A Comparative Evaluation of Linked Data Discovery in the Share-VDE 2.0 Catalog

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Share-VDE Overview

- A leader in library LOD & BIBFRAME since 2016
- Member-developed data model
- Sapientia Cluster Knowledge Base
- J.Cricket Editor
- Share Family of LOD projects, following a tenant-based model
- Beta Discovery Environment: https://www.svde.org/

Penn's involvement in SVDE

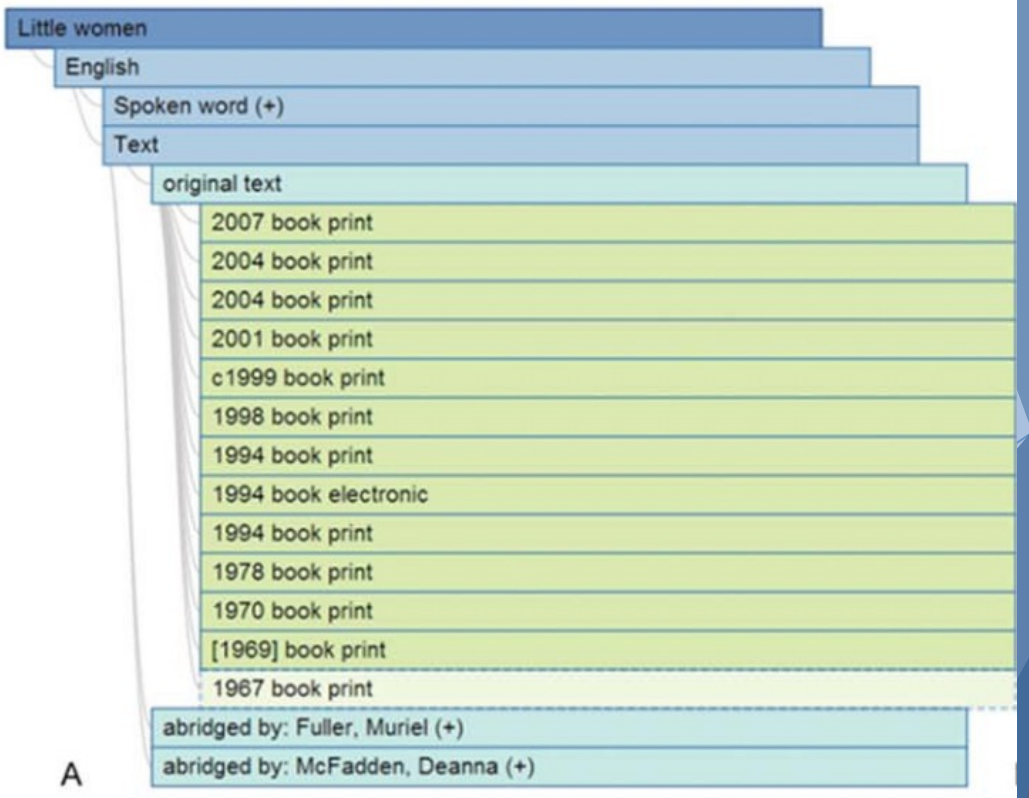
- Participant since the initial 2016 pilot project
- Contributed MARC bibliographic records
- Development of Use Cases
- Partnering with SVDE to develop a Penn skin
  - Branding
  - API links for user requesting

Penn's Linked Data Vision

"The Penn Libraries engage in linked data initiatives to improve the metadata we make available for our information resources, and the technology we use to manage it. **The primary goal of our work is to make resources easier for our users to find and obtain,** both through our own discovery tools and through external search. Secondary goals include making our resources more easily cataloged and described by our staff, making it simpler to share and exchange resource metadata, **enhancing information about resources of interest to our users**, and **providing a platform for advanced metadata-based research by librarians and other scholars".**

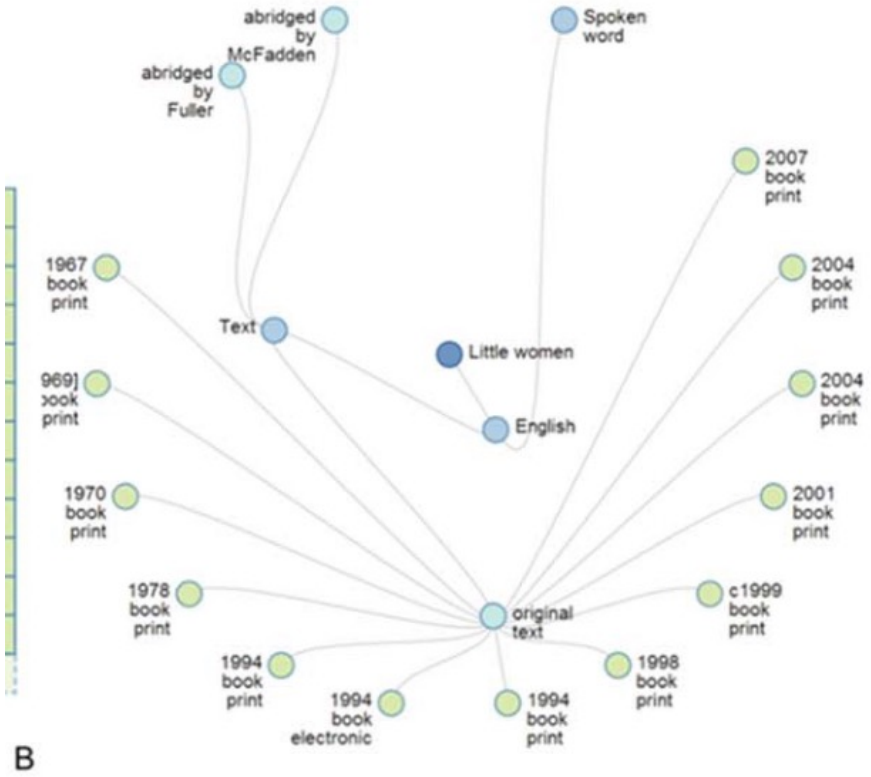
Previous Linked Data Discovery Studies

- FRBR Based Prototypes (Merčun, Žumer, Aalberg, 2017)
  - Indented Tree Layout
    - One of the more successful layouts evaluated by users.



