Using **Wikidata** to Provide **Visibility** to **Women** in **STEM**

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University of Ottawa Library

IUPUI University Library

Wikidata

Collaboratively **Free** Multilingual **Knowledge Base**
Launched 2012 **Stores Structured Linked Data**
CC0 License **~60 Million Items** Read by Humans
and Machines **Central Hub Wikimedia Projects**

Women's Visibility in **Wikimedia** Projects

- WikiProject Women in Red
- WikiProject Women

> *"Female scientists are still less recognized on Wikipedia than male scientists across all levels of scientific achievement."*
> - Schellekens, Holstege, & Yasseri, 2019

Women in **STEM** Pilot Projects

Faculty Profiles for **Women** in **STEM**

IUPUI University Library

Background of Faculty Profiles Project

- Why Wikidata for Faculty Profiles?
  - Aligns with our library commitment to open knowledge[1]
  - Ability to contribute to an open platform and connect works
  - Opportunity to increase the representation of scholars (with an emphasis on women)
- Pilot project conducted in 2017 to explore the potential of Wikidata and Scholia[2] for faculty profiles
  - Began considering the feasibility of implementing a ***Scholarly Profiles as Service*** model at the Campus level
- Pilot informed current efforts for providing a presence for women faculty in Wikidata

[1] IUPUI University Library Commitment to Open Knowledge: http://www.ulib.iupui.edu/digitalscholarship/openknowledge

[2] Scholia: https://tools.wmflabs.org/scholia/

Women in **STEM** Project Overview

Objectives

- Provide a presence in Wikidata for IUPUI women faculty in STEM disciplines (full-time faculty ranking from assistant to full)
- Contribute to the ever-growing bibliographic dataset in Wikidata
- Generate scholarly profiles for the faculty

STEM disciplines concentrate in two schools:

Purdue School of Science (Q63862196)	29 eligible faculty
Purdue School of Engineering & Technology (Q22095680)	15 eligible faculty

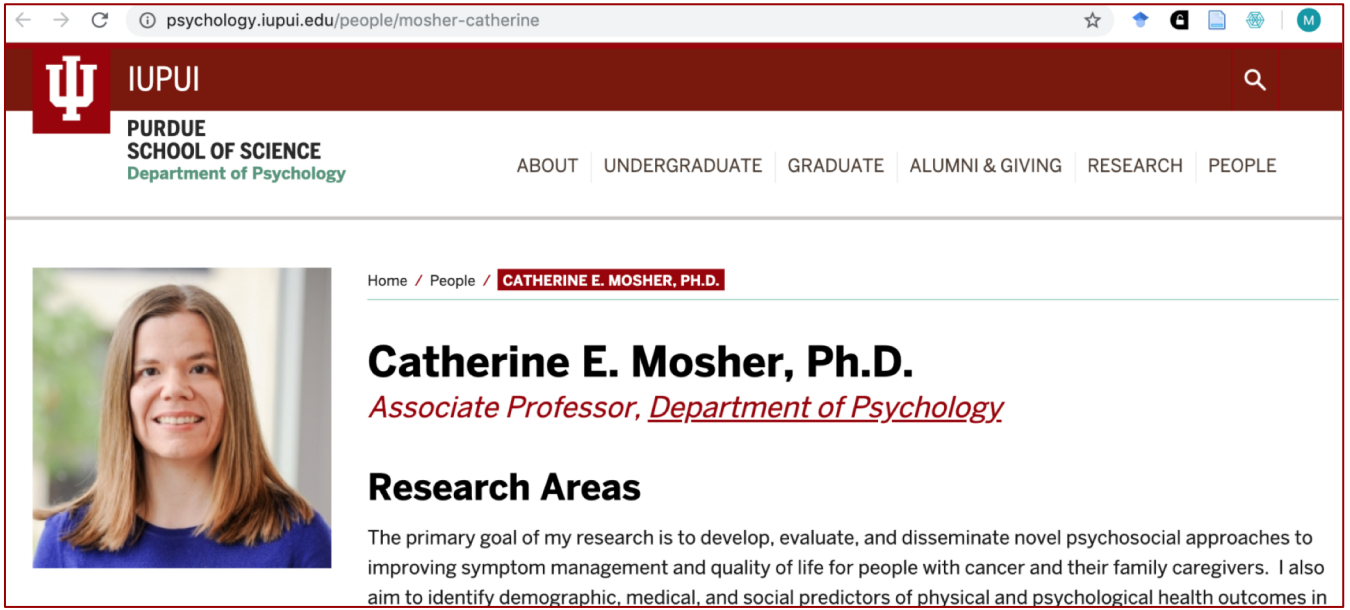
- Manual process
  - Gathering faculty biographical data from both schools' websites

Download my CV

Education

2002 B.A., Psychology, Youngstown State University
2004 M.A., Psychology, University at Albany, State University of New York
2007 Clinical Psychology Internship, Duke University Medical Center
2007 Ph.D., Clinical Psychology, University at Albany, State University of New York
2010 Post-doctoral Fellowship, Psycho-Oncology, Memorial Sloan-Kettering Cancer Center

- Semi-automatic process
  - Using the IMPORTXML function in Google Sheets: IMPORTXML(url, xpath_query)
    - Faculty name, job title, website URL



