Using controlled vocabularies to organise keywords in the SSH

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Organising keywords in the SSH

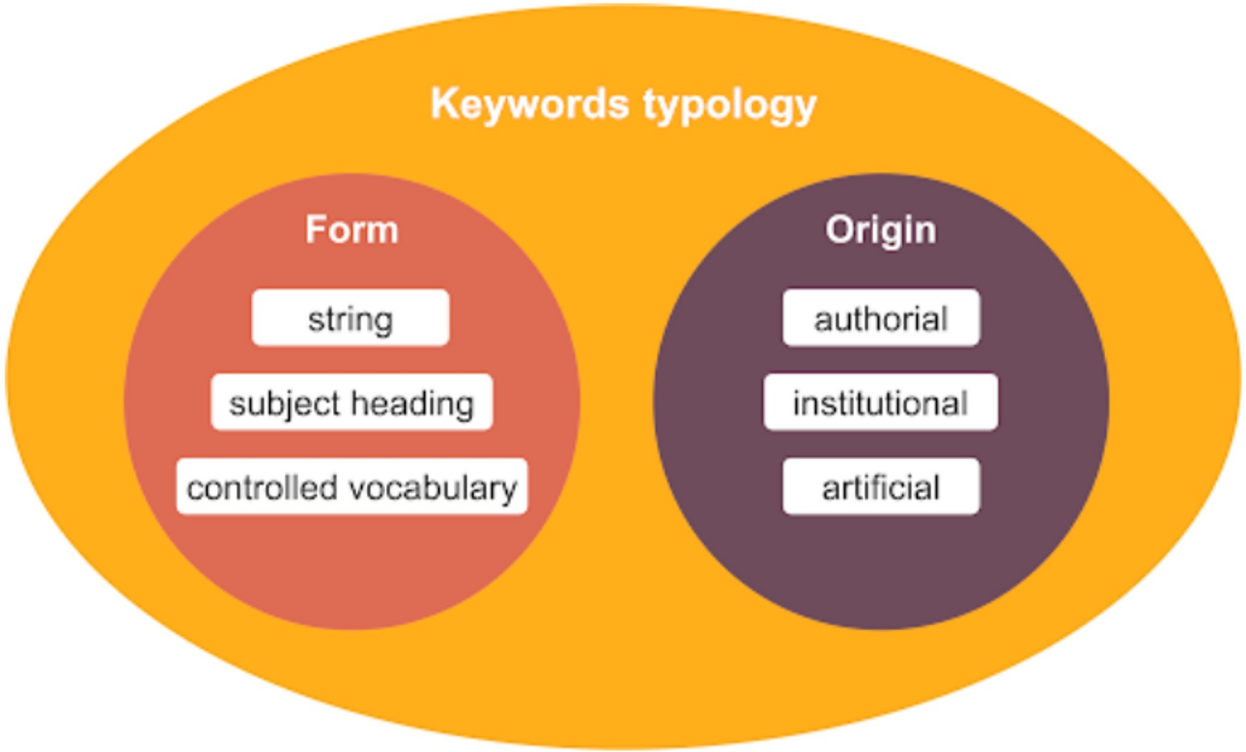
Subject description in SSH academic repositories, metadata aggregators or digital libraries is not necessarily based on attribution of entries from controlled vocabularies or this attribution is implemented improperly.

Although this hinders semantic interoperability, we should still treat existing subject descriptions as invaluable resources and aim to improve them.

Why *keywords*?

We use *keywords* as a broad term for short phrases describing topic of a document

Here we discuss the keywords which are uncontrolled strings (*keywords-strings*).



TRIPLE project contributed to these works which are now realised through DARIAH-PL's dariah.lab (ending in Dec 2023).