FRBR Based Prototypes (Merčun, Žumer, Aalberg, 2017)

- Radial Tree



FRBR Based Prototypes (Merčun, Žumer, Aalberg, 2017)

- Circlepack

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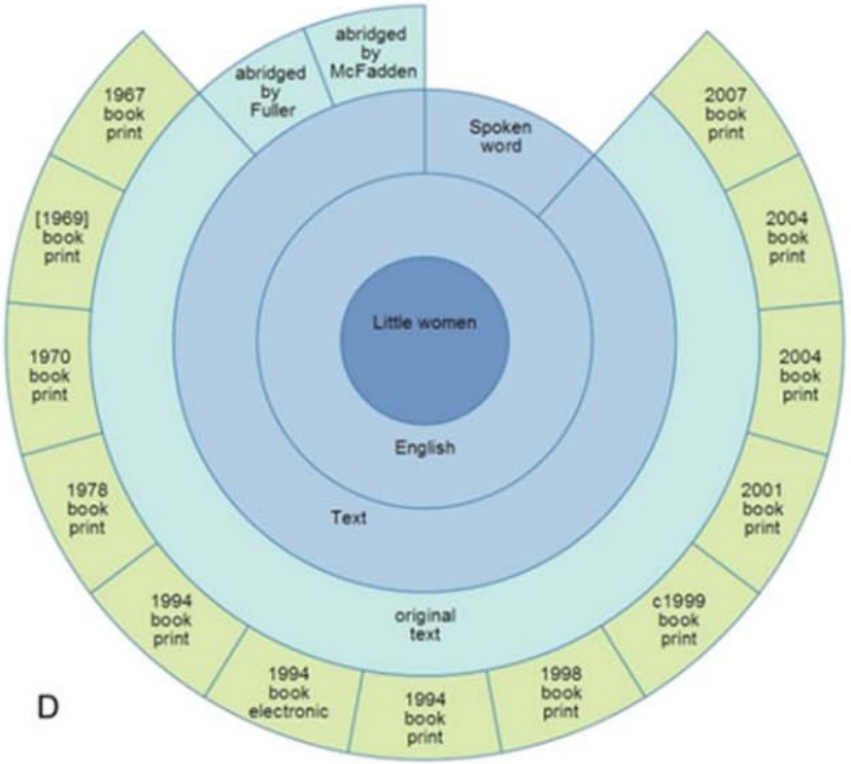
FRBR Based Prototypes (Merčun, Žumer, Aalberg, 2017)

- Sunburst
  - Another successful layout in terms of user perception.

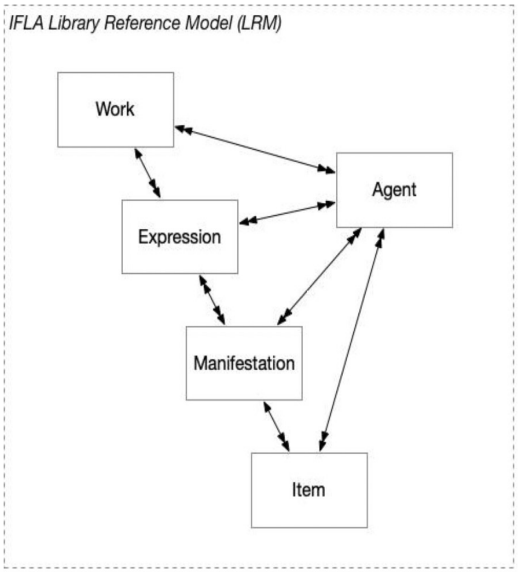


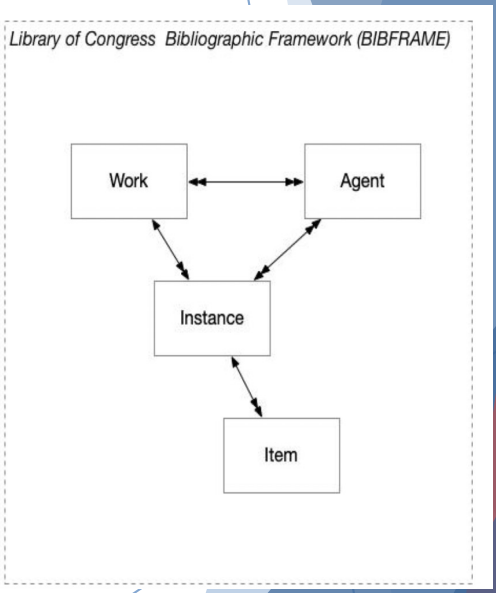
LD4 Discovery Affinity Group / Cornell work in LD4P3

- LD4 Community Affinity Group regular meeting to discuss entity relationships that are useful in linked data discovery.
- Cornell / Stanford Core Interest Group presentation on Discovery Improvements related to linked data.
  - “Soldering the Links” Huda Khan, Steven Folsom, and Astrid Usong (2022)
  - http://ow.ly/acN050JwiWP

Previous Linked Data Discovery Studies

- New bibliographic models and the search experience (Aalberg, Tallerås, & Massey, 2019).
  - Comparing BIBFRAME and LRM models to understand characteristics that may affect search usability
    - Number of entities and how each vocabulary will represent





Methods

- IFLA-LRM framing to study user tasks in the SVDE interface

Table 1: A summary of user tasks

Find	To bring together information about one or more resources of interest by searching on any relevant criteria
Identify	To clearly understand the nature of the resources found and to distinguish between similar resources
Select	To determine the suitability of the resources found, and to be enabled to either accept or reject specific resources
Obtain	To access the content of the resource
Explore	To discover resources using the relationships between them and thus place the resources in a context

https://www.isko.org/cyclo/lrm

Select LRM Tasks

LRM Exemplar Tasks	Find "To find all expressions of a work that - are written in a given language" (p.97)	Identify " a personal name that corresponds to the person sought by the user, even though other people are identified by similar names" (p.98)	Explore "relationships in order to understand the structure of a subject domain and its terminology" (p.99)
Semantic Interface Hypothesis	Expressions of a work in a given language can be easily ascertained in a semantic interface search result page.	As compared to non-semantic interfaces, name disambiguation is better supported in Semantic Search Results.	Semantic Interfaces can better support relationship exploration in a subject domain (e.g. browsing online).

Methods

- **Penn Scholarly Personas:** subsets of faculty, graduate students and undergraduates.

- **Themes explored in (Boettcher, 2020):** Findings on discovery workflows uncovered three broad areas of interest to scholars in the discovery workflow:
  - *Related Resources,*
  - *Seeking Context, and*
  - *Future Research.*
- The overarching question for SVDE linked data: What relationships are useful?

User Experience Testing:

Method

- Virtual test environment
- Screenshare recordings
- Standardized testing script
- Analyzed in a shared table across work team

By the numbers

- 5 user interviews
- 6 core tasks evaluated
- 35 questions, included perceptions of usability
- 3 hours recorded

UX Testing Tasks & Objectives

Testing Task	Task Objectives
Name disambiguation	To test name (person) disambiguation functionality in results of a search with similar names.
Title disambiguation	To test work (publication) disambiguation functionality in results with similar titles.
Search for [language] materials	To test retrieval of searching for publications of a work in a desired language.
Related Agents	To test the usability of the “related agent” list.
Exact title match	To test the usability of a “exact match” menu presented as the result of title matching.
Wikidata/Wikipedia	Exploratory linked data exercise
UX on interface terminology	Other ways you might describe this besides the language used?

