

C. SENTENCE-MEANING AND WORD-MEANING

In Quarterly Progress Report No. 66 (pages 289-293), I pointed out that it is necessary for an understanding of the semantical behavior of those morphemes that function as structural-constants¹ to distinguish between sentence synonymy and word synonymy. The principle underlying this view is that it is the particular configuration of structural constants belonging to a well-formed grammatical string which gives rise to the fundamental sentence-meaning, the meaning of each individual structural-constant, as a morpheme, remaining constant - hence the term 'structural-constant' - but the meaning of each configuration varying, the variation depending upon both the structural properties of the configuration and the particular indispensable structural-constants that occur in it.

This semantical theory has been constructed to apply only to the analysis of the meanings of structural-constants and their interlocking relationships and does not attempt to cover the analysis of the meanings of lexical items that function as denotative terms. It is the author's opinion that different methods are required for the semantical analysis of those morphemes that function denotatively and those that function structurally. This method of analyzing the meaning of structural-constants and their various configurations departs quite radically from the methods proposed thus far which have been formulated primarily to handle denotative terms. In this theory, the denotative morphemes are treated as variables, only the class over which they range having structural significance. Thus, although it makes a great deal of difference to the total meaning of a sentence whether Jane or John is named as the subject or object of an action and whether the particular activity or relationship named by the verbal is of a certain kind, appropriate substitution of one member of a set for another does not alter the basic sentence-type, nor do such substitutions alter the fundamental sentence-meaning.

For an illustration of this theory, let us look at the following sentence:

(1a) If John is to be president, he must get his organization ready now.

In sentence (1a) the fundamental sentence-meaning is: John's getting his organization ready now is a necessary condition of his being president. The event denoted by the

clause 'John is to be president' has not occurred nor does the sentence as a whole claim that it ever will, since the getting ready of the organization is not the sufficient condition of being president. Some sentences that are synonymous with sentence (1a) which are important in that they express the same fundamental meaning with a complete change of structural-constant, are

(1b) Unless John gets his organization ready now, he can not be president.

(1c) Only if John gets his organization ready now, can he be president.

It should be noted that the fundamental sentence-meaning of the above synonymous sentences, when it can be expressed through a symbolic notation, will be logical in form, not grammatical. Grammatically, the form of sentence (1a) has the shape that 'If John is to be president' is the dependent clause, whereas 'he must get his organization ready now' is the independent clause. In sentence (1b), 'Unless John gets his organization ready now' becomes the dependent clause, and in sentence (1c) 'Only if' subordinates that which in sentence (1a) was the independent clause to the dependent clause. Thus, from the point of view of grammatical form, either elementary sentence can be subordinated to the other without a change in fundamental sentence-meaning. Logically, however, the event denoted by the sentence 'he is to be president' is dependent for its existence upon the previous occurrence of the event denoted by the elementary sentence 'he gets his organization ready now'. The symbolic notation, formulating the fundamental sentence-meaning, must express this physical dependency. Thus far, no new notation expressing explicitly the relations of necessary and sufficient conditions has been introduced into the formal logical systems.² Expanding the logical notation of the formal systems will be a necessary step in establishing rules for coordinating sets of synonymous strings of one language system to sets of synonymous strings from another language system so that a sentence-by-sentence translation can be carried out.

Sentence (1a) can be expressed as a partially interpreted sentence-type, i. e. , a sentence-type whose indispensable structural-constants that form the configuration expressing the fundamental sentence-meaning are explicitly indicated and whose denotative morphemes are indicated only by the class to which they belong.

(1d) If x is to be f , then x (or y) must g .

Sentences (1b) and (1c) can easily be put into abbreviated schematical forms. The combination of a partially interpreted sentence-type set up as equivalent to another represents a tautology whose major connective is an equivalence. Each tautology is a transformation law. It is to be noted that the transformation laws for every language are obtained by empirical observation; the sentences established as transforms of each other must be synonymous in actuality.

To show how vital to sentence-meaning the particular configuration of structural-constants is, let us alter sentence (1a) by affixing to it just one morpheme, the structural-constant, 'even', in prenex position.

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(2a) Even if John is to be president, he must get his organization ready now.

The sentence-meaning of sentence (2a) is immediately seen to be quite different from sentence (1a) which expresses a relation of necessary condition. The fundamental meaning of sentence (2a) is that the accepted fact of John's being president in the future is unexpectedly not the sufficient condition of John's not having to get his organization ready now. When the structural-constant 'even' enters into the configuration of indispensable structural-constants belonging to sentence (1a), there is an immediate effect upon the 'meaning' of the individual morphemes: the event of John's being president is now known to take place in the future, 'is to be' thus becoming a simple future tense instead of being an indispensable structural configuration expressing necessary condition; the auxiliary 'must' represents no longer an indispensable structural feature. Sentence (2a) is synonymous with sentences of the following set:

(2b) Although John is to be president, he must get his organization ready now.

