

Project Proposal for the Lendület Programme:

Formal Semantics and Dialogue Theory
Research Institute for Linguistics, HAS
Principal Investigator: Marcus Kracht

Goals of the Project

The project aims to establish a unified logical perspective on pragmatics and semantics in natural language. In particular, this will include the following.

- _ Develop a logical language and a formal model theory of meaning and communication. This will include modelling actions and utterances alike. Moreover, this logic will model not only communication but crucially also reasoning by agents in a network.
- _ Implement this logic on a computer. This will allow to check the predictions made by the theory as well as determine the computational properties.
- _ Use this logic to analyse speech acts and communication. Compare how the logical theory classifies speech acts and how that is reflected in existing theories.
- _ Try to establish the interplay between content and dialogue structure.
- _ Look at commercial applications, for example in business communication, and emerging technologies such as the pragmatic web.

Time line of the project:

Year 1. Development of the logical framework. Analysis of linguistic elements (eg performatives, discourse particles, verbs of mental attitude or thought) in connection with the interaction between action and mental state. Specification of the computer implementation and preliminary design of the components.

Year 2. Develop the computer implementation of the logical framework according to the specification. Look in detail at natural language speech acts.

Year 3. Develop an integral theory of natural language discourse based on the logic approach. Implement and test it using the computer implementation.

Year 4. Study properties of protocol in connection with speech acts. Work on the interactions between dialogue structure and semantics.

Year 5. Work out the potentials of the new theory of dialogue. Compare natural dialogue with the predictions. Work on improving the theory to meet the challenge of natural dialogue both in terms of predictions and computational properties.

The results of this research will be published at major conferences (for example the SIGDial, (E)ACL, WoLLIC), and in major journals (Computational Linguistics, Research in Language and Computation, Journal of Logic, Language and Computation). It is planned to publish around 3 articles/conference papers a year in addition the development of software (model checker).