Formalism for the Usage of Natural Language

Yvonne Meeres

Max Planck Institute for Meteorology

Abstract. Defining a formal language not for natural language itself but for the speaking of natural language, we gain insights into new algorithms and into foreign language teaching.

Motivation

My motivation is twofold:

1. problems mastering a foreign language
2. imitate natural language algorithms for robust communication in technical systems.

Learners of foreign languages have problems to master certain aspects of the new language even if they spend years learning it. The presented formalism for grammar teaching books sheds light on the possible reasons for the learning problem.

Apart from that natural language uses interesting algorithms to make communication robust. Technical systems can use this mechanism to achieve a robust communication.

Methodology

The teaching material for foreign languages will be formalized with a formal language. Complexity measurements are defined to make hypothesizing possible. With the help of these formalisms the grammars can be optimized concerning different complexity measurements.

Future Outcome

A deep understanding of the robustness and the complexity of natural language will be achieved. This research is in progress. The formalisation as well as the complexity measurements are in progress with already some of the desired insights gained.

Outlook

The application of the above formalism is widespread, ranging from cognitive science and natural language research to algorithms for a variety of technical systems.