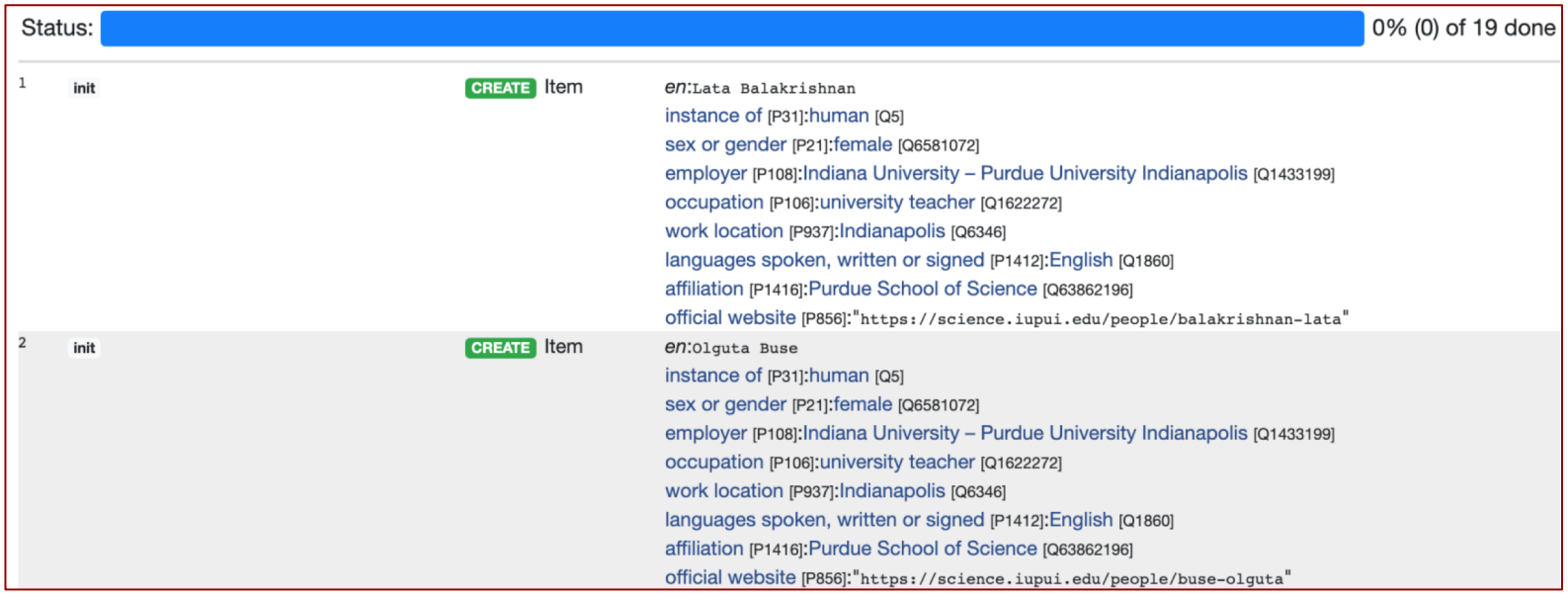
- Google sheets formatted for semi-automatic process
  - Values replaced with the identifiers for Properties and Items (P# and Q#)
  - Constant values added to the file
    - *instance of* (P31), *sex or gender* (P21), *employer* (P108), *occupation* (P106), *work location* (P937), *languages spoken, written or signed* (1412), *affiliation* (P1416)

P31	P21	P108	P106	P937	P1412	P1416	P856
Q5	Q6581072	Q1433199	Q1622272	Q6346	Q1860	Q6023649	https://science.iupui.edu/people/balakrishnan-lata
Q5	Q6581072	Q1433199	Q1622272	Q6346	Q1860	Q6023649	https://science.iupui.edu/people/buse-olguta
Q5	Q6581072	Q1433199	Q1622272	Q6346	Q1860	Q6023649	https://science.iupui.edu/people/ppgenphyscheng-ruihua
Q5	Q6581072	Q1433199	Q1622272	Q6346	Q1860	Q6023649	https://science.iupui.edu/people/chernoff-ellen

CSV to QuickStatements

This tool converts a properly formated CSV file into a series of commands you can pass to the QuickStatements tool for Wikidata.

