Title
Evolutionary aspects of lexical meaning. A computational phylogenetic study of colexifying meanings

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Abstract

The directionality of meaning change in the lexicon is a problem in traditional comparative models of language reconstruction. Compared to, e.g., phonological and morphological change, the directions of meaning change over time are difficult to reconstruct. Semantic change typically depends on unpredictable socio-cultural and historical changes in speech communities. Other aspects of change may be related to speakers' cognitive and communicative preferences (Meillet 1912; Ullmann 1962; Sweetser 1991). Potentially endless change directions in combination with unpredictable causes for change has led scholars to point out semantics as an area in which it is difficult—if not impossible—to establish general trends (Ullmann 1962; Anttila 1989). The current paper attempts to reconstruct the mechanisms of lexical meaning change by a quantitative model. We use a data set of 104 core concepts in 160 Eurasian languages from several families, which are coded for colexification as well as cognacy, including semantic change of lexemes in etymologies (Carling et al. 2019). In addition, the various meanings are coded for semantic relation to the core concept, including relations such as metaphor, metonymy, generalization, specialization, holonymy, and meronymy. Further, concepts are coded into classes and semantic properties, including factors such as animacy, count/mass, concrete/abstract, or cultural connotations, such as taboo/non-taboo. We use a phylogenetic comparative model to reconstruct the probability of presence at hidden nodes of different colexifying meanings inside etymological trees, similar to what previously has been done for morphosyntactic features (Carling and Cathcart 2021). We find that the reconstructions come close to meaning reconstructions based on the comparative method. By means of the phylogenetic reconstructions, we measure the evolutionary dynamics of meaning loss of co-lexifying meanings as well as concepts. These loss rates are highly varying, from almost completely stable to completely unstable meanings. Loss rates vary between different semantic classes, where for instance wild animals have low rates and domestic animals and implements have higher rates. We find a negative correlation between taboo animals and loss rate, where taboo animals have lower change rates than any other nouns, including other animals. Further, we find a negative correlation between animacy and loss rate, indicating that animate nouns have lower loss rates than inanimate nouns. A further result is a negative correlation between loss rate and degree of borrowing (borrowability) of concepts, indicating that lexemes that are more likely to be borrowed are less likely to change semantically. Among semantic relations, we find that metonymy is more frequent than any other change, including metaphor, and that a change from general to more specific is in all cases more frequent than the other way round.

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