Testing Script Example: Related Agents

Task 2: Related Agents

Prototype link https://www.svde.org/a-life-in-the-law-p4951646690300306/related-agents

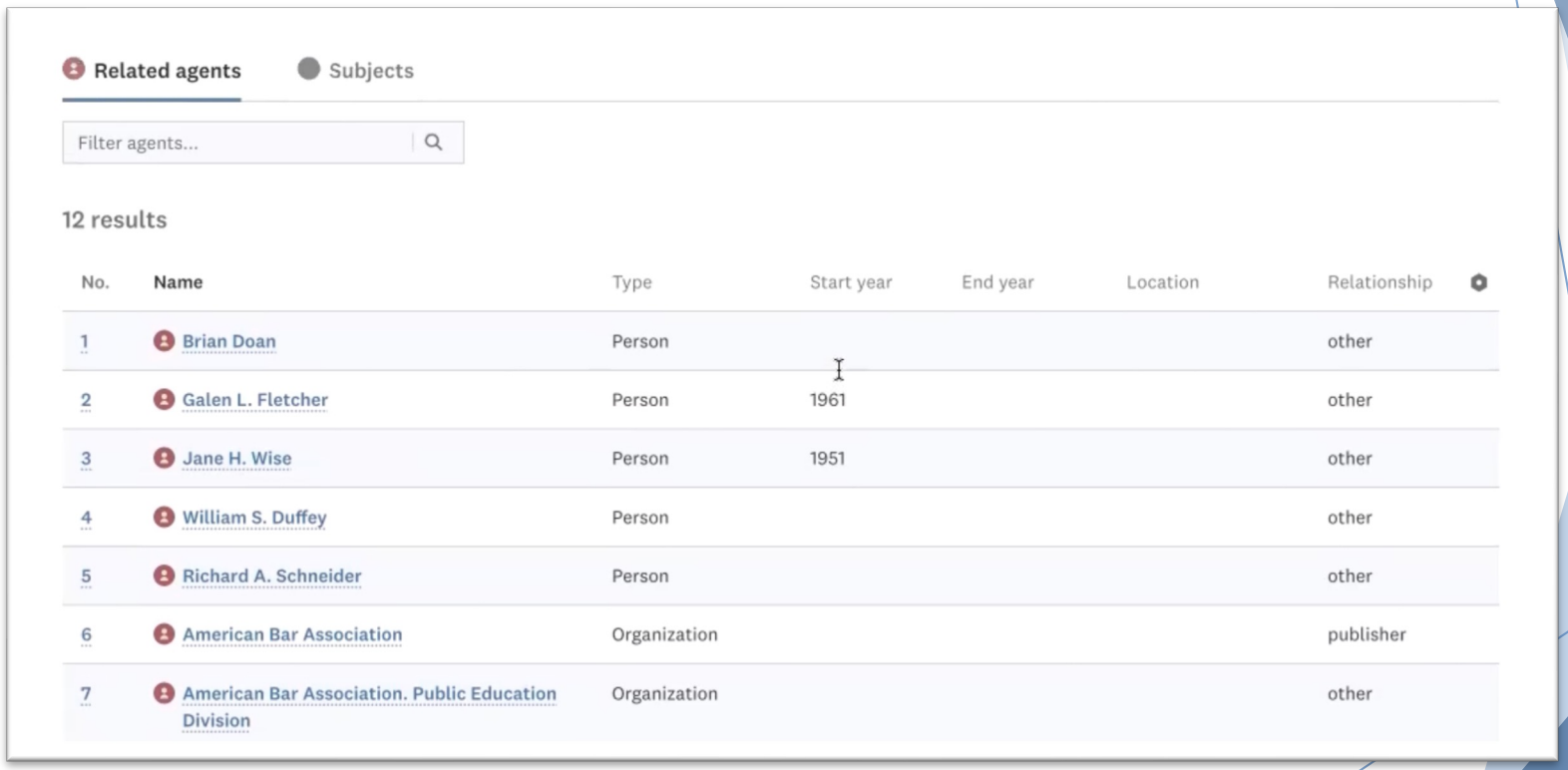
Relevant research objective: To test the usability of the "related agent" list

Expected user pathway: scroll down through the related agent table

- Looking at the same page from the last task, can you locate a section titled "Related Agents?"

6. Before you scroll down, what do you think that might mean?
7. Go ahead and take a look at the related agents for this record.
8. What do you think is being displayed here? Is there information that isn't here that would be helpful to you if you were researching using this book? Is there anything that's confusing or needs explanation?
9. Overall, this task was…
    a. Difficult
    b. Neither easy nor difficult
    c. Easy
2. Why did you give this score?
3. **Stay on this page for the next task.**

Testing Task Example: Related Agents



Related agents | Subjects

Filter agents...

