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EXPLANATION, MENTAL REALITY AND CAPTURING HEFFALUMPS¹

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... and all the time Pooh was saying to himself, "If only I could *think* of something!" For he felt sure that a Very Clever Brain could catch a Heffalump if only he knew the right way to go about it. (A.A. Milne, *Winnie-the-Pooh*, p. 58)

What I have to say today is more in the line of a consultation than a scientific paper because I am, frankly, a bit mystified by a point of view which is fairly widespread in linguistic research today. It all started two or three years ago when I wrote an article (Hirtle 1988a) proposing a solution to a major problem of the English verb - the meaning of the simple form - a problem I had been reflecting on for some time. I submitted my study to a serious journal, one of whose articles I had cited a number of times, and it was refused. In itself this was not surprising since the type of linguistics I practise is not widely accepted. What did surprise me was the first reason for turning it down: "the underlying theory of Guillaume was lacking in explanatory power". This made me wonder how specialists, presumably well informed and well intentioned, could hold an opinion quite the opposite of mine. The only answer I could find was that we were here confronted with two very different views of what constitutes an explanation.

In the journal's comments, the only hint of an alternative view was a reference to Dowty 1979, which is based on an approach to language, Montague Grammar, involving a type of explanation quite foreign to the one I was accustomed to. Although I cannot be sure this is the type of explanation the journal editors had in mind, the issue is, I believe, of sufficient interest to bring before you today. Let it be quite clear: I am not here discussing Montague Grammar or Dowty's study as such, but rather the more general question of what constitutes an explanation in linguistics. Indeed, I believe Dowty's study typifies, in an extreme form perhaps, the approach of many linguists and linguistic schools today.

The crucial difference between Dowty's view and mine resides in the theoretical constructs on which an explanation is based. For Dowty (p. 375), such a construct, the "intension" of a word, "has in principle *nothing whatsoever* to do with what goes on in a person's head when he uses that word" (italics in the original). That is, there is no attempt to reconstruct, model, describe or otherwise call into play the preconscious mental processes the speaker undertakes in order to use a word. Not that the existence of these processes is denied. On the contrary, he defines the mental reality of meaning, called the "concept of a word", as "whatever it is in a person's head that determines how he uses and understands the word" (p. 384). Thus, the

¹ I am indebted to William Baker, Patrick Duffley and Roch Valin for comments on the original version of this text.

conditions governing how a person uses a word really exist in the preconscious. Although usage is determined or conditioned by this mental reality, the theoretical constructs on which Dowty bases explanation have nothing to do with it. In short, this type of explanation is not based on factors which determine or condition what is observed but rather, it seems, on idealizations, i.e. on abstract categories of meaning obtained by inductive generalization from observed meanings, categories which do not correlate in the language itself.² By attributing a symbol to each such category, the analyst then describes a sentence in terms of these symbols. In other words, explanation here involves naming the general categories or forms within which each of the constituent meaning-elements of the sentence can be situated. This is a categorial or formalizing type of explanation which, if I am not mistaken, is reminiscent of disciplines like mathematics or logic.

Guillaume's theory, as is suggested by its very name — the Psychomechanics of Language — adopts quite the opposite standpoint: it bases all its explanations on what goes on in a person's mind when he uses a word (cf. Guillaume 1984 *passim*). That is, it postulates that the preconscious reality of any word (or grammatical system), which is quite beyond the range of any direct observation or "intuition", consists of a little mental program involving the set of mental processes a speaker must put into operation to produce that word. As a consequence, in Psychomechanics explanation consists precisely in trying to reconstitute the prior linguistic conditions "in a person's head" that determine the use or understanding of a word. This is essentially the same approach as that of other disciplines concerned with explaining observable phenomena. A geologist, for example, confronted with a certain formation, tries to imagine the elements and processes in "deep time"³ that were necessary to produce what he observes, just as an astrophysicist tries to postulate the elements and processes in "deep space" (and time) that were necessary to produce what he observes. Likewise for the linguist using the comparative method in historical linguistics: by comparing directly observed phonetic correspondences in the earliest texts, he tries to reconstruct the most likely antecedent sound from which they could develop. In all such cases, explanation involves a description of presumed prior conditions which appear to be necessary in order for the observed phenomenon to exist. It is, if you like, a generative type of explanation involving "causal relevance"⁴ since it is concerned with what leads up to and produces the facts to be explained. In linguistics, this type of explanation is necessarily "mentalist" since the facts to be explained — words and their use as observed in discourse — are determined by the speaker's preconscious language system which must come to