Organisational context

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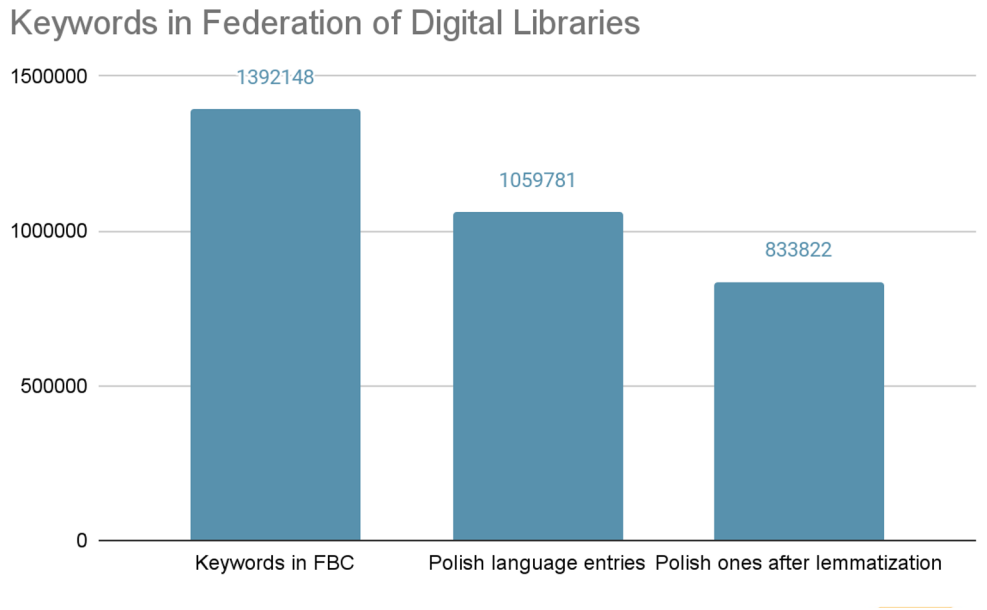
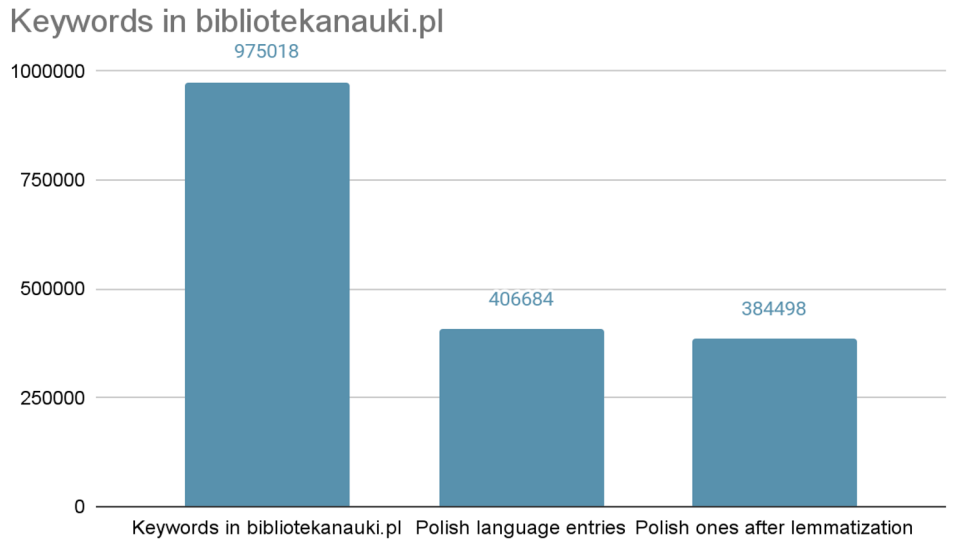
Keywords-strings are not FAIR

Main Polish SSH data providers:

Federation of Digital Libraries – more than 6,6 mln documents (cultural heritage documents)

Library of Science (bibliotekanauki.pl) – more than 0,5 mln documents (mostly scientific articles)





Why providers struggle with FAIR compliance?

- Limitations of software (e.g. local software does not support proper attribution of controlled vocabularies)
- Lack of know-how (it is not a priority to use controlled vocabularies)
- Limitations of data standards (e.g. DC-related challenges)

How to make keywords-strings more FAIR compliant?

Computations

Our mission in projects such as dariah.lab, TRIPLE or in planned future project is

expression of keywords-strings in the form of entries from controlled vocabularies

to foster semantic interoperability, data harmonisation and improvement of data quality.

