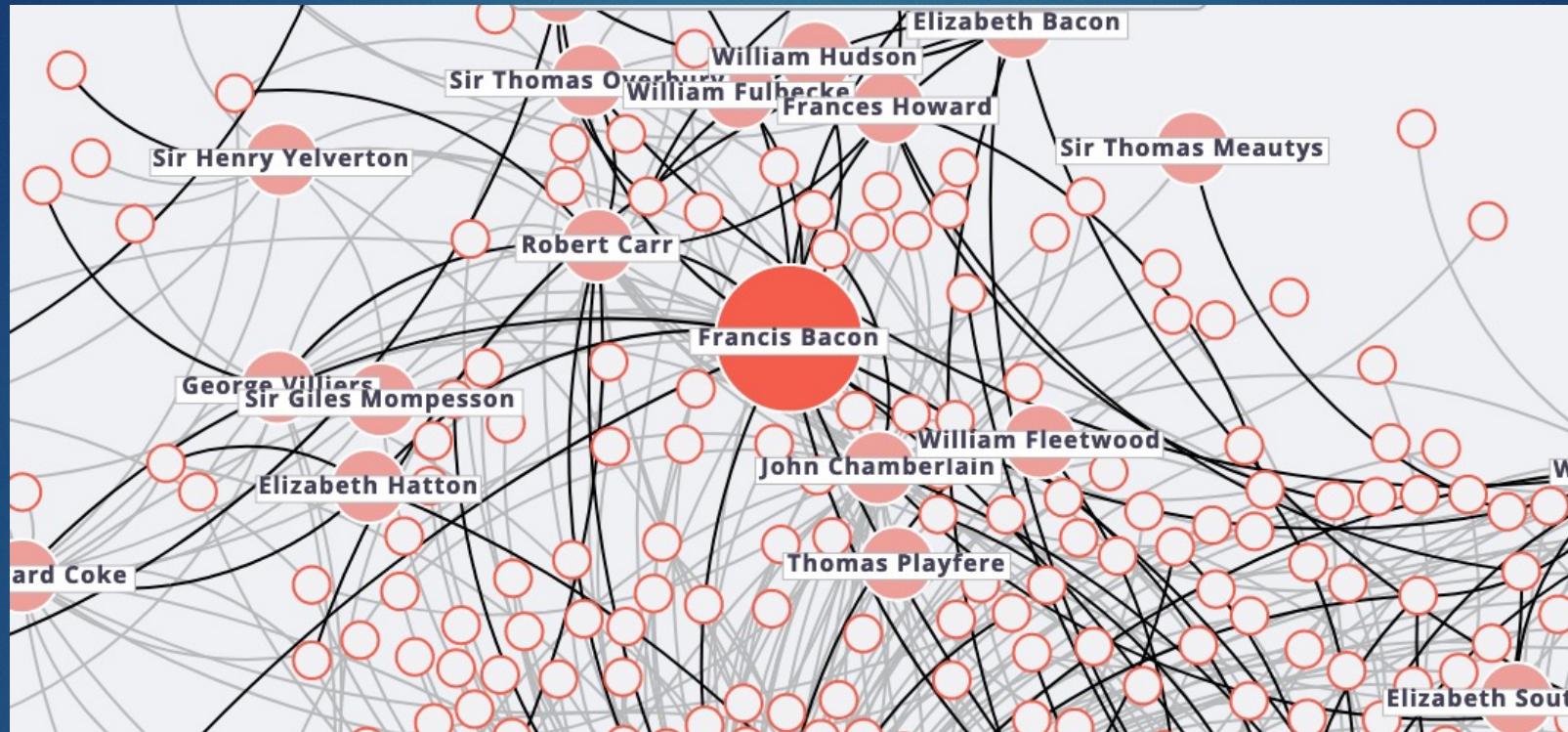
[reasonator.toolforge.org/?&q=51403552](http://reasonator.toolforge.org/?&q=51403552)

# Wikipedia article with Wikidata



[wikipedia.org/wiki/WP:MBABEL](https://wikipedia.org/wiki/WP:MBABEL)