² In this respect expressions such as "capture a generalization", "capturing a large and important class" and the like are of interest. In its proper sense, "capture" is used of beings that already exist (a wild animal, an escaped prisoner, etc.) and this carries over to the metaphorical use in these expressions to give hypostatizing overtones.

³ For the concept of "deep time" as time of "an almost incomprehensible immensity" see Gould 1987, Chapter 1.

⁴ The expression is borrowed from Salmon (1975:120): "I shall agree from the outset that *causal relevance* (or causal influence) plays an indispensable rôle in scientific explanation...." (italics in the original).

grips with the particular experience (an entity which is outside language) he wishes to represent and express.

Each of these types of explanation has a serious drawback when applied to language. The categorizing, formalist type is based on abstract entities which have no existence outside the mind of the linguist who conceives them (and those fellow linguists to whom he manages to communicate them). Thanks to such idealizations, one might be said to "account for" the data, in the sense of putting a label on each of the observed facts, of reckoning where each fact fits (as in the expression "all present and accounted for")⁵. This approach may help bring out certain elements of meaning implicated in the word — a sort of explicitation or unfolding — but this is not the same as an explanation based on an understanding of the object under scrutiny. That is, because it postulates entities that are outside both the language and the speaker, this type of explanation, whatever its value for other purposes, fails to throw any light on the nature of language itself, the object of linguistics.

As for the generative type, the drawback with proposing an explanation based on the mental entities presupposed by what we observe of language is, of course, that such entities, by definition, cannot be observed. Again the parallel with other disciplines comes to mind. The need to theorize in science arises because the scientist is convinced that part of reality cannot be perceived. In fact, what escapes direct observation because it is in deep time or space or in micro-time⁶ or space constitutes the very matter of science: *Il n'y a de science que du caché* as Bachelard said. As a consequence, many consider that linguistics as a scientific discipline began with the exploring of deep linguistic time in the great work of the nineteenth century comparatists with a method of analysis that permitted them to go back in time far beyond what is directly observable in the most ancient texts.

Thus Guillaume was by no means the first to propose this type of explanation in the study of language but he was the first to propose a method of getting beyond the limits of what is directly observable in language use at the moment of speaking or writing. That is, he confronted the problem, not of going back in deep time before the first texts, but of going back in the present beyond what emerges into consciousness to explore how, in the moment of speech, the speaker produces the words that he utters. He had to find a way of probing the extraordinarily rapid operations of thought involved in language, preconscious operations whose duration is so short that they are said to involve "micro-time", which is time far too short to impinge on our consciousness. Only the results of these operations last long enough to emerge into the macro-time of the speaker's conscious awareness. The method he put forward is, like its nineteenth century predecessor, based on comparison and aims at "reconstructing" grammatical systems and lexical entities as they exist in the preconscious. Such an aim is a bold one fraught with so many pitfalls and difficulties that any results must, like the hypotheses of comparative

⁵ *To account (for)* "suggests a making acceptable by fitting the thing to be accounted for into some acceptable scheme (as logical or mathematical consistency, or an order of nature)" whereas *to explain* suggests "to clarify or make acceptable to the understanding something that it finds mysterious, causeless or inconsistent." Webster's Third, s.v. *explain*.