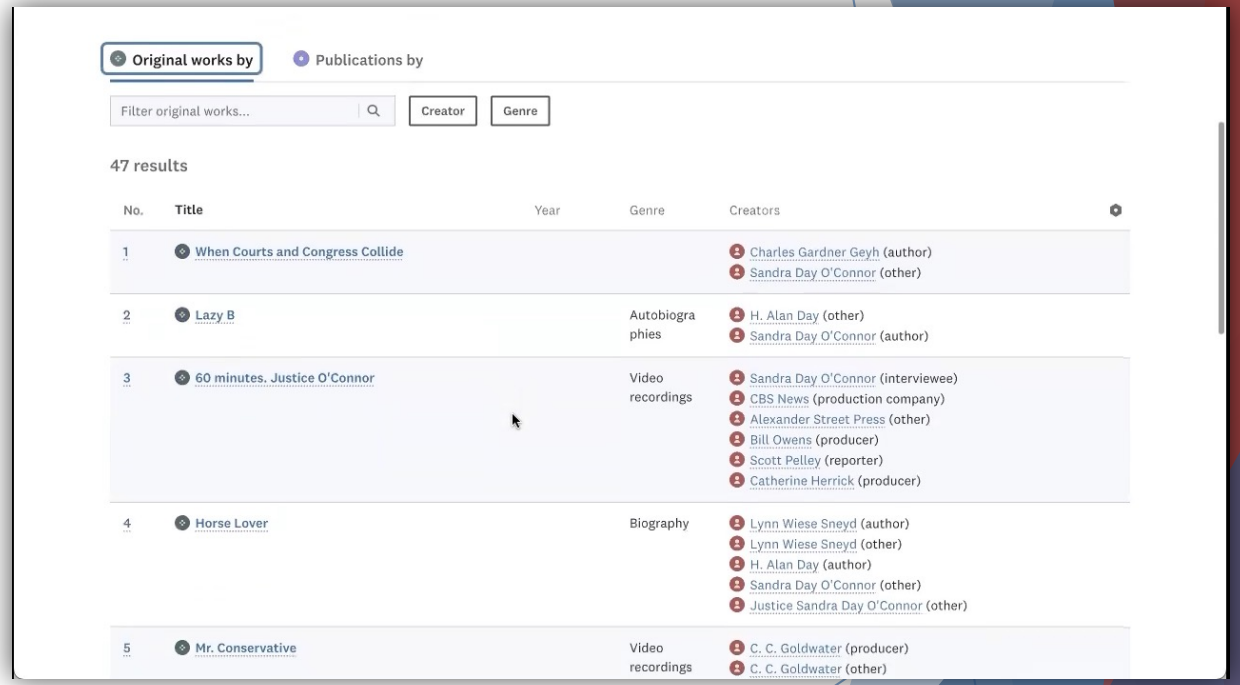
12 results

No.	Name	Type	Start year	End year	Location	Relationship
1	Brian Doan	Person				other
2	Galen L. Fletcher	Person	1961			other
3	Jane H. Wise	Person	1951			other
4	William S. Duffey	Person				other
5	Richard A. Schneider	Person				other
6	American Bar Association	Organization				publisher
7	American Bar Association. Public Education Division	Organization				other

UX Testing:

Opportunities

- Improve indicators that confirm known item/entity searching confidence at both results and record retrievals
- Further testing and on novel ShareVDE UI terminology
- Users unclear about order of results in Original Works by/Publications by tables. Chronological? By Format?
  - Subject familiarity required to determine desirability of results



UX Testing:

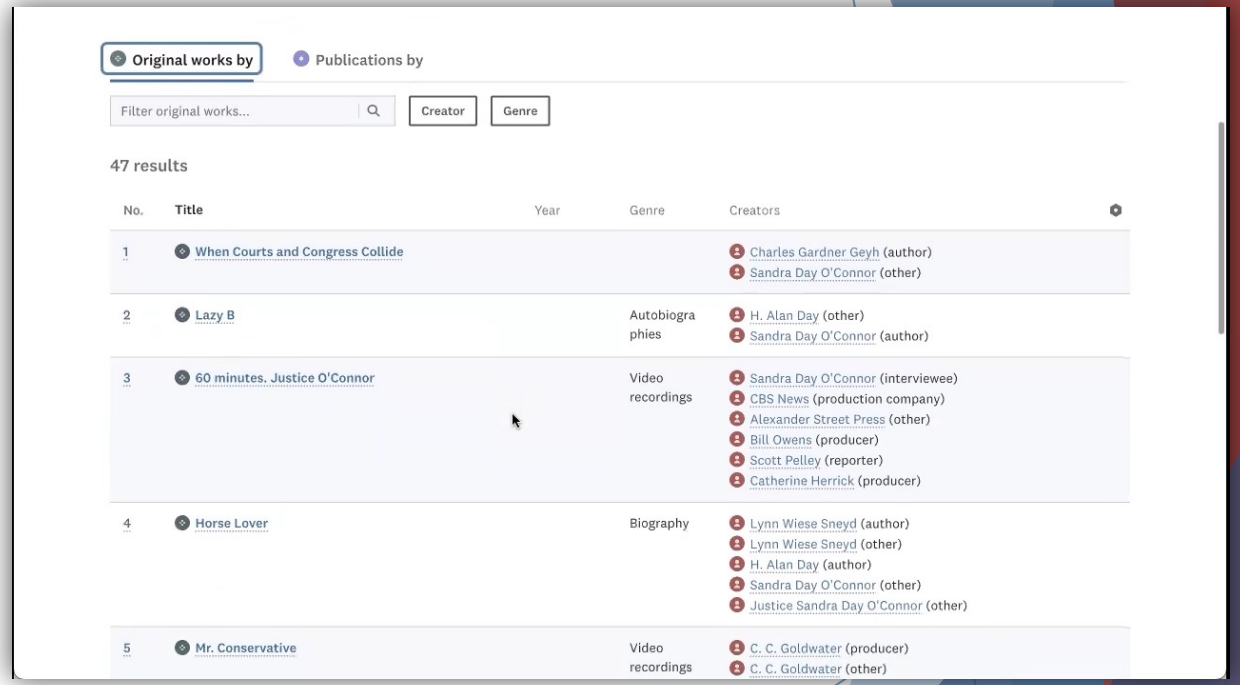
Trends

All participants:

- Begin their searching in Google
- Rated high familiarity with searching in online library search environments
- Used more sophisticated search techniques- boolean operators or using quotes for phrase searching

No participants:

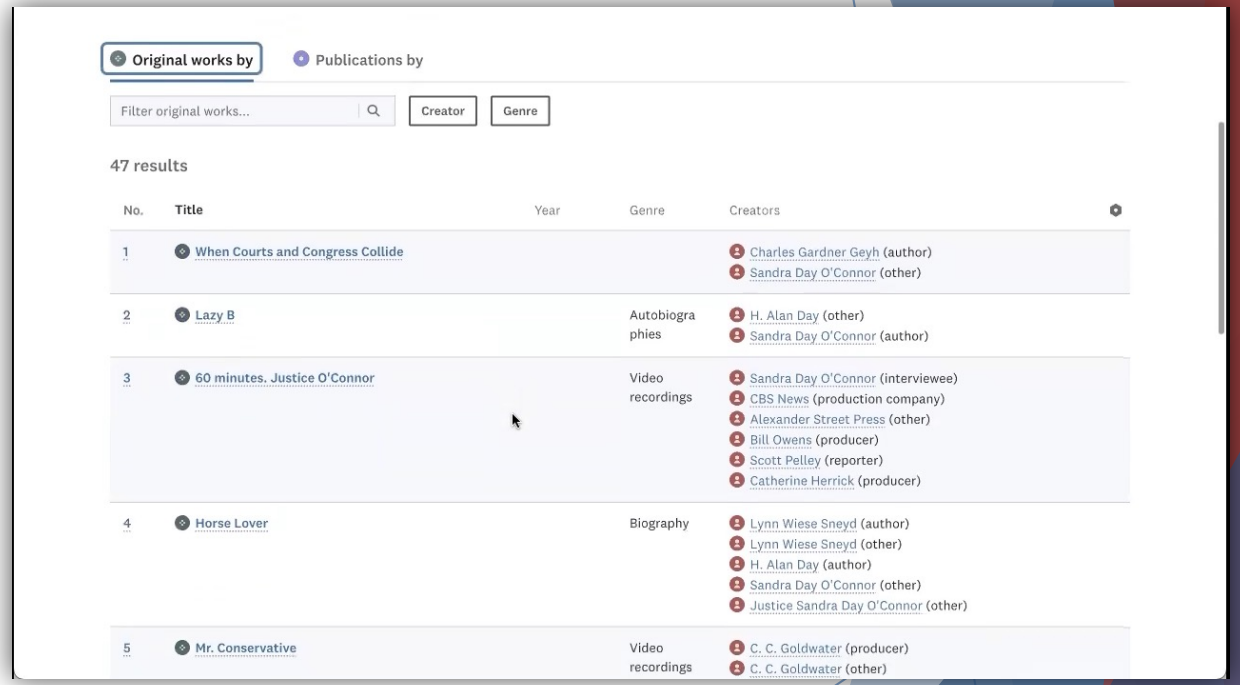
- Confidently defined terminology tested