(2c) In spite of the fact that John is to be president, he still must get his organization ready now.

(2d) If John is to be president, he must get his organization ready now anyway.

Sentence (2d) shows very clearly that the listener must be aware of the total structural configuration of a sentence before he can determine the meaning of the sentence, since sentence (2d) is exactly like sentence (1a) in shape except for its very last morpheme 'anyway'. The morpheme, 'even', in prenex position, prepares us psychologically for a second clause denoting an unexpected event; 'anyway' psychologically springs the eve denoted by the second clause as a surprise. The partially interpreted sentence-type to which sentence (2a) belongs is

(2e) Even if x f's, x (or y) must g .

The distinction between sentence-meaning and word-meaning is particularly important in clarifying the semantic nature of the free-variables 'any', 'ever', 'whatever', and other related morphemes. Only if the two concepts are carefully kept separate can one explain how it is that the meaning or the definition of the free-variable can remain constant but the sentence-meanings of the structural configurations in which the morpheme occurs can vary.²

Whereas it appeared at one time to me that free-variables were the only structural constants that behave in this peculiar way of apparently shifting in meaning in different contexts, recent investigation has convinced me that this 'peculiar' behavior attends many of the structural-constants.

This theory opens the way to a solution of linguistic problems that have plagued grammarians for a long time. I have recently proposed a solution⁴ for determining the proper occurrence of free-variable morphemes in sentences whose import has been termed negative by grammarians, although their grammatical forms contain neither explicit nor implicit negative morphemes: One of the results was to show that this

'negative' import, ascribed by grammarians to morphemes such as 'few', 'little', 'only', 'too', and 'hardly' as opposed to their respective polar words 'many', 'much', 'all', 'enough', and 'almost' had been obtained by the replacement of the original non-negative sentence under discussion by a negative sentence synonymous to it. The negative sentence had been derived by an unformulated, intuitive recognition that sentences as wholes are related semantically as synonymous although the negative quality was erroneously assigned to a particular morpheme rather than to the sentence-meaning as a whole. However, by selecting only one negative grammatical string as representing the canonical grammatical form of the sentence under consideration, they failed to see that there are many synonymous sentences, some negative in form, some positive. Thus it was not possible for them to understand the real function of the structural-constant; they had considered as 'negative' a morpheme that is not itself negative because the selected structural-constant can occur in other configurations that do not give rise to a negative fundamental sentence-meaning. Furthermore, since, by the rules that transform one grammatical string into another grammatical string preserving the original sentence-meaning, one can always transform a string in which no negative morphemes appear into a synonymous string in which negative morphemes do appear, the explanation offered appears very arbitrary. One has only to look at sentence (1a) and the sentences synonymous to it to see this point. In sentence (1a) there is no explicit negation, but in sentence (2b) when 'unless' occurs in the first clause, an explicit negation 'not' must occur in the second clause, but if 'only if' occurs in the first clause, the negation must disappear if the fundamental sentence-meaning is to be preserved. It is this constant interplay of structural-constants that the early grammarians overlooked. They relied upon intuitive semantic paraphrasing only when they were forced into it by the need of explaining certain phenomena in the language under analysis. The author is writing a paper on the problem of the occurrence of free-variable morphemes within these so-called negative contexts.

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References

1. For explanation of 'structural-constant', see Elinor K. Charney, On the Semantical Interpretation of Linguistic Entities That Function Structurally, paper presented at the First International Conference on Mechanical Translation of Languages and Applied Language Analysis, National Physical Laboratory, Teddington, England, September 5-8, 1961.
2. Elinor K. Charney, Linguistic analogues of the free-variable, Quarterly Progress Report No. 64, Research Laboratory of Electronics, M.I.T., January 15, 1962, pp. 208-211.
3. For examples of 'all' and 'only', see Elinor K. Charney, On the problem of sentence synonymy, Quarterly Progress Report No. 66, Research Laboratory of Electronics, M.I.T., July 15, 1962, pp. 289-293.

(XXI. MECHANICAL TRANSLATION)

4. Elinor K. Charney, On the Occurrence of Free-Variables in Sentences of "Negative" Import, lecture presented at Linguistics Seminar, Research Laboratory of Electronics, M. I. T. , November 9, 1962.