# Six Degrees of Francis Bacon



[sixdegreesoffrancisbacon.com/?ids=10000473&min\\_confidence=60&type=network](http://sixdegreesoffrancisbacon.com/?ids=10000473&min_confidence=60&type=network)

# Croto

 **Croto**

Cosmos  
Callisto  
Lab

smithsonian

4340 Results

Strawberry-Blite (*Chenopodium capitatum*)  
Mary Vaux Walcott - Smithsonian American Art Museum

Niagara Falls  
George Inness - Smithsonian American Art Museum

Still Life with Fan and Roses  
Thomas Hovenden - Smithsonian American Art Museum

Two Young Men  
George Catlin - Smithsonian American Art Museum

Louisa Dunmore Mums Mott  
National Portrait Gallery

Language English  Images/page 20   
 → Contribution mode

[zone47.com/croto/?s=smithsonian](http://zone47.com/croto/?s=smithsonian)

# WADE: Wiki Art Depiction Explorer

66

## 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: [tribe](#) [indian](#) [comanche](#) [children](#) [art](#) [style](#) [exhibit](#) [domestic - teepee](#)

what can you see in this painting?



[wikidata.org/wiki/Wikidata:WikiProject\\_Wiki\\_Art\\_Depiction\\_Explorer](https://wikidata.org/wiki/Wikidata:WikiProject_Wiki_Art_Depiction_Explorer)

30

Inventaire

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%)

