Challenges in the Computational Detection of Metaphoric Change in Less-Resourced Languages: A Case Study of Technology-Related Expression in Polish

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Metaphor is one of the primary driving factors of semantic change (Anderson 2017). Among the methods that have been employed to study this phenomenon (Díaz-Vera 2015), computational methods have shown promise in automatically detecting metaphoric change in language (e.g. Schlechtweg et al. 2017). Here, we explore whether detecting metaphorical change in less-resourced languages can potentially be addressed with computational methods that usually require large-sized resources. This study uses two small-sized corpora of historical Polish: KorBa (Kieraś et al., 2017) and PL19 (Łaziński et al., 2023).

We selected 60 technology-related words that are attested in both corpora and analysed their semantic evolution using word embeddings and topic modelling. Both of them can be applied in the study of meaning change because they encode word contexts. With word embeddings, we detected metaphorical shift in, for instance, the word *kolumna* (eng. *column*), whose architectural meaning is attested in KorBa, but metaphorical – related to the arrangement of troops – is only attested in PL19. Topic modelling allowed us to trace the acquisition of metaphorical meaning of the word *rama* (eng. *frame*). Although occurring in documents about personal properties in KorBa, the word started occurring in scientific and religious texts in PL19.

The results suggest that both word embedding and topic modelling are promising methods of studying semantic change, also when used with small-sized corpora.

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