

Distinctive Feature Matrices in Fluid Construction Grammar

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Abstract

Language users are confronted with a huge search space when processing linguistic utterances, and they unavoidably have to deal with multiple hypotheses when parsing a sentence. One of the main functions of grammar is therefore to restrict the set of possible combinations and to guide the language user through this search process. However, grammatical constructions are polysemous and can have different functions in different contexts. A big challenge for grammar formalisms is therefore to represent this multifunctionality in such a way that both captures the necessary generalizations and constrains the search space.

In this talk, I will demonstrate how the use of ‘distinctive feature matrices’ provides an elegant and efficient way of capturing grammatical constraints where traditional approaches would opt for distributed disjunctions or complex type hierarchies. Distinctive feature matrices can best be thought of as feature bundles that explicitly represent grammatically relevant distinctions. More specifically, I will focus on how such matrices can be exploited for representing case syncretism for German definite articles. The demonstration makes use of Fluid Construction Grammar, a (more procedurally-oriented) grammar formalism that is capable of both producing and parsing utterances using the same grammatical constructions and processing mechanisms (‘unify’ and ‘merge’; De Beule and Steels, 2005; Steels and De Beule, 2006), as opposed to (most) declarative formalisms that compile their grammars into separate parsing and production procedures.

References

- Joachim De Beule and Luc Steels. Hierarchy in Fluid Construction Grammar. In Ulrich Furbach, editor, *KI 2005: Advances In Artificial Intelligence. Proceedings of the 28th German Conference on AI*, volume 3698 of *Lecture Notes in Artificial Intelligence*, Koblenz, 2005. Springer.
- Luc Steels and Joachim De Beule. Unify and merge in Fluid Construction Grammar. In P. Vogt, Y. Sugita, E. Tuci, and C. Nehaniv, editors, *Symbol Grounding and Beyond.*, LNAI 4211, pages 197–223, Berlin, 2006. Springer.