inventaire.io/entity/wd:Q8265

# Histropedia

Secretaries of the Smithsonian Institution

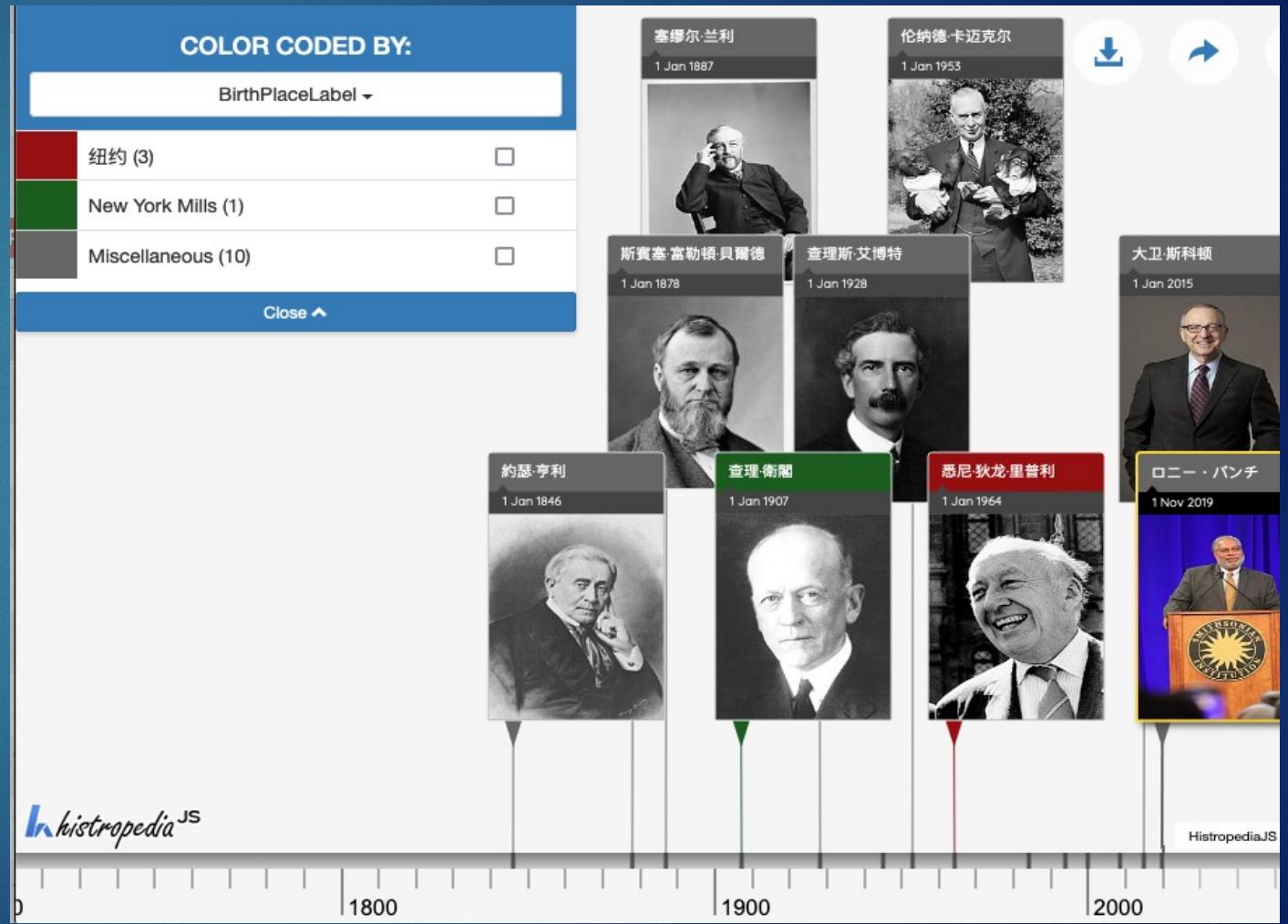
w.wiki/3wmq

Data representation via Histropedia

[tinyurl.com/SIsecretaries](http://tinyurl.com/SIsecretaries)

[tinyurl.com/SIsecretariesBydates](http://tinyurl.com/SIsecretariesBydates)

[tinyurl.com/SIsecretariesLang](http://tinyurl.com/SIsecretariesLang)



# Wikidata “Dashboard”: CoVid-19



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](#).