- QuickStatements[3] tool used to make batch-edits using converted CSV



[3]QuickStatements tool: https://tools.wmflabs.org/quickstatements/#/

Gather/Prep Faculty Data

Contribute to Wikidata

Link Publications

Lata Balakrishnan (Q66072477) •••

Academic

▸ Recoin: Most relevant properties which are absent

▾ In more languages Configure

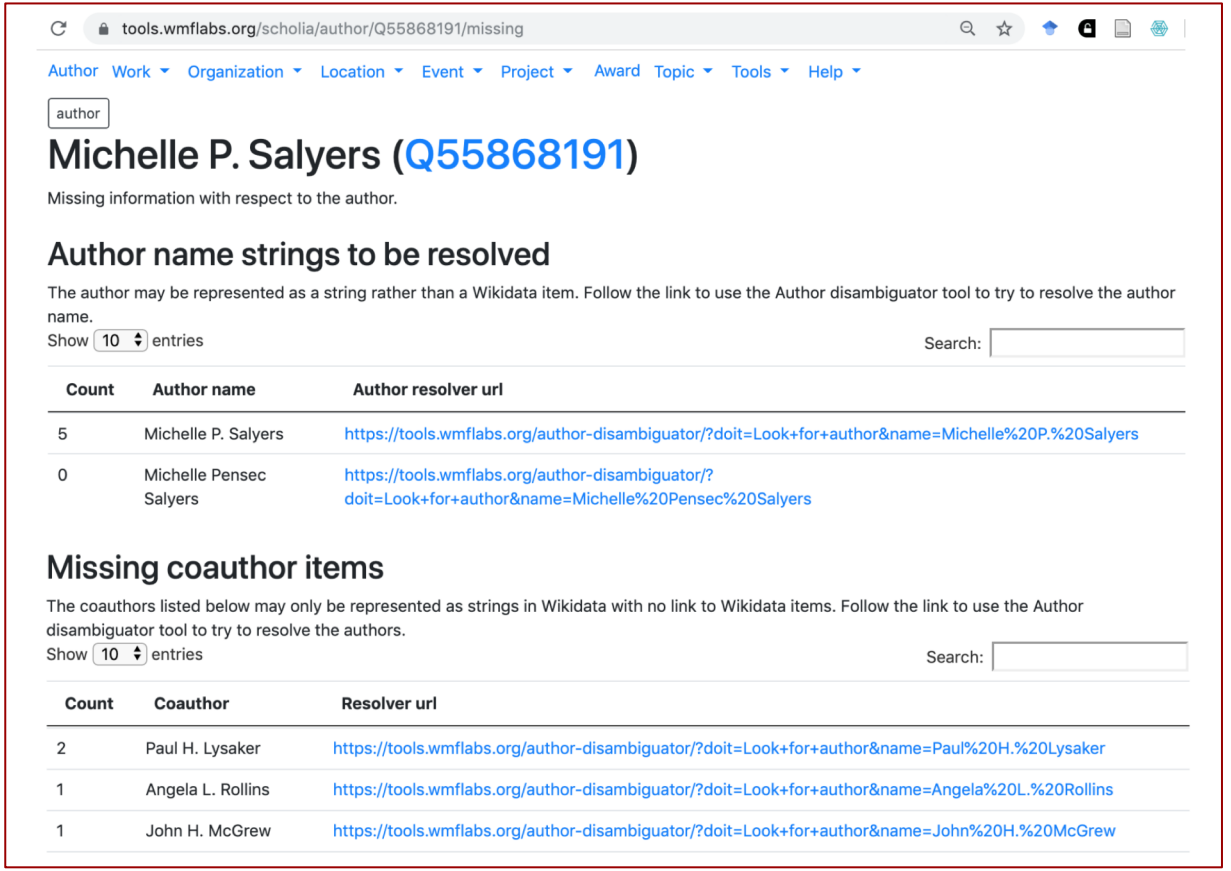
Language	Label	Description
English	Lata Balakrishnan	Academic
Spanish	Lata Balakrishnan	No description defined
Brazilian Portuguese	Lata Balakrishnan	No description defined
Italian	Lata Balakrishnan	No description defined

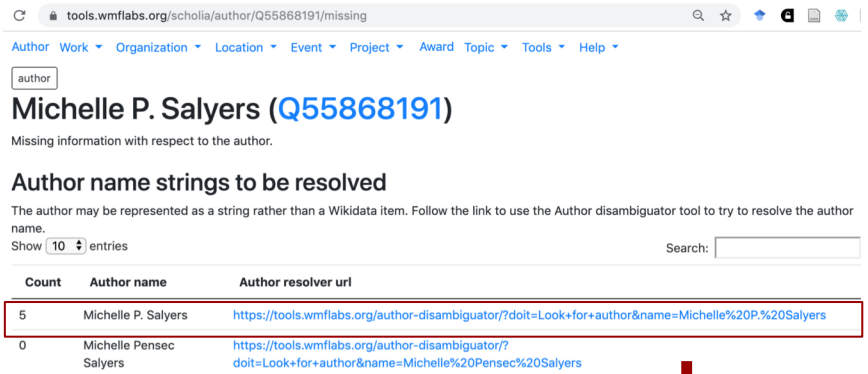
All entered languages

Statements

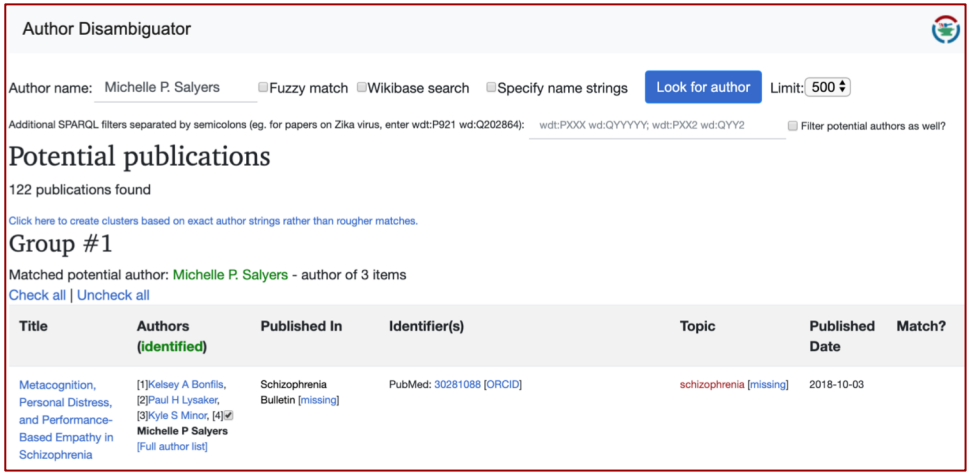
instance of	human ••• ▾ 0 references	
sex or gender	female ••• ▾ 0 references	
languages spoken, written or signed	English ••• ▾ 0 references + add reference + add value	edit
occupation	university teacher ••• ▾ 0 references + add reference + add value	edit
employer	Indiana University – Purdue University Indianapolis ••• ▾ 0 references + add reference + add value	edit
affiliation	Purdue School of Science ••• ▾ 0 references + add reference + add value	edit
official website	https://science.iupui.edu/people/balakrishnan-lata ▾ 0 references + add reference + add value	edit

- Initial search for faculty publications in Wikidata
- Found entries containing the name of the faculty member under the *author name string* (P2093) property
- Used Scholia to find alternate names added under P2093 by adding */missing* to the URL





- The link provided in Scholia was used to open up the Author Disambiguator[4] tool
- Author Disambiguator provides a list of possible faculty publications that needed matching and prepares data to be sent to QuickStatements for batch-editing



[4]Author Disambiguator tool: https://tools.wmflabs.org/author-disambiguator/?

