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ANALYTIC/SYNTHETIC AND SEMANTICS.

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I. Introduction.

In this paper we enumerate the main functions in terms of which semantics is justified. We remark that primarily the function of representing explicit verbal definitions is taken into account by most authors when constructing a semantic system. This is based on the hypothesis that explicit definitions mirror semantic relations. We ask if this is justified. Are the explicit verbal definitions not derived from a synthetic system of interrelations between terms ?

To answer this question we look at a set of explicit verbal definitions. These fall into three classes. From the analysis of each we make the point that each type is synthetic. By referring to the cognitive tendency to simplify information, we hypothesize an explanation for the impression of analyticity of type II_B definitions.

Subsequently we sketch our approach to a methodological synthetic semantics, and illustrate with an example. Our results are corroborated by confronting our system with a set of explicit definitions from our informants.

II. Explanation and semantics.

In the literature on semantics, a lot of adequacy requirements appear : efficient realizations of deductions (e.g. Shank 1975, p.37); question answering

and paraphrasing (e.g. Winograd 1973); translation (Steiner 1975); resolving ambiguity (e.g. Katz); explaining analogies and differences between sentences (e.g. Norman and Rumelhart),... . The most important function, however, for semantic systems, or that which seems to be taken most strongly into account by semanticists, is without doubt : the explicit verbal explanatory behavior. In the work of e.g. Katz, Shank, Hays, Winograd, Norman and Rumelhart, Weinberg, Jackendoff and Lakoff, the explaining of verbal terms (sometimes called concepts) is basic. All the other roles mentioned above are only secondary.

Some rare authors have criticized this. Thus Minsky (1975, p. 114) remarks that it is not necessary that the semantic system explicitly reflect definitions. Wilks (1975, p. 40), moreover, warns against the naive view that by writing terms in upper case letters, we are departing from natural language to some more basic cognitive or denotative layer.

In any case, for semantics the interrelations between the terms used in actual speech are of central importance. Which combinations are normally expected in which contexts ? Which are not ? Here, the crucial question is, what is the epistemological status of the interrelations and combinations ? Are the explicit verbal definitions the basis for the interrelations between the terms and their signification ? Or should we take the actual combinations of terms in normal conversation as our point of departure ? In this case the explicit verbal definitions are derived from the primary system of interrelations of terms for the purpose of inducing in the listener a correct

hypothesis on the signification of a term (note 1).

In order to answer these questions we want to examine some verbal explanations.

- (1) "The atmospheric conditions have been very unfavourable lately" said Owl.

"The what?"

"It has been raining" explained Owl.

"Yes" said Christopher Robin "It has".

(A.A. Milne, Winnie the Pooh, 1961, p. 140) (note 2)

- (2) "That is Jacques" said Mike.

"Who?" asked daddy.

"He is that child who always finishes first with his reading." answered Mike.

(note on a conversation)

- (3) Bachelor: human, male, who has never married.
(Katz)

- (4) Brother: male sibling. (A. Wierzbicka 1975, &: classical method)

- (5) Man: animate, +humanness, +sex, v marriage
(Steinberg 1975, p. 37)

- (6) Cube: object, manipulable, rectangular (Winograd 1973, p. 174)

- (7) To eat: ingest an object after bringing it into the mouth with an instrument (this is an informal translation of Schank's formal definition of "eat"; Schank 1973, p. 201)

- (8) Grandfather: someone who is thought of as father of X's mother and father (Wierzbicka 1975, 3)

- (9) Politics is dirty intriguing between big bosses behind the scenes (De Volkskrant, 19 July '75)

From all these verbal explanations of the terms, it is clear that the explanation is given by relating

(or substituting) the term with other terms which are contextually (physically or psycho-socially) related.

(3), (4), (5) and (6) (set I) differ from the others in this way: in the explanation only a set of juxtaposed terms is introduced, and no interrelations between the several juxtaposed terms are specified. As far as the relation between the explicandum and each term in the explicans is concerned, we have inclusion.

The other explications (Set II) are much richer. Relations between the terms in the explicans are also expressed. As a consequence, other relations than inclusion relations do appear between the explicandum and the explicans.

In set II we also note an important difference between (1) and (2) on the one hand and (7), (8) and (9) on the other. It is true that in both sets the explication proceeds by relation the explicandum (E) to a certain structure of terms. This construction can be arrived at in two ways: either (II_A) this explanative construction can be the result of an operation with the explicandum (E) as a "hypothesized" argument, in other words by its actual functioning, or by indicating a result of its functioning it is explained, or (II_B) the explicandum E can be the hypothesized result of the construction which is the explicans.

In any case the explicans is always a construction by means of which is hoped that the listener will be able to make a successful hypothesis about the signification of the term. By introducing additional constructions it is possible to help the listener to control the fruitfulness of his hypothe-

sis about the signification. Another important consequence is that there is a possibility, which without doubt is generally true, that there are several ways the listener can be brought to a successful hypothesis on the signification of a term. This means that a pluralism in the successful explicit verbal behavior is possible.

This ties in with Myhill's view that every analysis of a certain term is a creative hypothesis about its possible connections with other terms. An analysis is a construction of type II_B . Examples (7), (8) and (9) are analyses. (1) and (2) are constructions of type II_A .