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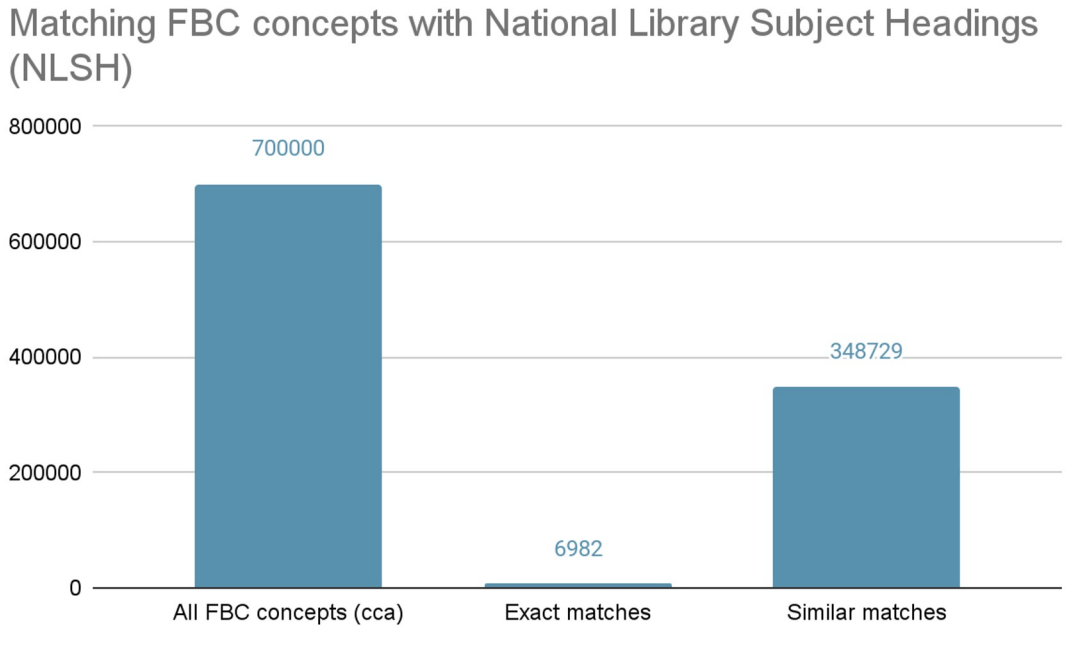
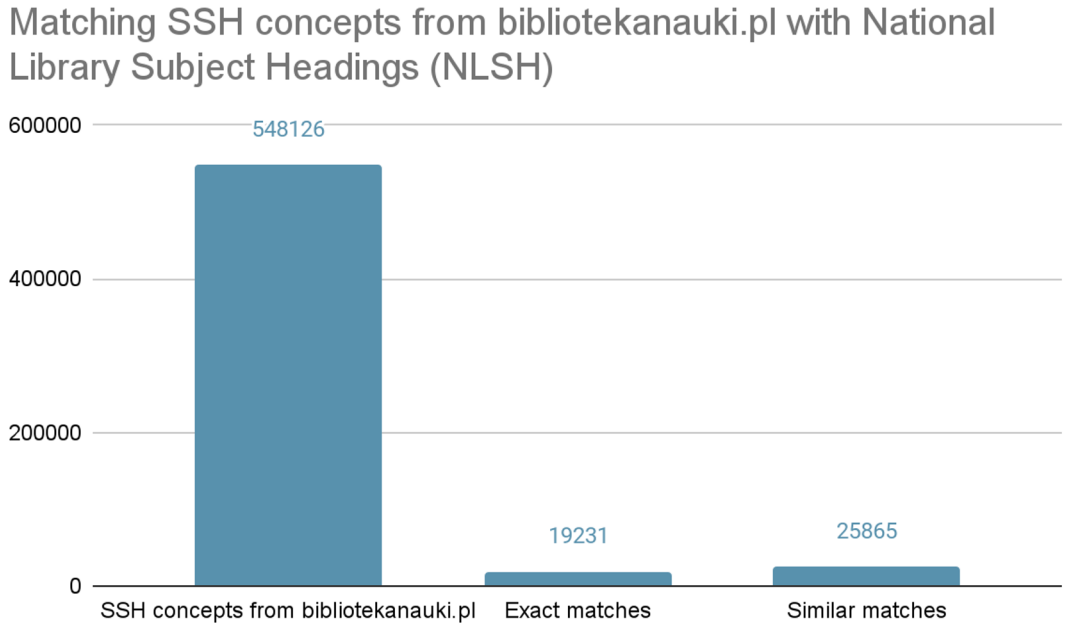
Hidden entries from controlled vocabularies

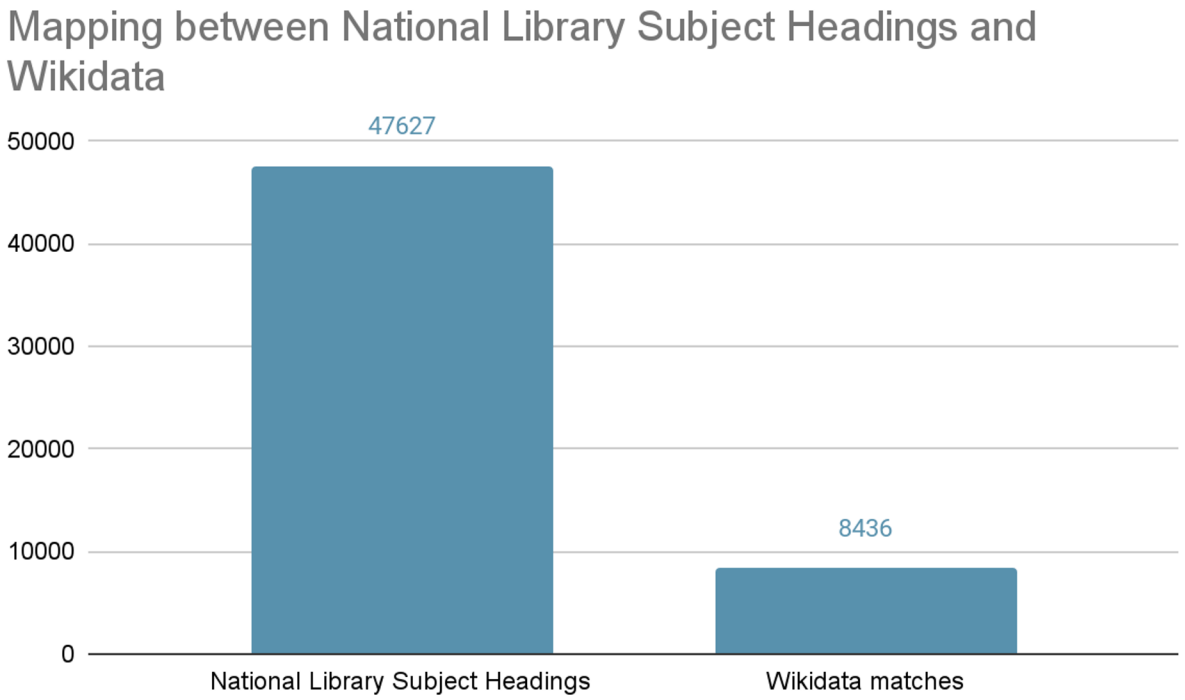
Our main finding – data providers are in fact using entries from controlled vocabularies, but in a non-FAIR compliant way.