Outcomes

- 2 entries to represent both schools where the STEM disciplines are concentrated
- 44 faculty members
  - 43 entries created
  - 1 entry enhanced
- 173 existing Wikidata article items linked to their corresponding faculty

Next Steps

- Add to Wikidata all existing publications produced by the 44 faculty members
- Continue imputing new publications as they are made available

University of Ottawa Library

Background

- Initiative in collaboration with uOttawa Library, Library and Archives Canada (LAC), and the International Network of Women Engineers and Scientists - Education and Research Institute (INWES-ERI) to develop a search portal to facilitate the discovery of archival fonds of women in STEM curated by Canadian institutions in one central location.
- Officially launched in June 2018.
- 327 archival fonds available in the portal as of September 4th, 2019.

Canadian Archive of Women in STEM: https://www.wikidata.org/wiki/Q63647303

Why Wikidata for archival fonds?

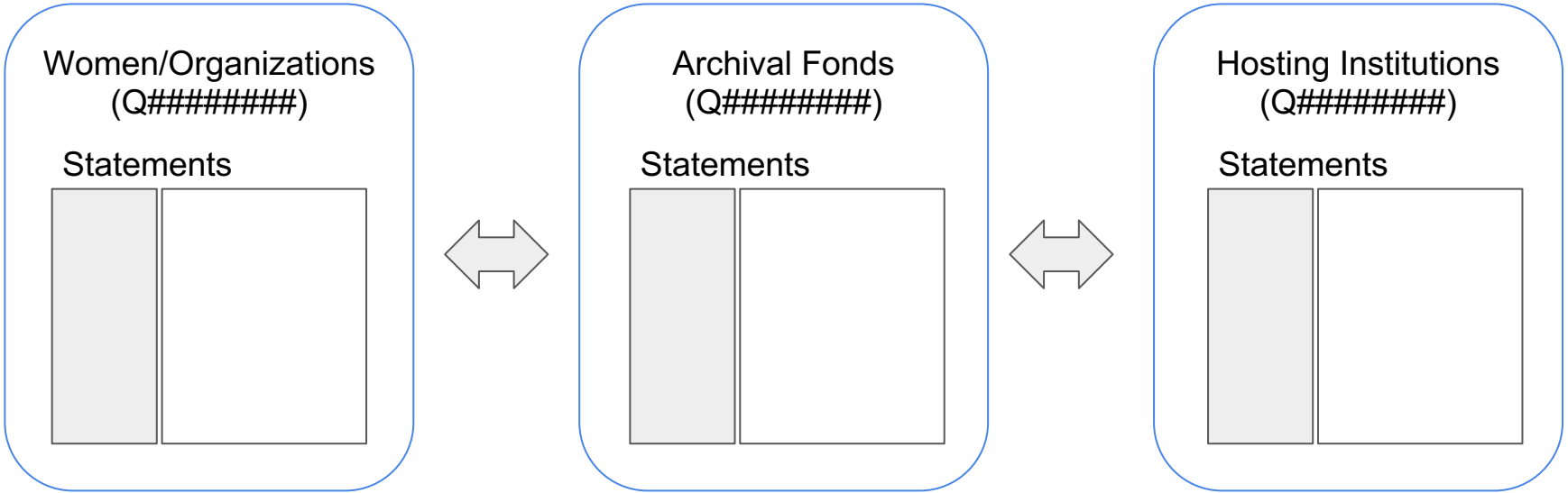
For Canadian Archive of Women in STEM

- Better data exchange with other applications.
- Improvement of findability and searchability of the archival fonds about Canadian women in STEM through linked data, rather than having an isolated stand-alone portal.
- Wikidata: WikiProject Archival Description

For Wikidata

- According to Denelezh, only 24% of Canadian represented in Wikidata are female.

What did we want to accomplish?