⁶ For the concept of "micro-time" as time so short that it is below the limits of perceptibility, see Valin 1971, where it is used to characterize all the psychomechanisms involved in language.

grammar, be confronted with the widest possible range of attested usage before they can be considered "proved" (in the sense that any other hypothesis appears quite improbable), let alone "established" (cf. Hodge 1983:148). Notwithstanding such difficulties, this goal, which is inherent in any mentalist approach to language, in any claim to "psychological reality", is of crucial importance to linguistics simply because language is by nature a mental entity in large part. Indeed, any other approach must lead the linguist away from the reality of the object of his study.

Granted the importance of this aim of reconstructing the hidden entities of tongue, the method of achieving it takes on an equal significance and so deserves our attention for a moment. It consists of recognizing and taking full advantage of a widespread, not to say ubiquitous, characteristic of language, namely polysemy. The fact that theoretically all words and morphemes can express more than one meaning constitutes a stumbling block for many analysts, but for Guillaume it is a stepping stone in approaching the hidden nature of the entity in question. Like the numerous grammarians and linguists who seek the "underlying" or "basic" meaning of a given form, someone working within the framework of the Psychomechanics of Language questions the different meanings it can express to find out what lies behind them and makes them possible. However he questions these different senses from a very particular point of view: each sense attributable to a given form is viewed as the product of a thought process, the result of an immediately preceding mental operation, or act of representation. That is, the basic postulate of this approach is that every word or morpheme signifies a mental process and that all observable language usage (whether physically perceivable or mentally perceivable) is the result of prior, hidden operations of thought on the part of the speaker/writer.⁷ And so in the Psychomechanics of Language, when observing various uses of a given form one seeks any indication of a generative operation, any hint of how a particular sense was represented.

This method can best be grasped through particular cases where it has been applied with success. The indefinite article, for example, is commonly considered to express three different senses (cf. Seppänen 1984):

1. Generic, as in *A whale is a mammal*, where, out of the total class evoked by the substantive, any individual is an eligible candidate;
2. Non-specific, as in *She wants to marry a millionaire if she can find one*, where, out of a restricted group (available, unmarried, male, etc.) evoked by the substantive, any individual is an eligible candidate;
3. Specific, as in *She wants to marry a millionaire she met last year*, where, out of a set made up of one member, that one is an eligible candidate.

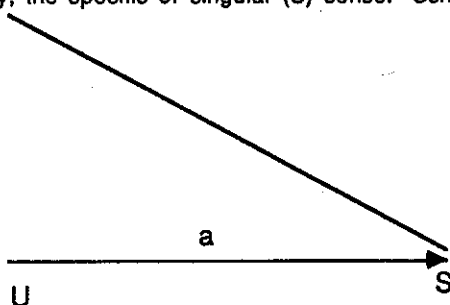
A comparison between these three senses shows that they have something in common - an expression of the extent of reference or extensity, i.e. of the size or scope of the set the speaker has in mind - and something distinguishing them. That is, in every case *a* expresses a size or quantity, but in each case the actual size is different: the greatest possible for the substantive in (1), the smallest possible for the substantive in (3) and some intermediate size in

⁷ This postulate determines how the observed facts of meaning are to be viewed, satisfying thereby the requirement felt by many scientists (cf. Holton 1978:215ff, Lyttleton 1977:12) of a hypothesis or principle to guide the observer in discerning what is pertinent in the plethora of individual facts.

(2). A formalizing approach might, of course, give appropriate symbols to the common meaning here and to each of the specific senses and thereby give a formal description of what the article expresses in each example but such a procedure would result in an explicitation of what has been observed rather than an explanation in the sense outlined above, i.e. based on an understanding of the nature of the article. In Psychomechanics, on the other hand, these three senses are viewed as the products of a single mental operation, that of representing the extent of reference or extensity (cf. Hirtle 1988b:463 for this term), an operation which can be symbolized by means of an oriented vector as follows:



After comparison with the other part of the system, expressed by the definite article (cf. Hewson 1972), the starting point of this operation can be postulated as corresponding to the greatest possible extensity, the generic or universal (U) sense, and the final limit as corresponding to the smallest possible extensity, the specific or singular (S) sense. Schematically:



It is this operation, or rather the possibility of carrying it out that constitutes the meaning potential of the indefinite article in English. Each of the three senses observed in discourse can then be seen as a necessary result if the speaker holds up this mental process at one of its three cardinal points, beginning, middle and end. Intercepted at its very start, this operation will give a representation of an extent of reference at its maximum, a generic or universal sense; intercepted at its final instant, it will give a representation of a minimum extensity, a specific or singular sense; suspended at any point in between, it will give a representation of an intermediate extensity, a non-specific or restricted-group sense.

Other examples of this method of analysis might be given. The system of number in the substantive has been analyzed on this basis (cf. Hirtle 1986), as has the system of *some* and *any* (cf. Hirtle 1988b). Even the two main meanings of the present perfect can now be seen to result from two distinct interceptions of a single movement through time. These and other results suggest that this method of seeking the act of representation giving rise to the observed facts of meaning has widespread applicability.

The advantages of theorizing the data in this way, as opposed to tacking symbols on the observed facts of meaning, are of considerable importance. First and foremost is that of postulating a theoretical construct as corresponding to something existing in the speaker's mind. This is not a

gratuitous or haphazard postulate suggested by a set of data but rather something that appears to be necessary since the general nature of what is postulated for the indefinite article or any other form, its operativity, arises from what most linguists would accept as an inescapable presupposition: that a person must think in order to speak. The specific nature of the theoretical construct, an operation representing extensity beginning at the universal and ending at the singular, comes from examining and reflecting upon the uses of the articles. This way of proceeding, which differs markedly from that of starting with a working hypothesis (cf. Guillaume 1984:22ff), keeps the linguist's attention focused on the hidden reality of his object, the nature of human language.

A second signal advantage of this type of analysis is that it provides a generative or "causally relevant" type of explanation. That is, the operation postulated appears to the analyst (who, of course, is open to error) to be a necessary prior condition of the facts observed in discourse. This permits synchronic or descriptive linguistics to take its place among the other theorizing sciences, which start with what is observable in their object and attempt to probe what lies beyond. It also reconstitutes linguistics as a single discipline wherein both the historical or diachronic and the descriptive or synchronic make use of essentially the same method of analysis, the one applying it to linguistic deep time, the other to linguistic micro-time, as Valin (1964) has so clearly shown.

Although such prospects are exciting, it remains that actual results in terms of reconstructed systems are not as yet plentiful so that those hidden workings of the mind which are of concern to the linguist remain, for the most part, obscure. But even a little knowledge is better than none, and what has been achieved so far suffices to show that we can acquire knowledge piecemeal without having to await an all-embracing theory of the human mind.

In conclusion, the view that the Psychomechanics of Language "is lacking in explanatory power" appears to be unfounded. In fact, if, as in other sciences based on observation, explanation is taken in its generative sense of seeking a prior condition that determines what is observed, this criticism can be leveled at other approaches which fail to focus on the mental reality lying behind the observed facts of language. The theoretical constructs of such approaches are in effect idealizations since they do not exist in the mind of the speaker, only in the mind of the analyst. And since they exclude an essential part of what they purport to elucidate, such constructs can have little explanatory power insofar as language as a phenomenon is concerned. And yet today so many such approaches are on the linguistic stage that one wonders why there is such reticence and even aversion to coming to grips with the mental reality of language. If the reason is the difficulty of analyzing what is hidden from view, one would think that Guillaume's method would be widely acclaimed, but this is far from the case.

Be that as it may, unless anyone wants to argue that no mental activity is required to produce a word, there remain only two paths open to the linguist who wishes to get beyond a mere description of the concrete. He may attempt the arduous task of fathoming the apparently inaccessible mental reality lying beneath the conscious reality of language or he may set out with Winnie-the-Pooh to capture imaginary heffalumps.

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