National Library Subject Headings and Wikidata

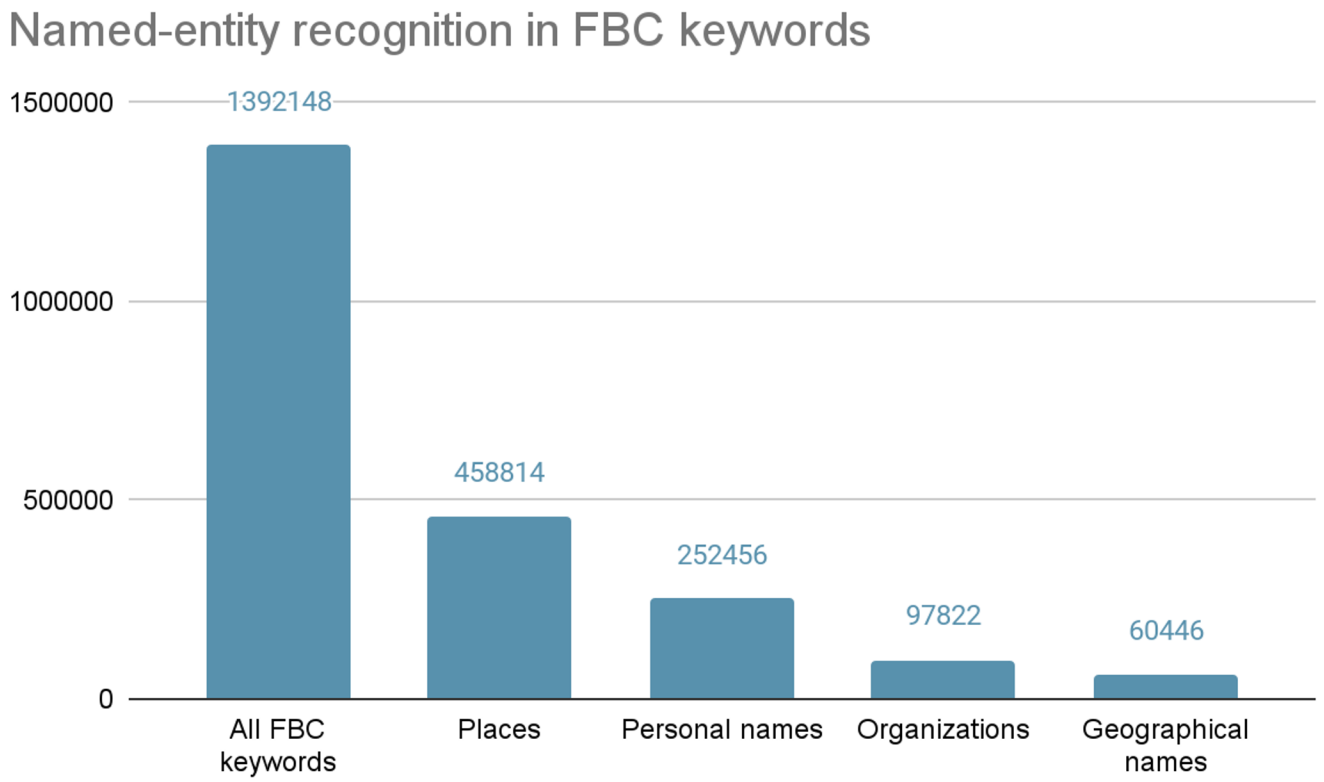
Mapping keywords onto NLSH fosters semantic interoperability as at least 18% of NLSH's entries could be mapped onto Wikidata.



Hidden entries from controlled vocabularies

Computations

Keywords include not only concepts, but also named entities which adds to harmonisation opportunities:



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Expressing keywords-strings as entries in controlled vocabularies

Computations

We are metadata-focused, so our goal is not to assign a topic to a publication, but we aim to assign a discipline to the keyword (and ideally a more granular entry).

In short it means **using controlled vocabulary to harmonise keywords**.