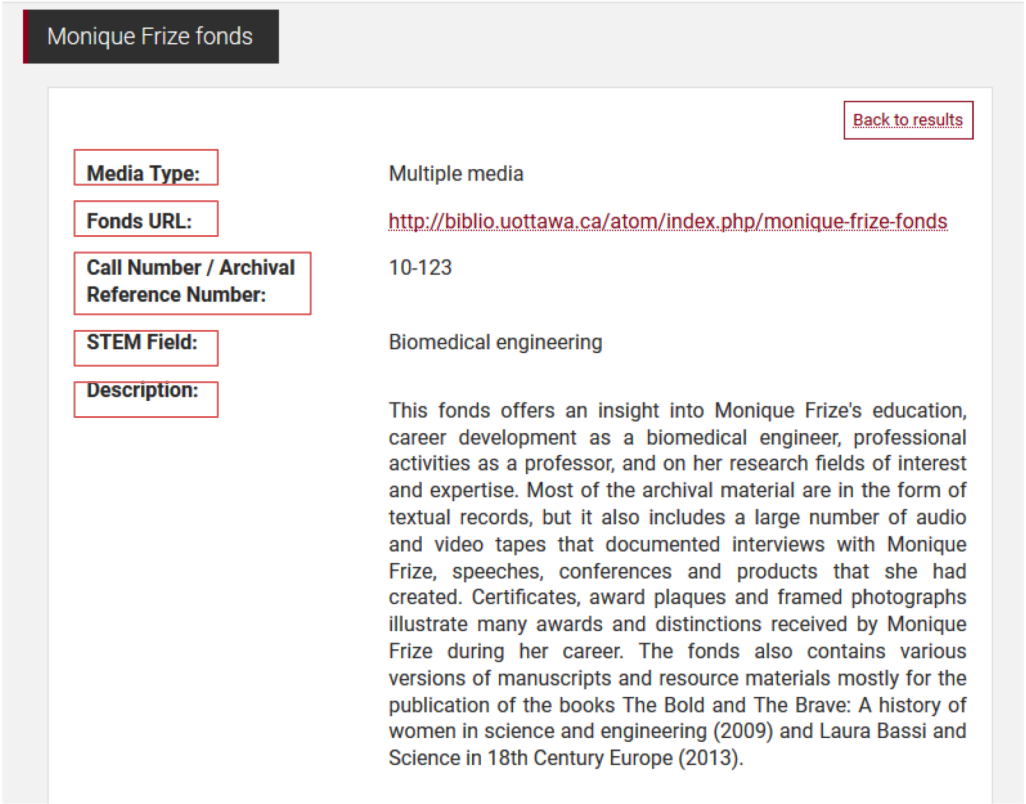


~67 women/organizations already existed in Wikidata

~0 archival fonds about them existed in Wikidata

~279 hosting institutions existed in Wikidata

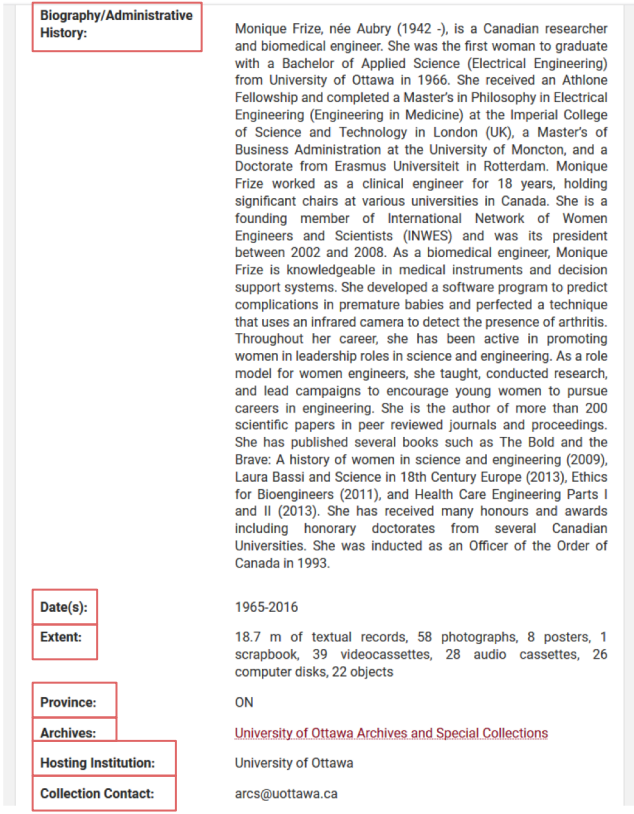
Metadata Fields in the Archival Fonds



Monique Frize fonds

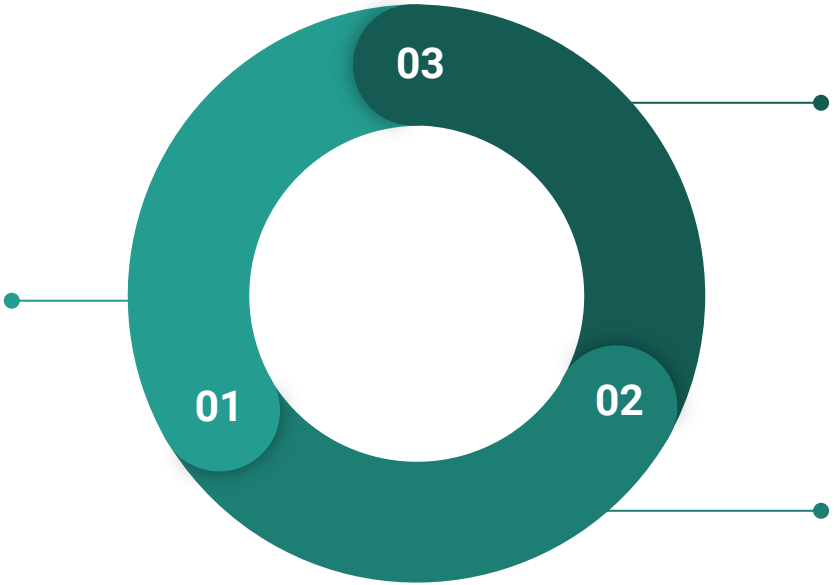
Back to results

Media Type:	Multiple media
Fonds URL:	http://biblio.uottawa.ca/atom/index.php/monique-frize-fonds
Call Number / Archival Reference Number:	10-123
STEM Field:	Biomedical engineering
Description:	This fonds offers an insight into Monique Frize's education, career development as a biomedical engineer, professional activities as a professor, and on her research fields of interest and expertise. Most of the archival material are in the form of textual records, but it also includes a large number of audio and video tapes that documented interviews with Monique Frize, speeches, conferences and products that she had created. Certificates, award plaques and framed photographs illustrate many awards and distinctions received by Monique Frize during her career. The fonds also contains various versions of manuscripts and resource materials mostly for the publication of the books The Bold and The Brave: A history of women in science and engineering (2009) and Laura Bassi and Science in 18th Century Europe (2013).