UX Testing:

Term: Related Agents

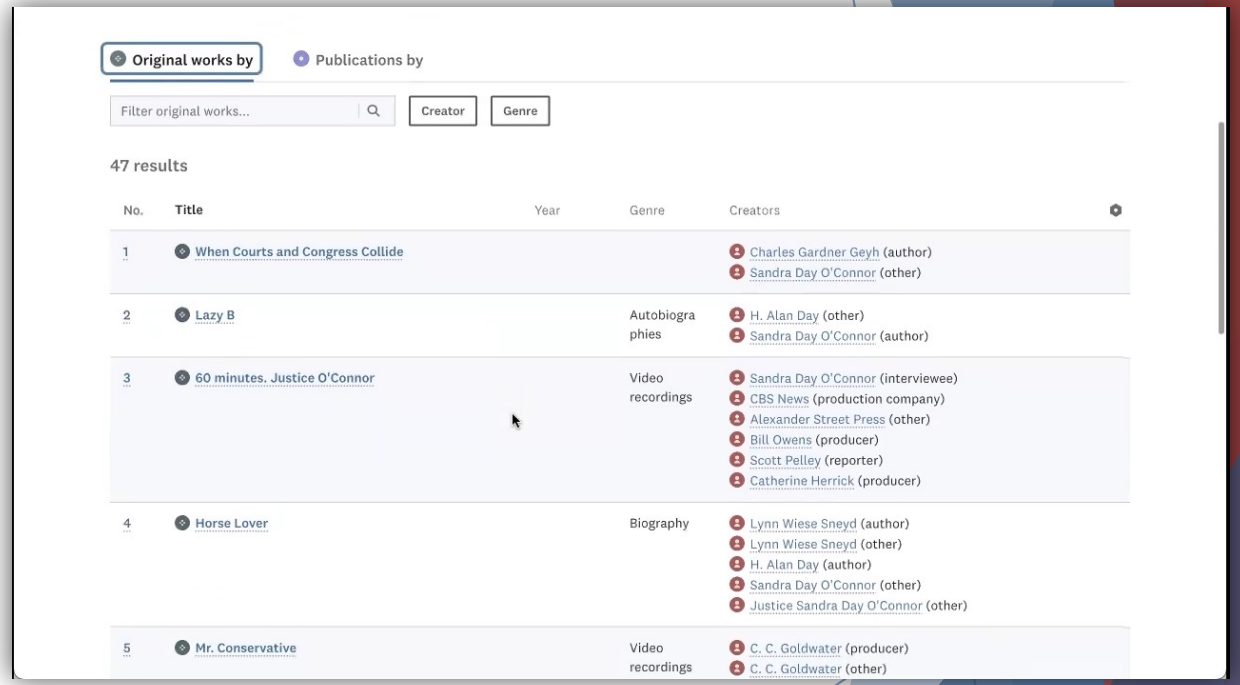
- "Similar things to this book, so I guess similar authors, the same publishing company."
- "Maybe people they worked with?"
- "I don't know. My first thought is maybe author or maybe publisher."



UX Testing:

Related Agents: Context Clues

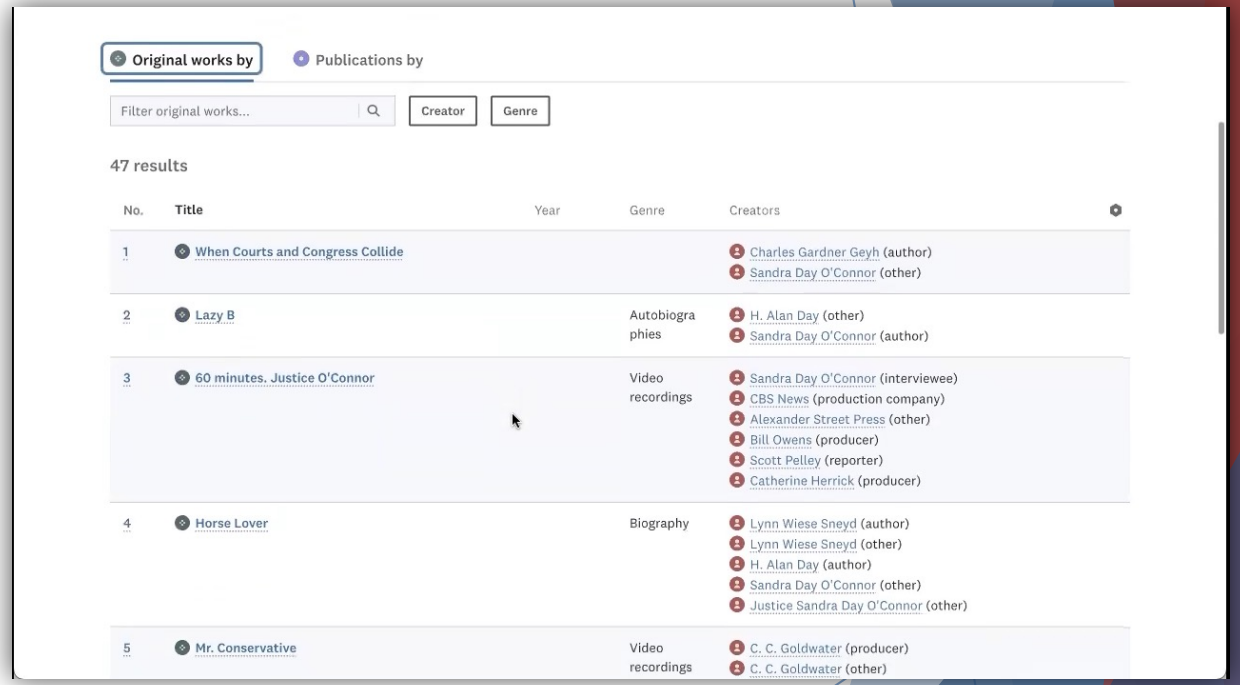
- “Not clear what start year and end year is. Maybe it is birth year. Is it the year they started publishing or started academic work?”
- Users requested information like first author, format (video especially), and other context clues to help parse relationships



