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Necessity of Introducing Some Information Provided by Transformational Analysis into MT Algorithms

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A few examples of ambiguous English constructions and their Polish equivalents are discussed in terms of the correlation between their respective phrase-marker representations and transformational analyses. It is shown by these examples that such an investigation can reveal interesting facts for MT, and therefore should be carried out for any pair of languages for which a given MT program is being constructed.

If the phrase-marker of the English construction is set into one-to-one correspondence with the phrase-marker of the Polish equivalent construction, whatever particular transformational analysis of this construction is to be taken into account, then the ambiguous phrase-marker representation can be used as a syntactical model for MT algorithms with good results.

If the phrase-marker of the English construction is set into one-to-many correspondence with the phrase-markers of the Polish equivalents, according to the transformational analyses of this construction, then the ambiguous phrase-structure representation has to be resolved in terms of transformational analysis, for only then is it possible to assign the corresponding phrase structure representation to the Polish equivalents.

A tentative scheme of syntactical recognition is provided for the multiply ambiguous adjectival construction in English¹ (which proved to belong to the latter case) by means of introducing some information obtained from the transformational analysis of this construction.

The Use of a Random Access Device for Dictionary Lookup

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The purpose of this paper will be to present a scheme to locate for single textual items and idioms in textual order their corresponding dictionary entries stored in an IBM 1301 random access mechanism.

Textual items are considered to be 24 characters in length (left justified with following blanks). A dictionary entry consists of a 24 character Russian form,

¹ cf. the paper by Robert B. Lees, "A Multiply Ambiguous Adjectival Construction in English", *Language* 36(1960).

grammar information for the form and a set of translations for that form. Dictionary entries are packed into sequential tracks of the 1301. This paper will cover the method used for dictionary storage.

The lookup for a textual item I first consists of a search for the first track that the dictionary entry E (if one exists) for I could be stored in. Once a track has been determined its contents are searched in core by a bisection convergence technique to find E. If E cannot be found, a "no entry" indication is made.

If E is found a further search is made of the dictionary to find the longest sequence of text, starting with the first item I, that has a dictionary entry. The last such entry found is picked up.

Included in the presentation will be examples of the dictionary lookup output for actual text.

Generative Processes for Russian Impersonal Sentences

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Impersonal sentences of Russian are those traditionally construed to consist of predicates only. Ever since the first Russian grammar was compiled, they have continued to pose a problem for grammarians. This paper is intended to be a review and evaluation of all types of the so-called impersonal sentences in the Russian language. The investigation of these sentences has been conducted in terms of their relationships to basic (kernel) sentences. Our paper attempts to define the origin for such impersonal sentences, i.e., how such sentences might be derived within the framework of a generative grammar from a set of rules possessing maximal simplicity and maximal generative power. The long-range aim of this investigation involves the most efficient manipulation of such sentences in a recognition device for Russian-English MT.

Concerning the Role of Sub-Grammars in Machine Translation

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The comprehensive grammars being developed at the Linguistics Research Center of the University of Texas will be too large for easy access and manipulation in either experimental programs or practical translation. It is necessary, therefore, to devise some reliable method for selecting subsets of the grammar rules which will be reasonably adequate for a given purpose. Since