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Beyond uncovering hidden vocabularies

Bibliotekanauki.pl's journals have assigned disciplines.

However, these disciplines poorly correlate with keywords-strings' disciplines.

E.g. for random 3500 keywords for literary articles an average semantic similarity index with NLSH for literary discipline is 0,18 (according to spaCy).

Historia Slavorum Occidentis
2022/4(35)

CITATION EXPORT TO PBN

Pages: **11-32**

Main language of publication
Polish

Published **2022-12-31**

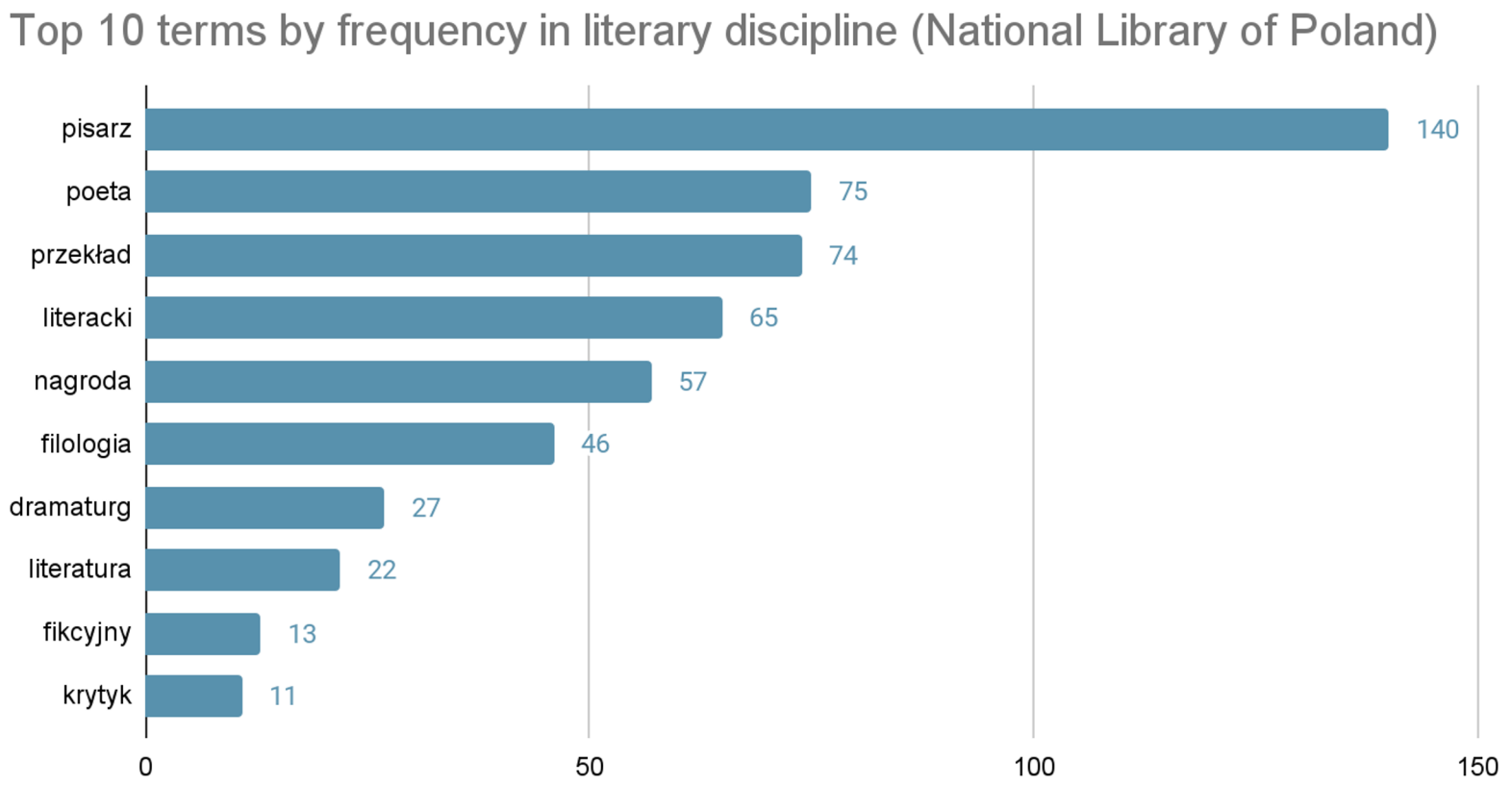
DOI: **10.15804/hso220401**

Humanities
literature

Vocabulary-based method

Vocabulary-based method for expressing keywords-strings in the form of entries from a controlled vocabulary relies partly on extracting most frequently used terms in the NLSH and mapping them onto keywords-strings.