UX Testing:

Wikidata

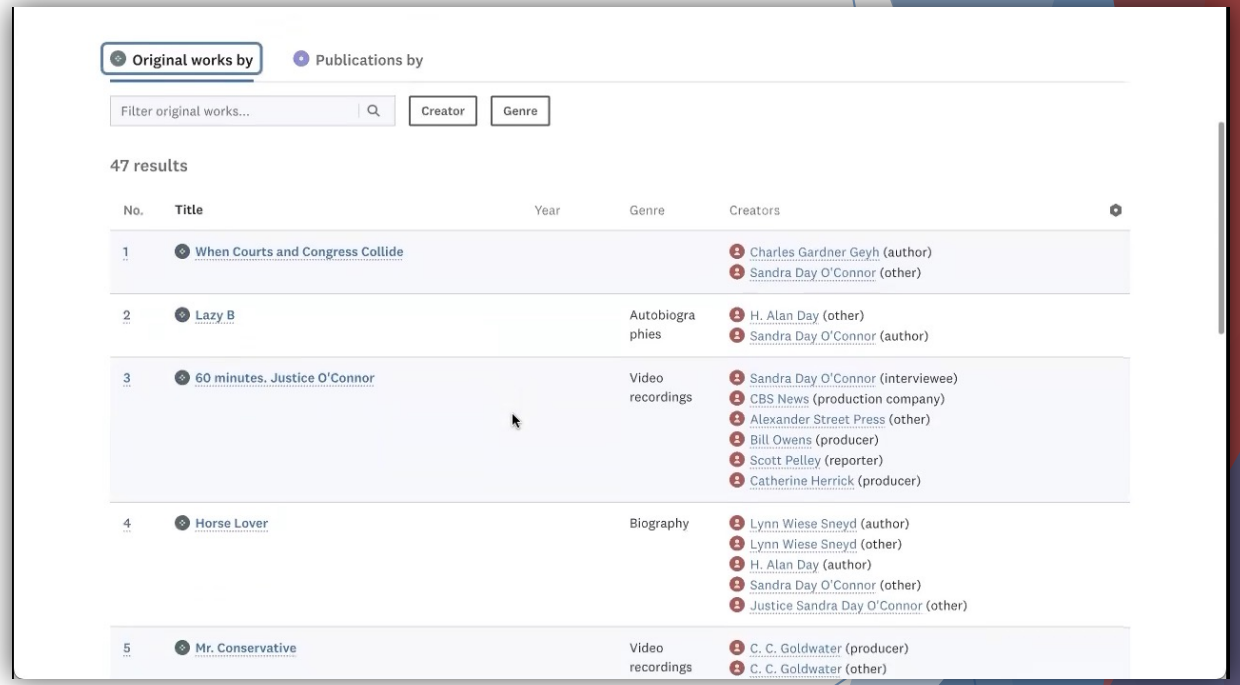
- Picture well received and useful for confirming search success
- Suggested smaller real estate on page with only basic info
- "I think it's really cool that it has her biography and other things about her...I appreciate that it has the genre like whether it's an autobiography or a recording etc."
- Concerns about quality of Wikipedia entry- confirmation bias



UX Testing:

Failed tasks

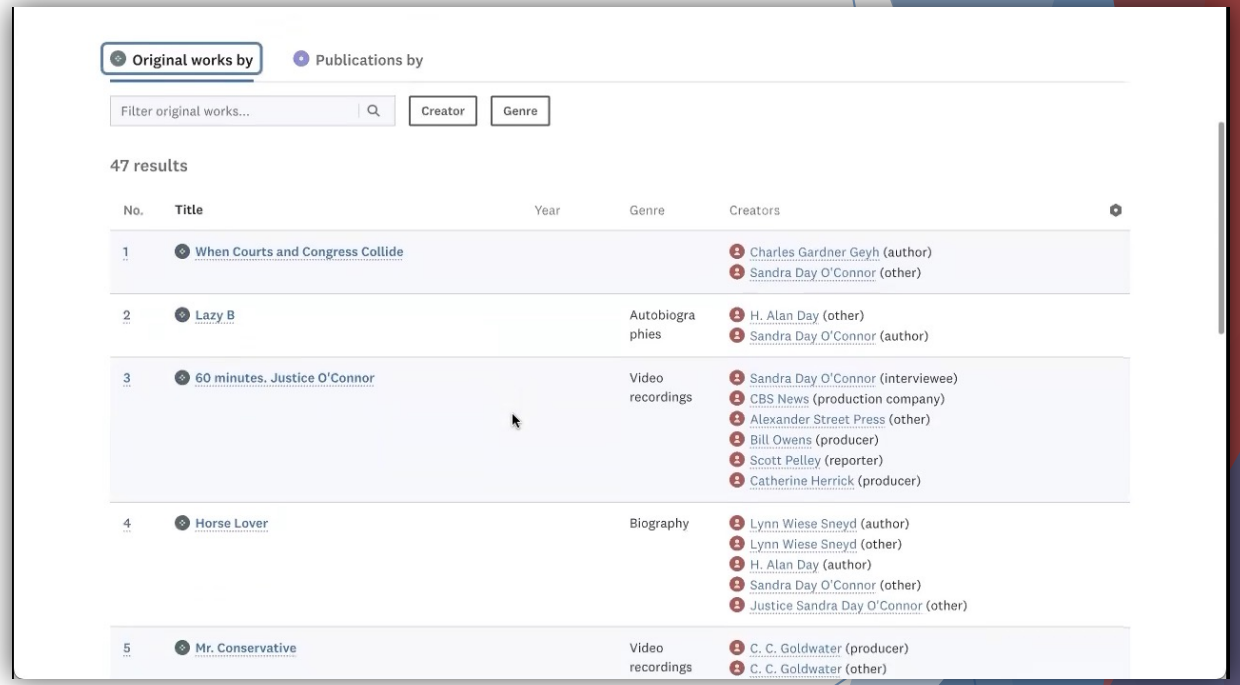
- Name disambiguation was the hardest task for our users to complete
- "I can see that it searched Stonehenge, music, or band instead of what I was looking for"
- "Stonehenge **band**" vs. "Le Monde **Newspaper**"



UX Testing:

User Friendliness

- "These titles seem broad and different to me."
- “Filters not necessarily what I would expect.”
- "I found it stressful. So much of my searching is in Franklin."
- Assumed that this interface was an improvement on faceted searching that "does it for you."



We asked: Would you want to use it again?

While user friendliness scores were largely “just okay,”4 of 5 users reported that they would like to use ShareVDE for future research.

- “This [Person page] is exactly what I would expect. What I would hope for.”
- “The interface is visually pleasing- it kind of feels like a slightly different Google.”
- “I can definitely see myself using this again- the breakdown of the works was really useful. Having publications laid out in that way and directly linking to [creators] who were connected was great.”

