

Department of Philosophy, Linguistics and Theory of Science

# Semantic change in interaction

Studies on the dynamics of lexical meaning

Bill Noble

Thesis submitted for the Degree of Doctor of Philosophy in Computational Linguistics, to be publicly defended, by due permission of the dean of the Faculty of Humanities at the University of Gothenburg on April 20, 2023 at 13:00 in J222 Hörsalen, Humanisten, Renströmsgatan 6, Gothenburg.

*opponent* · Associate Professor Casey Kennington, Boise State University



UNIVERSITY OF GOTHENBURG

<i>title</i>	·	Semantic change in interaction: Studies on the dynamics of lexical meaning
<i>author</i>	·	Bill Noble
<i>supervisors</i>	·	Staffan Larsson, Asad Sayeed
<i>language</i>	·	English
<i>department</i>	·	Department of Philosophy, Linguistics, and Theory of Science
<i>ISBN</i>	·	978-91-8069-205-2 (print) 978-91-8069-206-9 (PDF)
<i>key words</i>	·	semantic change, linguistic variation, computational linguistics, machine learning, formal semantics

This compilation thesis investigates how word meanings change. In particular, it's concerned semantic change at the levels of *interaction* and the *speech community*. To this end, the compiled studies employ methods from both formal and computational semantics.

The first study presents a model for, and companion annotation study of, *word meaning negotiation*, a conversational routine in which the meaning of a word becomes an explicit topic of conversation. The next two studies introduce and apply *classification systems*, a model of communal conceptual resources for ordering and talking about a particular domain. We use a formalization thereof to model how *genus-differentia definitions* can be used in interaction to update lexical knowledge of perceptual categories. The next study considers a related phenomenon, *perceptual category description*, but this time from a computational perspective. By modeling a short interaction between two neural networks, we investigate how different ways of representing perceptual categories affect linguistic grounding. Following that, we turn to the dynamics of social meaning, particularly the meaning of implicit conversational assumptions called *topoi*, with a focus on situations of involving uncertainty about the speaker's social identity. The final two studies of the thesis shift the focus from particular interactions to the level of the community. First, we investigate linguistic variation using *community conditioned language models* to learn vector representations for a collection of online communities. These language-based representations are found to correlate with community representations based on community membership alone. Finally, we use diachronic distributional word vectors to study *short-term semantic shift* in online communities. We find that semantic change has a significant yet nuanced relationship with the social structure of the community.

Altogether, the compilation offers two main insights. First, semantic plasticity is directly related to the complexity of the lexical semantic system. Words exhibit both perceptual and inferential meaning potential, each of which play a role in conveying and learning new meanings. Monolithic representations of word meaning belie a structured flexibility that guides how words can be used, while providing opportunities for innovation. It is this flexibility that is often the site of new conventionalized meanings. Second, semantic change is rooted in the interactive practices of the community. Communities sustain the communicative norms that govern how linguistic interaction takes place. These norms also provide a framework for negotiating meaning, and comprise the social and semiotic context that supports semantic innovation and change.