Biography/Administrative History:	Monique Frize, née Aubry (1942 -), is a Canadian researcher and biomedical engineer. She was the first woman to graduate with a Bachelor of Applied Science (Electrical Engineering) from University of Ottawa in 1966. She received an Athlone Fellowship and completed a Master's in Philosophy in Electrical Engineering (Engineering in Medicine) at the Imperial College of Science and Technology in London (UK), a Master's of Business Administration at the University of Moncton, and a Doctorate from Erasmus Universiteit in Rotterdam. Monique Frize worked as a clinical engineer for 18 years, holding significant chairs at various universities in Canada. She is a founding member of International Network of Women Engineers and Scientists (INWES) and was its president between 2002 and 2008. As a biomedical engineer, Monique Frize is knowledgeable in medical instruments and decision support systems. She developed a software program to predict complications in premature babies and perfected a technique that uses an infrared camera to detect the presence of arthritis. Throughout her career, she has been active in promoting women in leadership roles in science and engineering. As a role model for women engineers, she taught, conducted research, and lead campaigns to encourage young women to pursue careers in engineering. She is the author of more than 200 scientific papers in peer reviewed journals and proceedings. She has published several books such as The Bold and the Brave: A history of women in science and engineering (2009), Laura Bassi and Science in 18th Century Europe (2013), Ethics for Bioengineers (2011), and Health Care Engineering Parts I and II (2013). She has received many honours and awards including honorary doctorates from several Canadian Universities. She was inducted as an Officer of the Order of Canada in 1993.
Date(s):	1965-2016
Extent:	18.7 m of textual records, 58 photographs, 8 posters, 1 scrapbook, 39 videocassettes, 28 audio cassettes, 26 computer disks, 22 objects
Province:	ON
Archives:	University of Ottawa Archives and Special Collections
Hosting Institution:	University of Ottawa
Collection Contact:	arcs@uottawa.ca

Processes to contribute to Wikidata



Define Data Structure

Women/Organizations: Follow other examples based on the “biography or administrative history”

Archival fonds: Develop Wikidata properties

Link between women, her archival fonds and hosting institutions

Link them with appropriate Wikidata properties and qualifiers

Contribute Data about Archival Fonds to Wikidata

First round: Focus on women/organizations already represented in Wikidata

Second round: Organize a series of datathon events

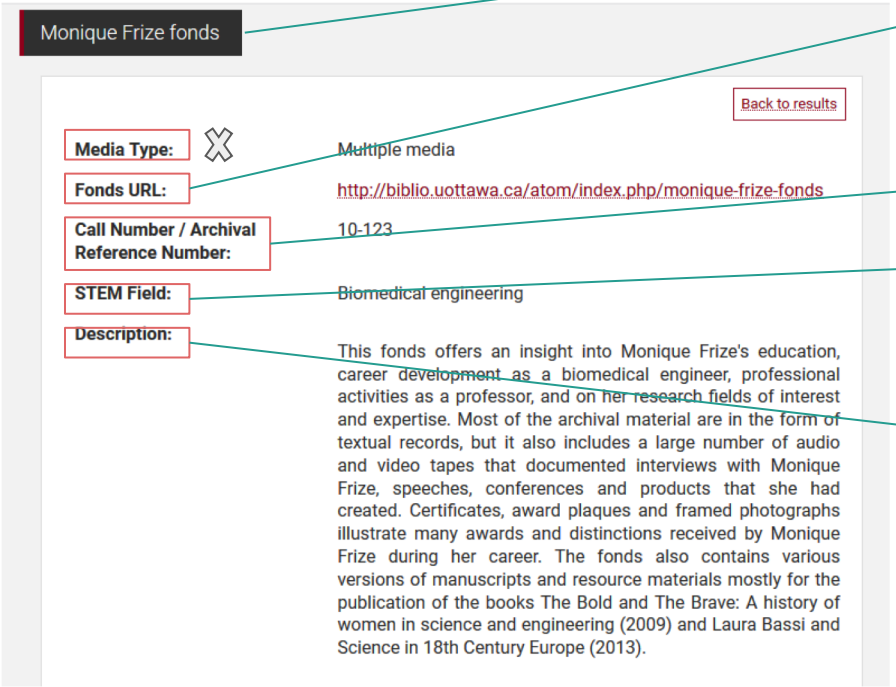
Statements for the Archival Fonds

Wikidata properties not from metadata

instance of (P31)	Archives (Q56648173)
part of (P361)	Canadian archive of Women in STEM (Q63647303)
level of description (P6224)	fonds (Q3052382)
main subject (P921)	women in science (Q113616)
main subject (P921)	women in STEM fields (Q6693003)
collection creator (P6241)	Monique Frize (Q40138)