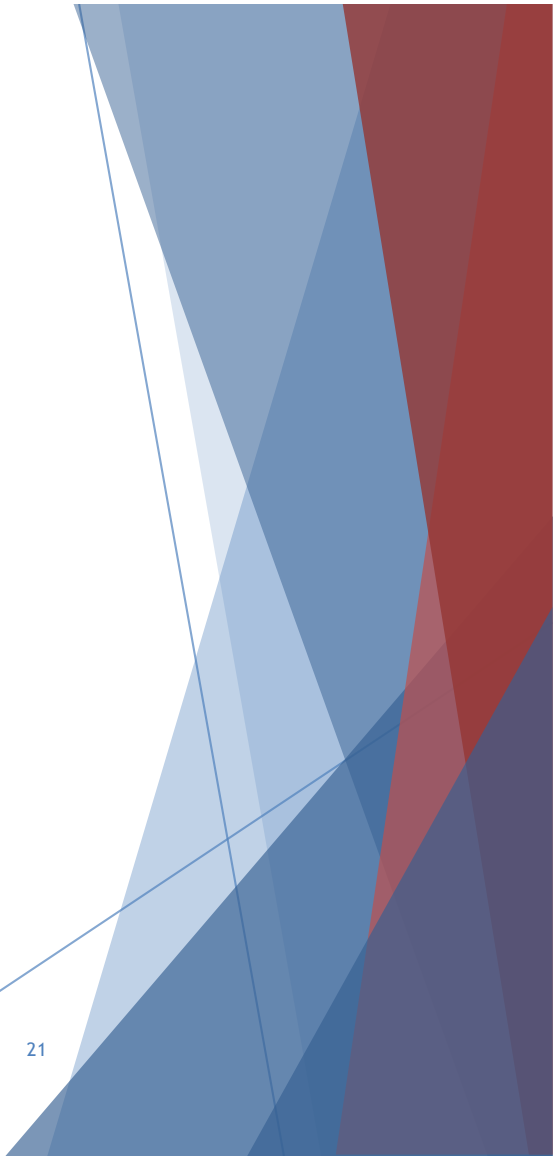
Discussion

- How we structure search results need not surface library language. This is already a consideration of the tested design. We need to go further.
- Though we have used the BIBFRAME vocabulary for structuring relationships, we may want to do away with presenting users with terms like Works and Agents.
- **Consider replacing Agents with other terms.**
- Work/Publication as displayed was an attempt to do away with presenting the wording of “Instances”. We may need to go further.
- **Consider removing Works/Publication hierarchy from terminology presented to user.**

Discussion

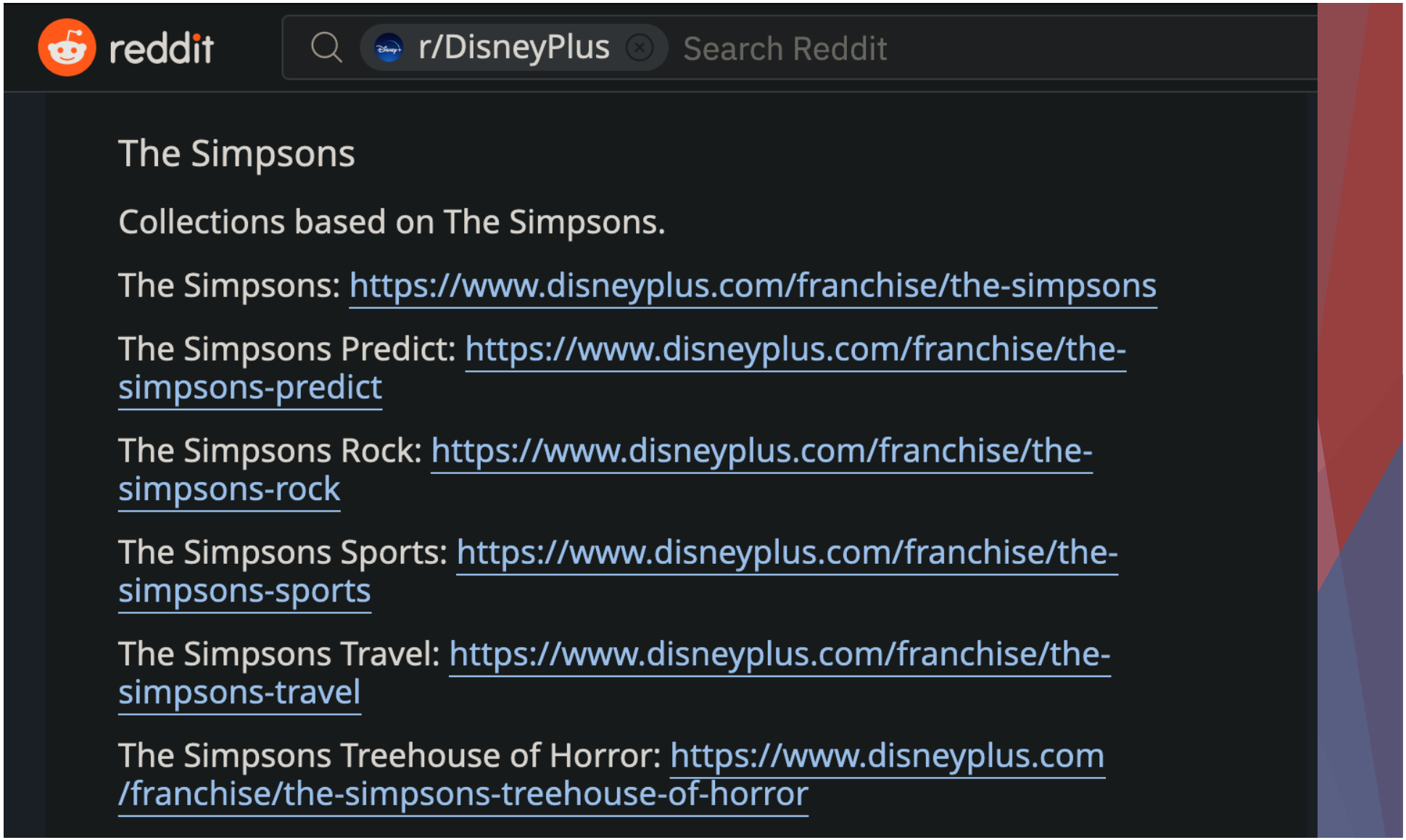
- As it regards **Works** ordering we might borrow examples from media streaming services which in some cases organize related works into “collections” of works. Which is perhaps how we can introduce the library concept – use a familiar reference point to introduce the corresponding (though not exact) concept.

