

The Interaction of Bayesian Pragmatics and Lexical Semantics in Sentence Meaning Composition

We contrast two views of how contextual influence on sentence meaning composition can be explained. The Semantic Similarity View maintains that discourse context affects the semantic composition of a sentence only by means of the semantic similarities between the words in the discourse context and in the sentence. Pragmatic factors of the discourse context do not effect sentence meaning composition. This view is thus consistent with a rigorous interpretation of the principle of compositionality as favored by semantic minimalists and according to which the truth-evaluable semantic content of a sentence is fully determined by its syntactic structure and lexical content where only a small number of lexical items (e.g., indexicals and anaphors) allow for a context-sensitive meaning contribution (Borg, 2004, 2012). The Free Pragmatic View, in contrast, challenges a rigorous notion of compositionality and maintains that pragmatic aspects of the discourse context can affect sentence meaning composition directly: Pragmatic discourse information can modulate meanings at every node in the semantic composition tree (Recanati, 2010, 2012). This phenomenon can be quantitatively modelled by Bayesian Pragmatics (Frank & Goodman, 2012). We introduce a Predictive Completion Task in which the hearer at every moment in a communicative situation has to generate a probabilistic prediction about how a discourse being uttered by the speaker is continued (Cosentino, Baggio, Kontinen, & Werning, 2017; Werning & Cosentino, 2017). We test the predictions of the two views in EEG using the well-established observation that the conditional probability of a word given a context is negatively correlated with the amplitude of its N400 component (Kuperberg & Jaeger, 2016). The results speak strongly in favor of the Free Pragmatic View and against the Semantic Similarity View.

References

- Borg, E. (2004). *Minimal Semantics*. Oxford: Clarendon Press.
- Borg, E. (2012). *Pursuing Meaning*. Oxford University Press.
- Cosentino, E., Baggio, G., Kontinen, J., & Werning, M. (2017). The time-course of sentence meaning composition. N400 effects of the interaction between context-induced and lexically stored affordances. *Frontiers in Psychology*, 8(818). <http://doi.org/10.3389/fpsyg.2017.00813>
- Frank, M. C., & Goodman, N. D. (2012). Predicting Pragmatic Reasoning in Language Games. *Science*, 336(6084), 998–998. <http://doi.org/10.1126/science.1218633>
- Kuperberg, G. R., & Jaeger, T. F. (2016). What do we mean by prediction in language comprehension? *Language Cognition & Neuroscience*, 31(1), 32–59. <http://doi.org/10.1080/23273798.2015.1102299>
- Recanati, F. (2010). *Truth-Conditional Pragmatics*. Oxford University Press.
- Recanati, F. (2012). Compositionality, Semantic Flexibility, and Context-Dependence. In M. Werning, W. Hinzen, & E. Machery (Eds.), *Oxford Handbook of Compositionality* (pp. 175–191). Oxford: Oxford University Press.
- Werning, M., & Cosentino, E. (2017). The interaction of Bayesian pragmatics and lexical semantics in linguistic interpretation: Using event-related potentials to investigate hearers' probabilistic predictions. In G. Gunzelmann, A. Howes, T. Tenbrink, & E. Davelaar (Eds.), *Proceedings of the 39th Annual Conference of the Cognitive Science Society* (pp. 3504–3509). Austin, TX: Cognitive Science Society.