An interesting question is how to explain the human tendency to look at constructions of the second type (II_B : explicit definitions) as necessary, in other words as analytical and even complete and unique. On the other hand, the plurality and the synthetic character of the type II_A explications is broadly accepted.

The explanation of the dissymmetry in the evaluation of types II_A and II_B could perhaps be explained by referring to (a) the praxeological principle of multiple efficient use of an element x (type II_A) and (b) the cognitive simplification tendency of hypothesizing only one efficient way to construct the element x (type II_B). This simplification hypothesis seems to be deeply embedded in human cognition, and perhaps it explains why the fundamental arguments of Quine and others on the synthetic character of all definitions have been overlooked by most contemporary semanticists. Perhaps a further reason is that it did not seem possible to do semantics when rejecting the

analytic/synthetic distinction. We believe that a solution for this problem can be found, if we keep in mind the point already made : the primary task of semantics is to determine interrelations between terms as they occur in certain contexts, for certain groups of speakers. These relations are evidently synthetic and the system of interrelations is dynamic. Given such a system, verbal explanations can be derived as well as all the other types of semantic functions we listed initially. In what follows we want to make a sketch of some work done in this spirit.

III.A synthetic semantics.

We have tried to construct the semantics of the language of a group of drug users along the principles just described (note 3). The problem we met was that one very quickly gets a very complex system of interrelations of terms. Here the point of certain authors - (e.g. L. Apostel 1967) that a theory of semantics must be rooted in pragmatics - became convincing. To get a non-arbitrary structure in this clumsy set of interrelations it seemed fruitful to split it up according to the pragmatic situation the terms were used in.

This presupposes the introduction of certain praxeological principles. We cannot discuss them here in detail (note 4). However, applying these principles on the set of contexts in which the terms were used, we obtained four types of situations. These types are :

- (1) acquisition of "stuff"
 - (a) by buying

- (b) by getting it free
- (2) physical operations on stuff (cutting, etc.)
- (3) smoking
- (4) the evaluation

In each context type we must differentiate from a praxeological point of view the several roles the actors can have. These roles are :

- (1) dealer
- (2) drug user
 - (a) a customer of the place
 - (b) a strange drug user
- (3) a stranger (not a drug user)

Taking these praxeologically defined categories into account, we get (not including the subcategories) twelve combinations. Each combination (if all information - perceptual, verbal, social and emotional - is introduced) is rather akin to Halliday's registers or Minsky's frames. In practice some of these combinations, viz. registers, can be empty in the sense that we do not have information on them from the soft drug users: our informants.

If we apply these frames to the information set we have of the drug user, we get a more manipulable quantity and therefore more manipulable constructions. Very striking is the discovery that certain terms which seem rather synonymous (e.g. terms as 'stuff' and 'shit') are used in different 'frames'. 'Stuff', for instance is mostly used in the interaction between the customer and the dealer (all this is verified for our informant group.) The term 'shit' is mainly used in the evaluation among customers and never by the customer when buying it from the dealer.

In the evaluation frame, we see that the term 'shit' is mainly used in contexts of evaluation of (a) the dealer, (b) the place where is smoked and (c) the shit itself. In the evaluation of the dealer it is stressed that a dealer knows everything about shit, that he has good shit and that he does not cheat as far as shit is concerned. In the evaluation of the stuff itself it is referred to as being "good" and "soft"; the price is considered interesting as is its origin; the physical consequences being stoned, being ill, etc. - are referred to also.

In a simplified way we can introduce the following model (fig. 1) for the above evaluation of 'shit' (note 5).

fig. 1

The following conventions are here introduced:

- ← (1) → exemplification relation ³
- ← (2) → relation indicating origin
- ← (3) → indication of causality

At a certain point, after collecting our corpus, we arranged for certain people to enter the group of

informants and ask them for some explicit definitions of terms.

We did this in order to control our construction system. In this way we could see if our system of interrelations describing the information we got from informants also made it possible to explain the explicit definitions produced by the informants. In this way it would be possible to falsify or to corroborate our basic hypothesis that the definitions are derived from the system of interrelations.

The sample of the definitions we obtained for 'shit' are in this respect very instructive. We got chiefly the following results.

Question I: What is shit?

Answers : I. Relaxing agent by which you get stoned.

II. hash.

III. stuff.

IV. Something to smoke. If used in small quantity you have a lot of fun. If used in large quantity you sometimes become passive.

Already from the simplified evaluation subframe of shit (fig. 1) we can derive most of answers I and IV.

IV. Conclusion.

We hope with this short paper to have indicated some lines of development for synthetic semantic systems. To prove their adequacy, it is of course not enough to indicate how natural definitions and explanations can be derived from the system of interrelations; the possibility of executing the other

functions of semantics must also be proved.

Notes.

- (1) On an extensive treatment of 'meaning', 'signification', etc. : see Vandamme 1972, 1975a, 1975b.
- (2) We take this from A. Wierzbicka 1975, 1.
- (3) For a more extensive treatment of our method and results : see F. Vandamme and P. Frericks (1975), F. Vandamme and P. Frericks (to appear).
- (4) We discuss this more thoroughly in "Logic of Action and Semantics" (to appear in *Communication & Cognition* 1976).
- (5) In a more detailed description of a frame, we see that it can be fruitful to have references to other frames too.

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