- In Disney+ “collections” we find examples of all movies that a fictional character appears.
- “Vader Collection” as an example…



STAR WARS DARTH VADER

Darth Vader Collection


reddit
r/DisneyPlus
Search Reddit
The Simpsons
Collections based on The Simpsons.
The Simpsons: https://www.disneyplus.com/franchise/the-simpsons
The Simpsons Predict: https://www.disneyplus.com/franchise/the-simpsons-predict
The Simpsons Rock: https://www.disneyplus.com/franchise/the-simpsons-rock
The Simpsons Sports: https://www.disneyplus.com/franchise/the-simpsons-sports
The Simpsons Travel: https://www.disneyplus.com/franchise/the-simpsons-travel
The Simpsons Treehouse of Horror: https://www.disneyplus.com/franchise/the-simpsons-treehouse-of-horror

Discussion

- Curating these types of collections would be resource intensive.
- The BIBFRAME vocabulary and other properties that can be used within the BIBFRAME vocabulary enable Work to Work relationships and others by design.
- By design BIBFRAME can support these types of content presentations. We need to find a way to surface the most valuable relationships to users and those relationships do not need to have library language attached to them. Find language of the users or from commerce and entertainment if useful.

Further Directions / Ramifications

- Tests indicated that users want to try SVDE again.
- Many features of the interface are also available as APIs.
  - Might consider pulling in valuable components of SVDE search into Bento displays or other types of search assistance within library webpages.
- Type-ahead and entity suggestions provide search assistance.
- Search assistance can dynamically suggest alternative terms, query reformulations, and possibly “best bets,” search suggestions in the library catalog.
  - SVDE entities as controlled search terminology.

References

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- Riva, P., Le Boeuf, P. and Žumer, M., (2018). IFLA library reference model: A conceptual model for bibliographic information. https://repository.ifla.org/handle/123456789/40
  - See chapter 6, Alignment of User Tasks with the Entities, Attributes and Relationships, (p.97):

Resources

- Share-VDE: linked data for libraries
  - https://wiki.share-vde.org/wiki/Main_Page
- Beta Discovery Environment:
  - https://www.svde.org/
- Share-VDE Statement: Share-VDE's Role in Library Linked Open Data
  - https://wiki.share-vde.org/w/images/e/ea/Share-VDE_Statement_2021.pdf

UX Testing Documentation

- User Testing Script
- Results Analysis Data Table

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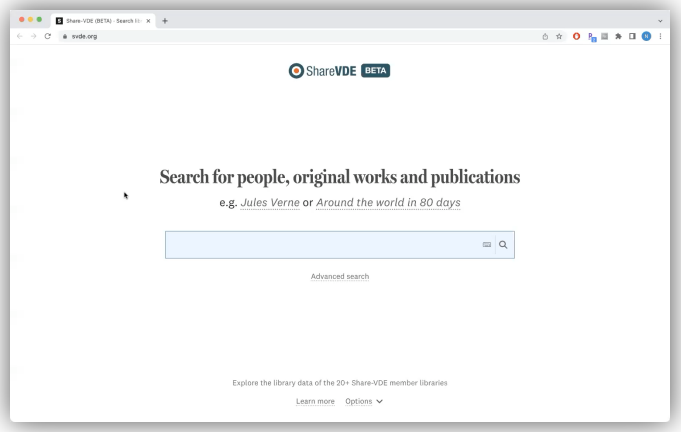

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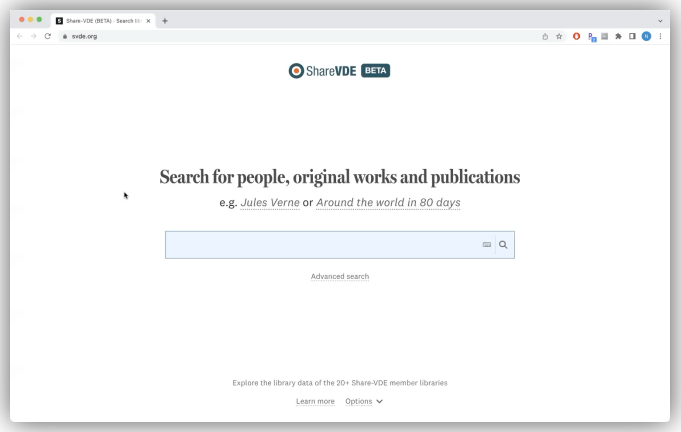

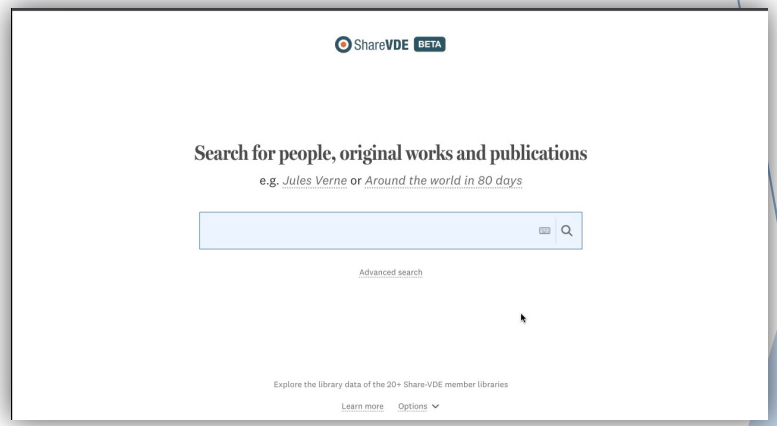

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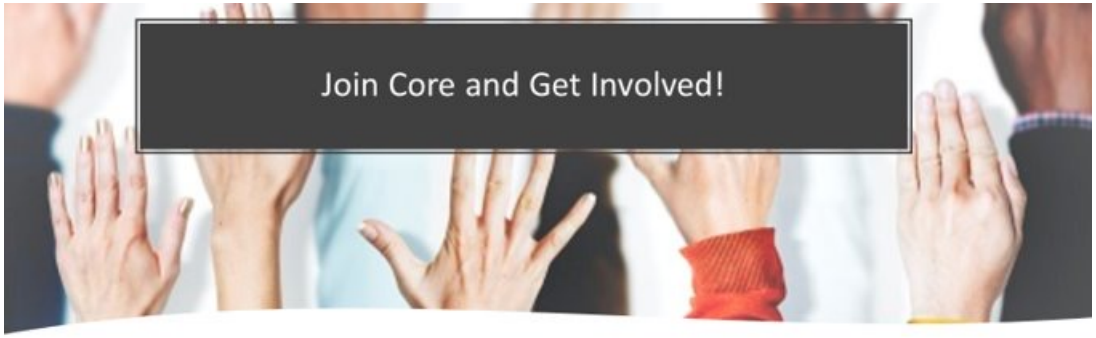

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