

XX. MECHANICAL TRANSLATION

THE GERMAN NOUN PHRASE

The work on the description of the German noun phrase continues. It has been intended to include the description of the semantic correlates of syntactic structures.

This problem can be characterized as follows.

The description of a specific structure can be presented in the form of an ordered set of rules, the application of which will permit the generation of the structure in question. At various points in the set of rules, a decision is made to apply one rule rather than another. This choice determines the selection of some of the later rules to be applied, or it may determine that at a later point in the set of rules, more choices will have to be made. The problem that is relevant for mechanical translation is: How can the factors determining these choices be characterized? As an example, consider the following case: With a noun stem as the head of the noun phrase, the adjectival modifier may occur in a post-nominal relative clause or as individual words in prenominal position between the article and the noun. These two structures are the results of the application of different sets of rules in the construction of the noun phrase, that is, the set of rules are identical up to a certain point, after which they diverge. The question to be answered is: What factors influence the choice of rules which in one case will place the modifier in a clause, but in the other case place it before the noun?

It should be possible to represent the factors affecting the choice of specific sets of rules that are to be applied in such a way that given the representation, a corresponding set of rules can be automatically selected from the total set of rules for producing grammatical structures; that is, the representation serves as a specifier for a given structure. The converse is also possible; that is, given a specific structure, it should be possible to determine, first, the set of rules applied to construct it, and second, the specifier that represents this set of rules. Since the process of translation is conceived as a three-step process: (a) analysis of a sentence in the source language to obtain a sentence specifier, (b) conversion of the source language specifier to the target language specifier, and (c) construction of the sentence in the target language from the specifier, a solution to the problems mentioned is essential to the preparation of a translation program.

Additional work on the manipulation of grammatical rules in human communication is also being done. Investigation of the processes involved in converting utterances produced by the application of one set of rules to those produced by the application of another set that differs by one or two rules, or in the order in which the rules are applied will be useful in preparing programs for the conversion of sentence specifiers.

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