Statements for the Archival Fonds

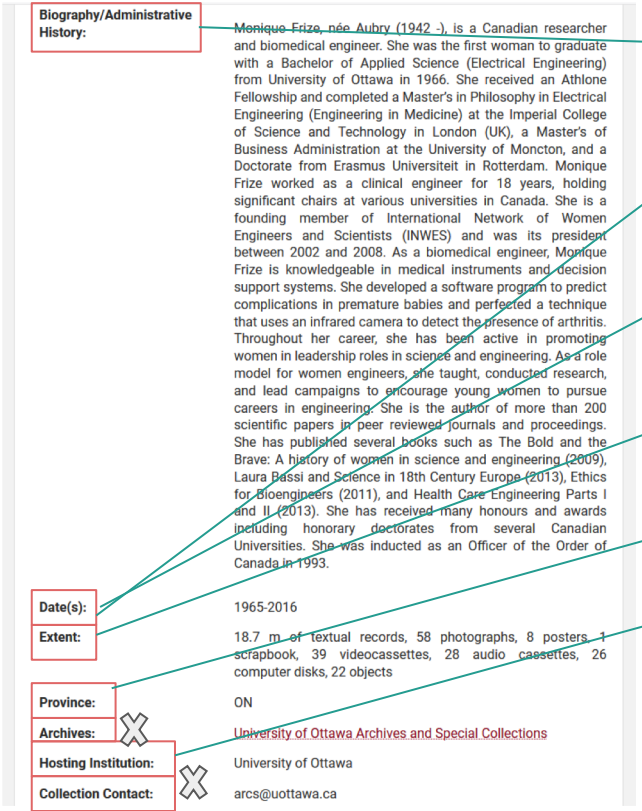
Mapping metadata fields to Wikidata properties



title (P1476)	Monique Frize fonds (English)
described at URL (P973)	Fonds URL
inventory number (P217)	Call Number / Archival Reference Number
main subject (P217)	biomedical engineering (Q327092)

In the description section (short description)

Statements for the Archival Fonds



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Province:	ON
Archives:	University of Ottawa Archives and Special Collections
Hosting Institution:	University of Ottawa
Collection Contact:	arcs@uottawa.ca

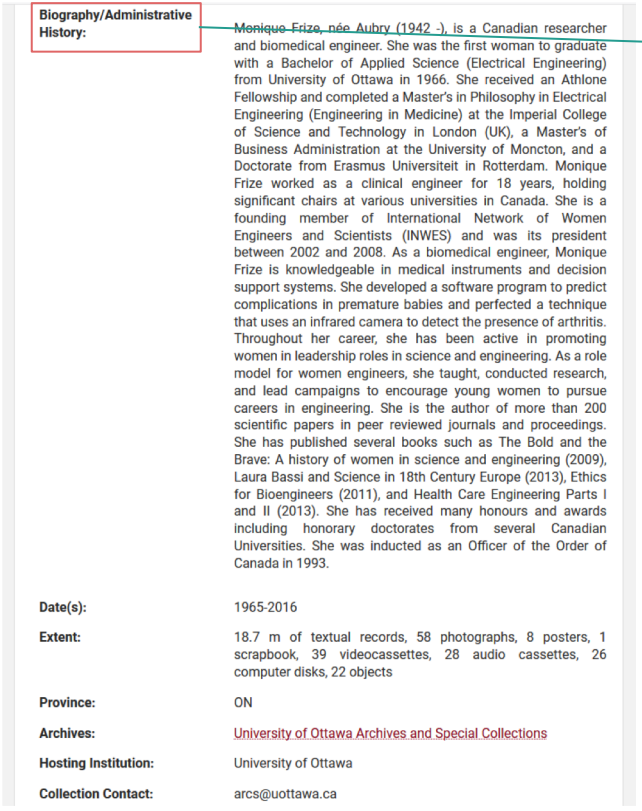
Wikidata entries for women/organizations

start of covered period (P7103)	1965
end of covered period (P7104)	2016
collection or exhibition size (P1436)	58 photographs ...

Wikidata entries for hosting institutions

maintained by (P126)	University of Ottawa Library (Q57942111)

Statements for Women



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Hosting Institution: University of Ottawa

Collection Contact: arcs@uottawa.ca

instance of (P31)	human (Q5)
sex or gender (P21)	female (Q6581072)
country of citizenship (P27)	Canada (Q16)
given name (P735)	Monique (Q1524975)
family name (P734)	Frize (Q61729478)
date of birth (P570)	...
place of birth (P19)	Montreal (Q340)
occupation (P106)	biomedical engineer (Q19902880)

Statements for Women

Biography/Administrative History:

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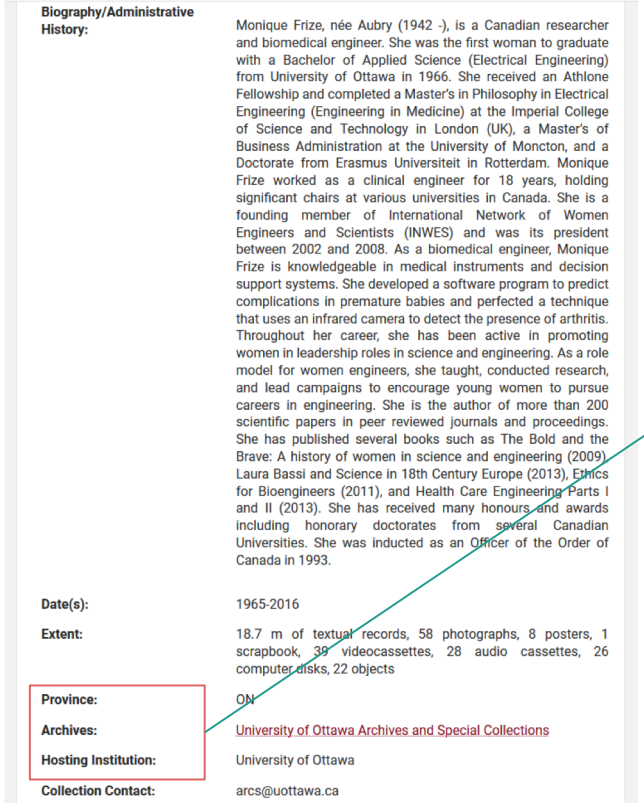
date of death (P570)	...
place of death (P20)	...
employer (P108)	University of Ottawa (Q627969)
position held (P39)	professor (Q121594)
award received (P166)	Officer of the Order of Canada (Q15278116)
educated at (P69)	Imperial College London (Q189022)
archives at (P485)	University of Ottawa Library (Q57942111) described at URL statement is subject of

Statements for Hosting Institutions



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Archives: University of Ottawa Archives and Special Collections

Hosting Institution: University of Ottawa

Collection Contact: arcs@uottawa.ca

instance of (P31)	academic library (Q856234) library system (Q28324850)
part of (P361)	Université de Montréal (Q392189)
country (P17)	Canada (Q16)
location (P276)	Montreal (Q340)
official website (P856)	...