Frequent literary terms in NLSH



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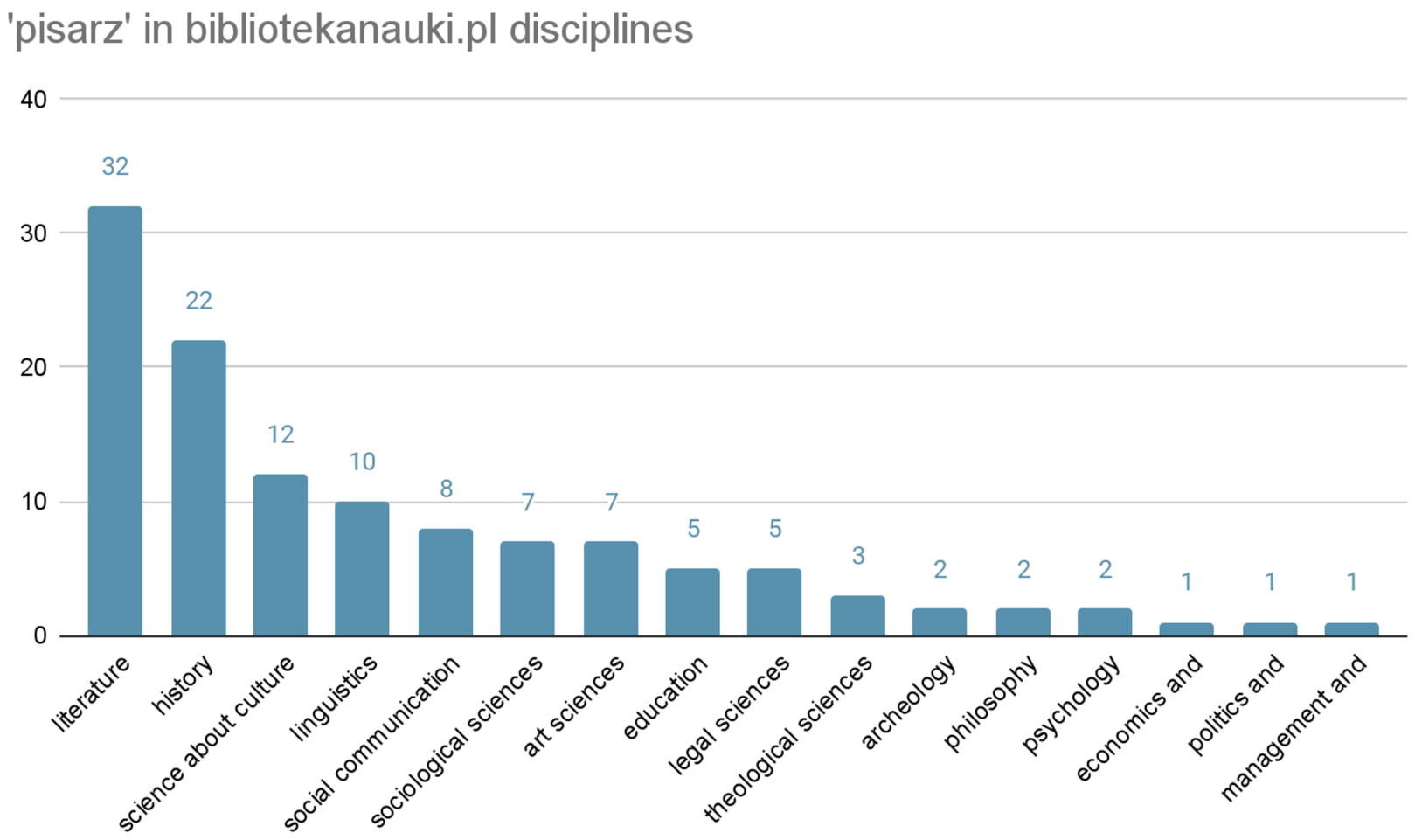
Frequent literary terms in NLSH



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Bias of controlled vocabularies

