

Proposal for the Computational Implementation of the Semantics of Hungarian Verbs

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The syntactic description of Hungarian verbal argument structure proves to be insufficient for a semantically adequate treatment of verbs, although up-to-date research in computational linguistics seems to confirm the inevitability of semantic representation.

In our paper we make a proposal for how to enrich an already existing valency dictionary with linguistically appropriate semantic representation. The framework we implement is Ray Jackendoff's Conceptual Semantics: the lexicon consisting of CS representations is monotonically extensible, it is hierarchical (more specific elements inherit a part of their meaning from more general elements), and the representation can be related to the WordNet ontology. Such meaning representations make it possible to draw adequate inferences the way people do while using natural language. One of the most advantageous properties of this framework is that it allows of capturing relevant generalizations over large classes of verbs.

However, applying a framework designed for dealing with English phenomena to Hungarian language raises several specific problems. The structure of Hungarian language does not make it possible to treat morphology, syntax and semantics as independent modules using each other's output in a pipeline process. The rich morphology of Hungarian language completes several tasks that are assigned to syntax in English.

As opposed to the picture of an independent semantic module interpreting the output of syntax, we hypothesize a bidirectional, dynamic interaction between syntax/morphology and semantics. The semantic representation consists of nine basic ontological types but this set can be extended as required. The denotations of the "semantically simple" words of natural language belong to one of these basic types, while "semantically complex" words are represented as functions that, besides the basic categories, may contain other functions. Syntactic analysis and mapping to the semantic representation take place in a parallel manner. In case of structural homonymy, the structure of the semantic representations associated with the possible senses helps the system to choose the correct syntactic analysis of the sentence. This approach offers a relatively simple treatment for certain types of metonymy and ambiguity.