Manual entry

- At the beginning, in order to understand how Wikidata worked for archival fonds, entries for woman, her archival fonds, and its hosting institution were created manually.

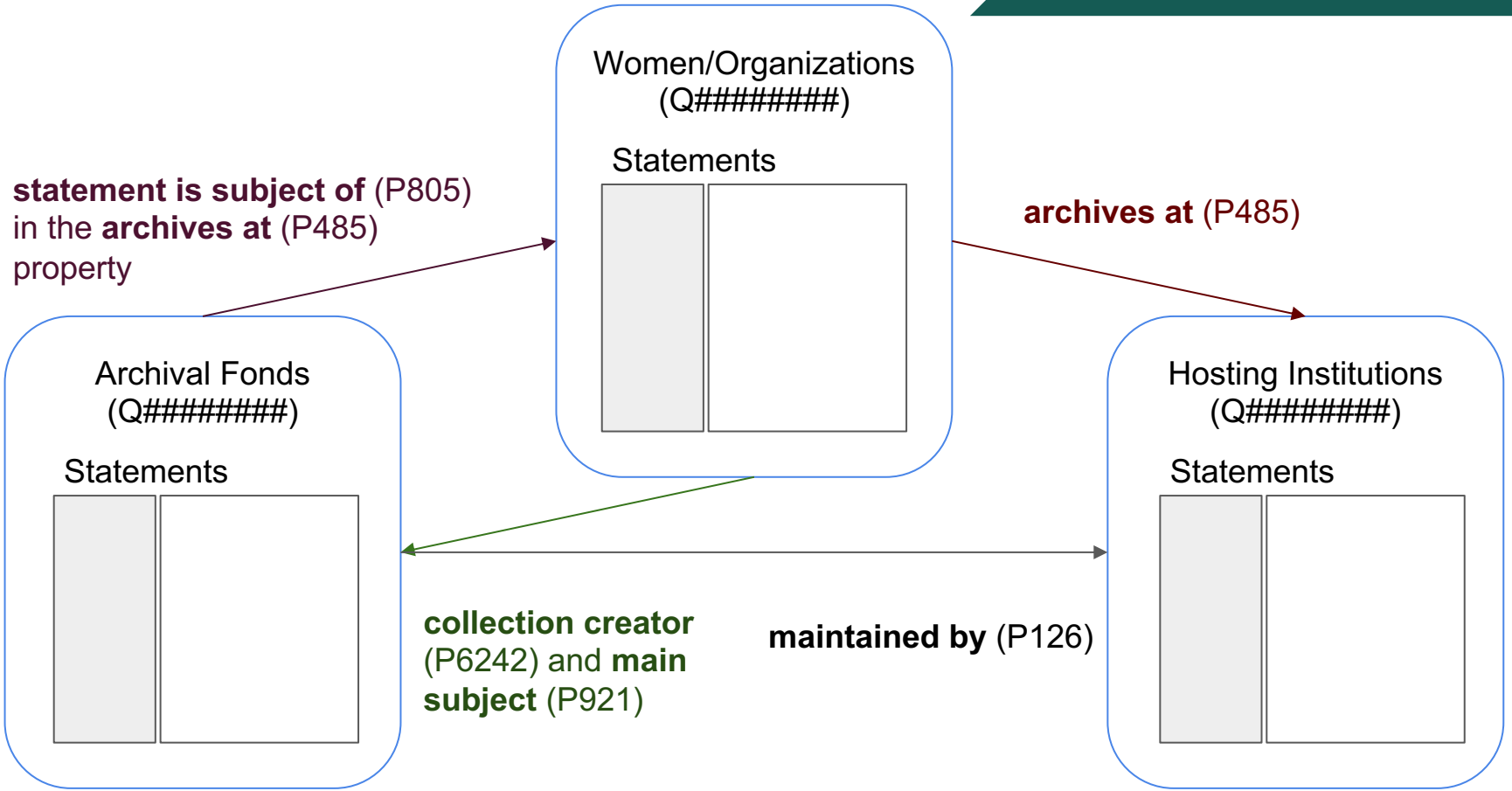
QuickStatements

- Batch-upload using the QuickStatements tool.

Challenges

- How to describe “collection or exhibition size”? 0.30 m of textual records?

Define Data Structure | Contribute to Wikidata | **Link**



Next Steps

- Datathon events to accelerate creation of Wikidata entries on a community level
- Develop an application based on Wikidata like Science Stories

Image credits

North America ortho:
https://commons.wikimedia.org/wiki/File:North_America_ortho.png

IUPUI University Library:
https://commons.wikimedia.org/wiki/File:IUPUI_University_Library.jpg

MorrissetO: https://commons.wikimedia.org/wiki/File:MorissettO.jpg

WikiProject Women in Red:
https://commons.wikimedia.org/wiki/File:Women_in_Red_logo.svg

Q19279214!

Mairelys Lemus-Rojas @mlemusrojas
Yoo Young Lee @yooylee