

# Shared Conceptual Knowledge for Natural Language Reasoning

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The aim of this PhD project is to investigate the relationships between the ontological knowledge and the linguistic description of the natural language and to develop a formal framework combining these two different sources of information for the goals of reasoning.

It is a trivial fact that for understanding natural language expressions it is not enough to know dictionary word meanings and compositional rules of a language. In the most of the real-life situations one has to have a lot of additional world knowledge in order to follow a discourse. The project concentrates on language phenomena which are known to require extensive knowledge for their resolution such as ambiguity, anaphora, bridging, ellipsis, temporal relations, metonymy. The interplay of different existing ontological and lexical resources (foundational ontologies such as SUMO<sup>1</sup> and DOLCE<sup>2</sup>, lexical resources such as WordNet<sup>3</sup>, FrameNet<sup>4</sup> and VerbNet<sup>5</sup>) involved in a natural reasoning procedure is investigated.

The practical outcome of this research consists in a procedure that enriches an output of a syntactic parser with the conceptual knowledge enabling access to external conceptual resources and inference of new pieces of information from the information expressed in a natural language form explicitly.

In the current phase of the project I am especially focusing on involving FrameNet in a reasoning procedure. Attention is paid to the conceptual organization of this resource and its possible restructuring for the goals of reasoning. Ontological status of frames is investigated with a perspective on mapping FrameNet on the DOLCE foundational ontology.

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<sup>1</sup> <http://www.ontologyportal.org/>

<sup>2</sup> <http://www.loa-cnr.it/DOLCE.html>

<sup>3</sup> <http://wordnet.princeton.edu/>

<sup>4</sup> <http://framenet.icsi.berkeley.edu/>

<sup>5</sup> <http://verbs.colorado.edu/~mpalmer/projects/verbnet.html>