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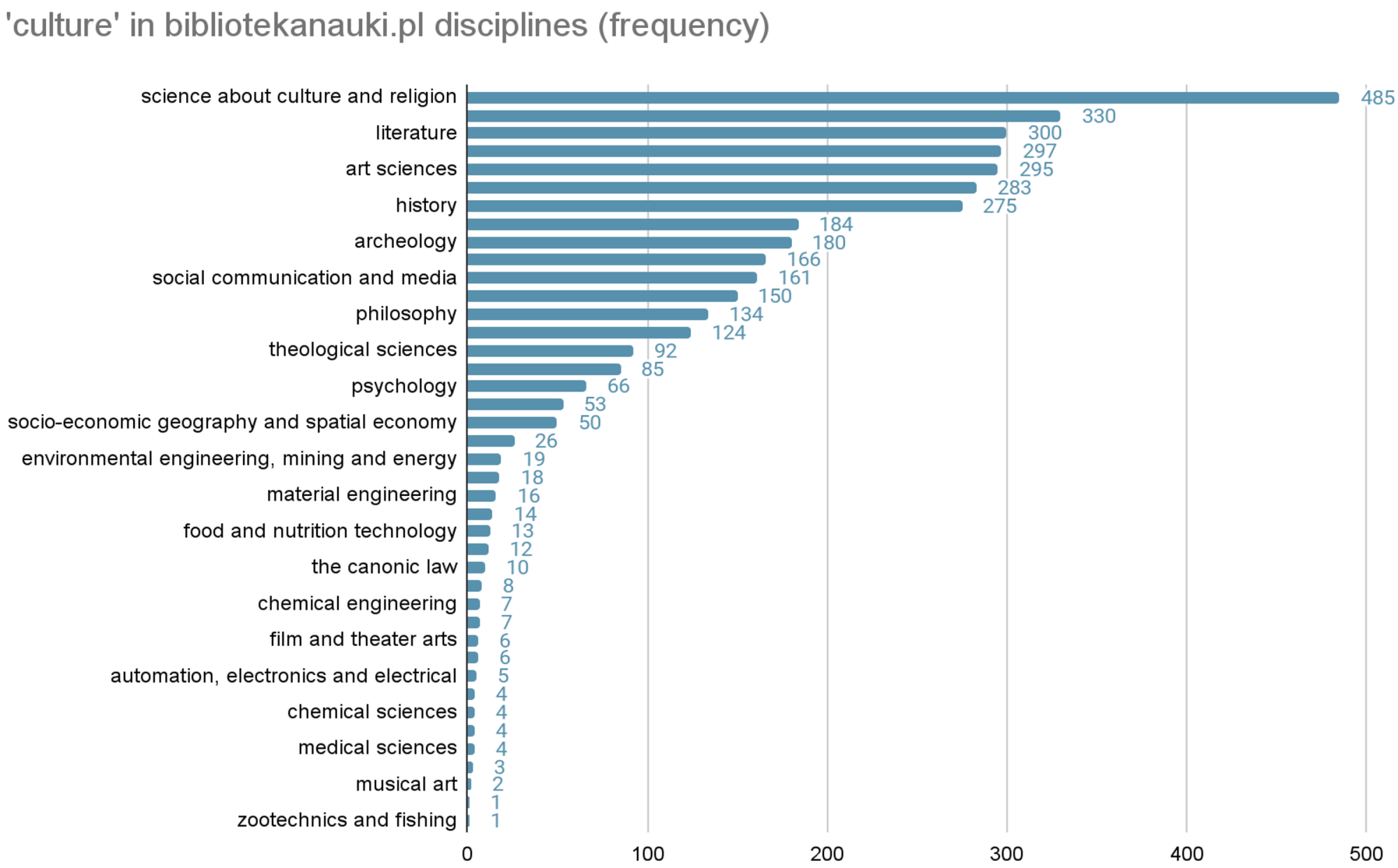

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Using vocabularies to organise keywords