coviwd.org



# Web services

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

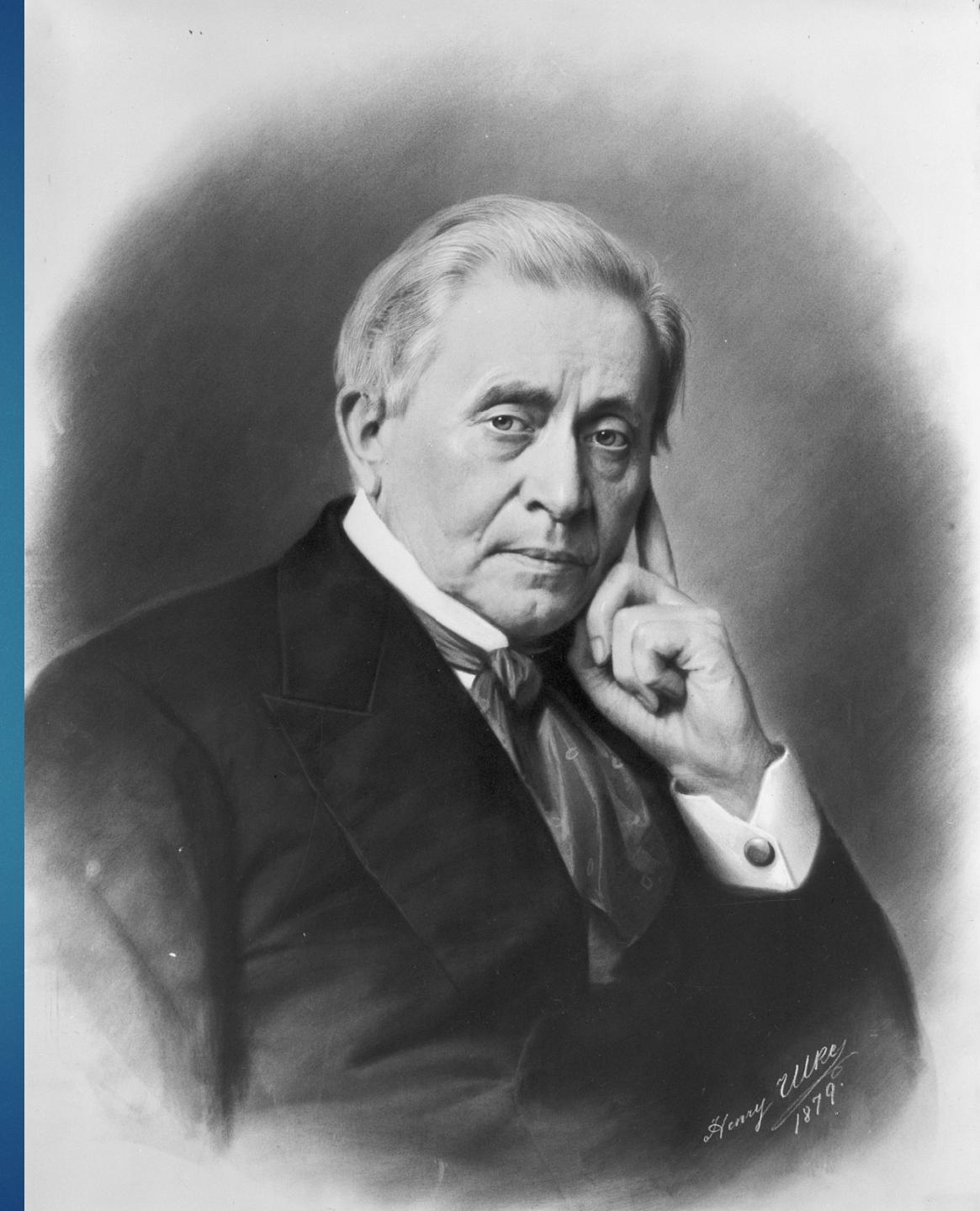
# Embedded in Library catalog

- ▶ Cornell new catalog
- ▶ Mich State catalog
- ▶ U-W Madison catalog
- ▶ “Two” (scroll to click link, <Highlight the DISCOGS data>)  
[newcatalog.library.cornell.edu/catalog/8058246](http://newcatalog.library.cornell.edu/catalog/8058246)
- ▶ “Comparison of ...” (scroll to click icon <i> links for <Subjects>)  
[d.lib.msu.edu/etd/3746/](http://d.lib.msu.edu/etd/3746/)
- ▶ “Mark Twain” (scroll to view <Information from the Web>  
[search.library.wisc.edu/catalog/9911042395202121](http://search.library.wisc.edu/catalog/9911042395202121)

“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

- ▶ *Linked data implementations*
  - ▶ <https://www.oclc.org/content/dam/research/events/2018smith-yoshimura-Linked-data-implementations-who-what-why-SWIB18.pptx>
- ▶ *IFLA/LRM and RDA training*
  - ▶ <https://www.loc.gov/catworkshop/RDA2020/>
- ▶ *LD4PE : Exploring Linked data*
  - ▶ [explore.dublincore.net/competency\\_index/d2695955/s2696018/s269601/s2742457/](http://explore.dublincore.net/competency_index/d2695955/s2696018/s269601/s2742457/)
- ▶ *Next-generation metadata and the semantic continuum*
  - ▶ <https://hangingtogether.org/next-generation-metadata-and-the-semantic-continuum/>
- ▶ *Formulating and Obtaining URIs*
  - ▶ [https://www.loc.gov/aba/pcc/bibframe/TaskGroups/formulate\\_obtain\\_URI\\_guide.pdf](https://www.loc.gov/aba/pcc/bibframe/TaskGroups/formulate_obtain_URI_guide.pdf)
- ▶ *URI FAQs: PCC URI Task Group on URIs in MARC*
  - ▶ [www.loc.gov/aba/pcc/bibframe/TaskGroups/URI%20FAQs.pdf](http://www.loc.gov/aba/pcc/bibframe/TaskGroups/URI%20FAQs.pdf)

# Your answer ...

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- ▶ 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?

# Thank you!

[bit.ly/Pratt653LOD202112](https://bit.ly/Pratt653LOD202112)