Unifying Linguistic Theories of Syntax and Semantics

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My current research is structured along two parallel lines. One is aimed at unifying two major theoretical paradigms in linguistic meaning and the other one is targeted at unifying some theories of human language syntax. Human language meaning has properties of both (embodied) cognitive representations and formal/mathematical structures. While cognitive/conceptual representations are ultimately rooted in sensory-motor systems, formal-logical structures of linguistic meaning are abstractions detached from and independent of the actualized world. Hence, it is not clear how these two types of representations of linguistic meaning can be reconciled. How properties of cognitive representations and formal/mathematical structures of natural language meaning can be united remains one of the puzzles in cognitive science.

A number of my recent papers sketch out the foundations of how representations of linguistic meaning in terms of cognitive/conceptual structures in Cognitive/Conceptual Semantics can be (potentially) unified with those in terms of formal-logical structures in Formal Semantics. Recently, I've consolidated this work on unifying two paradigms in linguistic semantics—formal semantics, concerned with a mathematically formalized model of linguistic meanings and cognitive semantics, concerned with the mental or cognitive representations that underlie linguistic meanings.

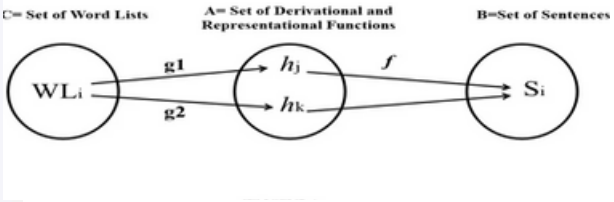
Clearly, these two paradigms are incompatible, and the tensions between them go far beyond the scope of formal linguistics. In my current book entitled 'The Cognitive Variation of Semantic Structures' (London: Routledge, 2024) and a series of journal papers, I've formulated the equations for the unification that can be utilized for the exploration of the cognitive constraints and principles underlying different kinds of semantic structures across languages that may help secure a firmer basis for a kind of cognitively-oriented semantic typology.

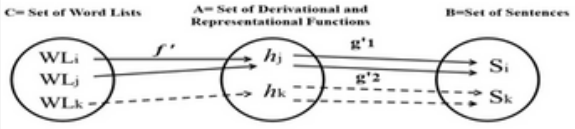
Most importantly, this work proposes to do this by unifying the formal properties of linguistic meaning (as in formal semantics) with the cognitive properties (as in cognitive/conceptual semantics) because formal and cognitive properties of linguistic meaning have long been considered to be incompatible in current theorizing on linguistic semantics. A number of my recent papers explore themes on the unification of the formal and cognitive approaches to linguistic meaning further.

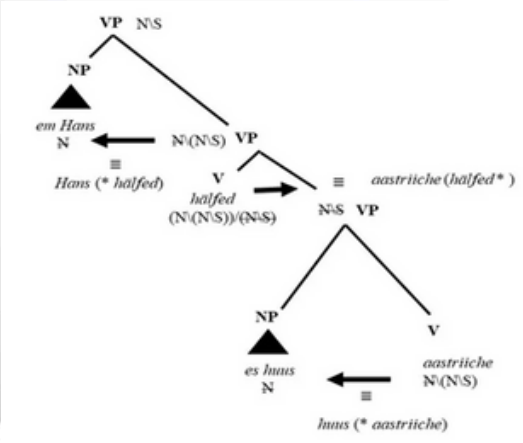
Further, my PhD scholar KNSR Ratna and I have worked together on a topic that I'm most excited about at present.

I've formulated a number of mathematical principles that can help unify the formal representations of linguistic structures in three important formalisms in linguistic theory, namely Phrase Structure Grammar (PSG), Dependency Grammar (DG) and Categorial Grammar (CG). Hence, we have formulated a number of mathematical derivations that can help unify the formal representations in all three grammar formalisms that have been considered both conceptually divergent and also incompatible in their empirical coverage for decades.

The goal is not to unify PSG, DG and CG, but rather to sketch out a way of representing discontinuity by uniting constituency relations (as in PSG), head-dependent relations (as in DG) and functor-argument relations (as in CG) for the encoding of discontinuous expressions in natural languages. This work is now published in conference proceedings papers and a journal, and further research is also underway.







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