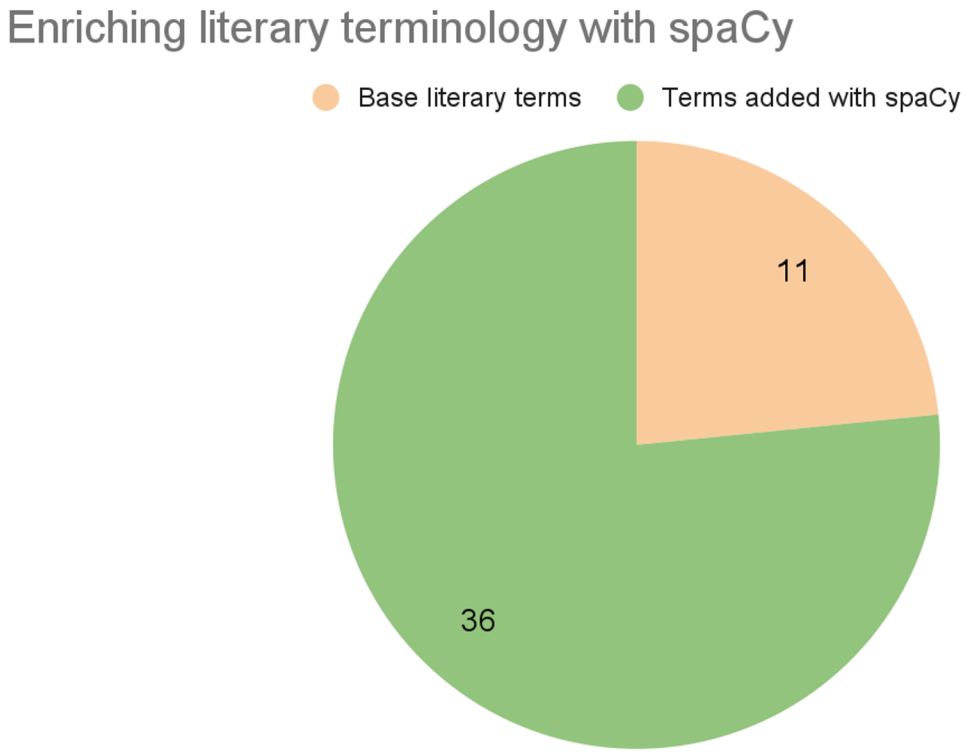
Computations

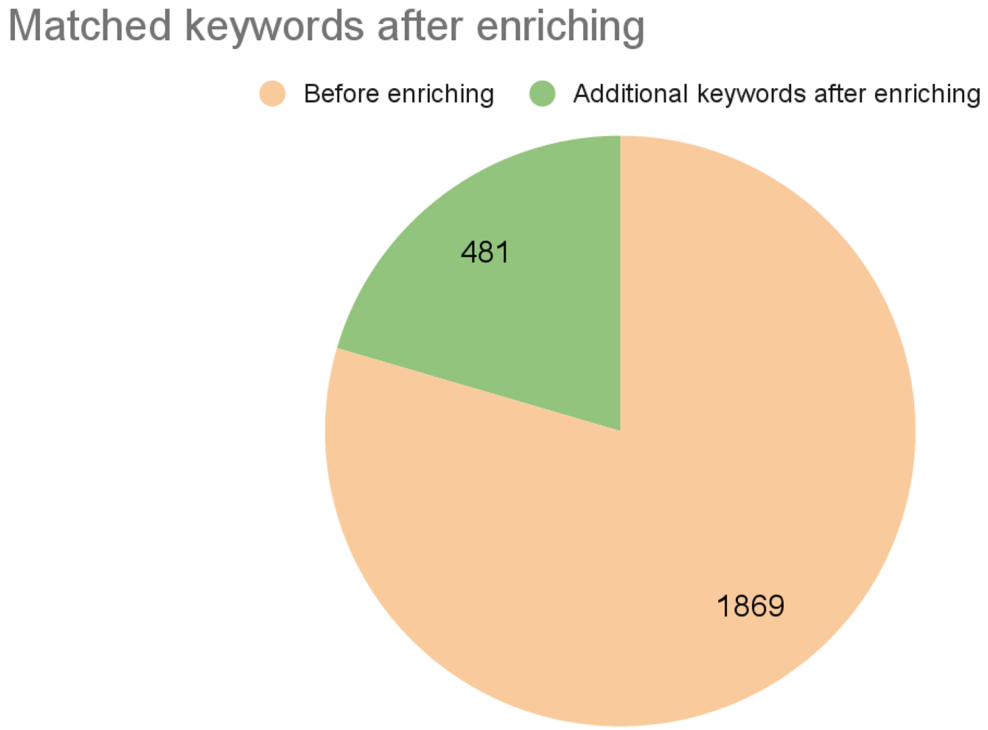
Vocabularies that are actually in frequent use (such as NLSH) – hence are attractive to be used for organising keywords-strings – could offer **limited semantic understanding** of domains or **might represent certain biased**.

Expanding concept understanding through language models

One of the ways to tackle vocabularies' limitations is through the use of language models to expand our understanding of domains.

Expanding concept understanding through language models





Conclusions

1. A lot of SSH content is *not* (properly) described through controlled vocabularies.

2. These descriptions are, however, valuable and improving their FAIR compliance aligns well with EIF and EU Data Strategy. We improve semantic interoperability while respecting contributions of other actors in the data “value chain”.

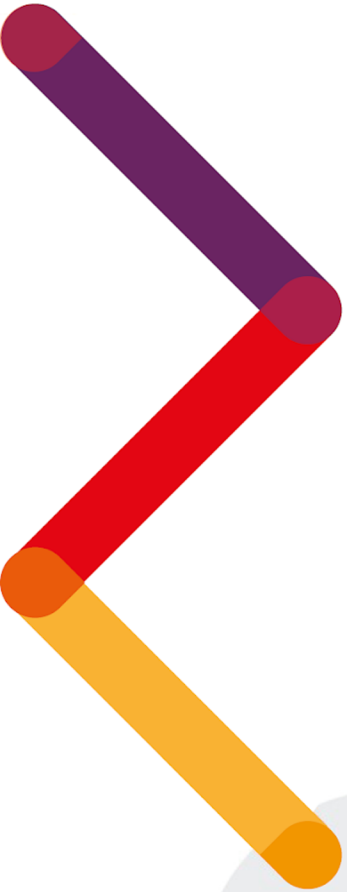
Conclusions

3. Using controlled vocabularies to make keywords-strings more FAIR is worthwhile especially if we use controlled vocabularies which are in frequent use (this adds to existing semantic interoperability).

4. Semantic interoperability in the field of improving quality of subject description demands collaboration between metadata experts and NLP experts. Many challenges are similar, but not exactly the same!

Challenges

5. More exciting opportunities are ahead, including new services development (semantic searching and fuzzy queries support), wider opportunities for international research and facilitating wider SSH data reuse for societal benefit.



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*The **GoTriple** platform will be the Discovery Service of the OPERAS Research Infrastructure.*

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open access in the european research area through scholarly communication

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