

DEEP CASES FOR ADVERBIAL AND PREPOSITIONAL PHRASES

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0. Purpose

This paper attempts to demonstrate the usefulness for Machine Translation of a case-oriented description of the syntactic and the semantic behavior of adverbial and prepositional constructions.

We aim to modify and refine the existing descriptions of adverbs and prepositional phrases in order to put them to efficient use in Machine Translation. We hope to point out, furthermore, the desirability of incorporating deep case information into the 'interface structure' of a Machine Translation system.

1. Task-specific requirements on parsing

Parsing sentences for translation purposes is bound to differ in significant ways from parsing natural language for other tasks. In this paragraph, we will formulate a number of translation-specific requirements on natural language analysis which, moreover, will be of particular interest in the discussion of the issues in the following paragraphs.

2. Surface cases, deep cases and conceptual cases

A much debated issue in AI is the desirable depth of the case system employed in natural language understanding programs. From the preceding paragraph, however, it will have become apparent that, in Machine Translation, one could better

make use of various case systems of increasing depth. In this paragraph, we will be concerned with the definition of the three types of cases we consider to be adequate for translational purposes: (i) surface cases reflect the dependency relations which exist between constituents and their governors; (ii) deep cases provide information about the valency boundness of the participants in the predication; (iii) conceptual cases are language-independent values which give information about the states of affairs people talk about.

3. Deep cases for adverbial and prepositional phrases

It is common practice in valency grammar to assign the properties + valency-bound or - valency-bound to constituents. We hope to show that this dichotomy is inadequate for dealing with natural language in general, and with adverbial and prepositional phrases in particular. The discussion will aim at introducing a third property to the set of deep cases commonly used: the 'transpositional case'.

The main part of this section will be devoted to the definition of the transpositional case. We will point out the descriptive and computational advantages of the three-case system proposed, on the basis of examples. This will lead to a classification of adverbial and prepositional constructions which differs in a considerable way from the one traditionally used in linguistics. Further attention will be expended to constructions other than adverbial and prepositional ones, which should as well be labeled transpositional.

4. Conclusion

In the final paragraph, we will briefly sketch the need of introducing the transpositional case into the set of deep case relations, by showing that its omission would lead to bad translations.