

A note on descriptive adequacy

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In the *Journal of Linguistics* 5.1 (1969) pp. 150-152, Peters and Ritchie present in summary form some results of work they have done and are doing in the field of mathematical linguistics, and which will be presented more fully in at least three papers to appear later. Preliminary announcements of this kind are a very good practice, which should be followed more widely. I realize that any reaction to such summary and tentative presentation must be equally summary and tentative. With this proviso I want to raise a few questions in connection with their note.

They have proved, as they say, that in any version of transformational theory proposed so far various forms of essentially different base grammars can be formulated which are universal, and that whatever the facts of any natural language regarding judgements of grammaticalness, ambiguity and paraphrase turn out to be, a finite sequence of transformations can be formulated to fit these facts. This implies, they say, that at least those instances of a universal base grammar (and the corresponding transformational theory) which have been seriously proposed in recent years, are not falsifiable given the range of data which are generally considered relevant. They assume that a grammar which accounts for the three categories of data mentioned is descriptively adequate. Descriptively adequate grammars, therefore, are not falsifiable on empirical grounds: given two such grammars it is not possible to decide which is the better. For this reason, 'the Universal Base Hypothesis can receive an empirical formulation only by (a) enlarging the range of data to be accounted for by a grammar or (b) restricting transformational theory more tightly than the currently available version' (p. 152).

I wish to query whether this is a fair statement of the criterion of descriptive adequacy as it is currently applied. I might agree that the three categories of judgements mentioned by Peters and Ritchie are in fact the data the linguist, or the grammarian, has to account for. I cannot agree, however, that accounting for these data is the only criterion for descriptive adequacy. When the term 'descriptive adequacy' is used, writers have in mind the necessity not only to account for the data, but also to account for them in the simplest possible way, i.e. to capture all relevant generalizations that can be formulated about the data. This principle of simplicity was the main motivation for Chomsky to propose the transformational principle, and it has been accepted ever since in all work in transformational grammar. It may even be maintained that it is the strict appli-

cation of this principle which distinguishes transformational theory from all other theories of grammar.

In *Syntactic Structures* Chomsky writes (p. 52): 'The point of view adopted here is that it is unreasonable to demand of linguistic theory that it provide anything more than a practical evaluation procedure for grammars.' And on pp. 55-56: 'The only ultimate criterion in evaluation is the simplicity of the whole system. . . . It is when we find that simplification of one part of the grammar leads to corresponding simplification of other parts that we feel that we are really on the right track.'

The source of the confusion lies perhaps in the following well known but rather obscure passage from Chomsky's *Aspects* (p. 24): 'A grammar can be regarded as a theory of a language; it is *descriptively adequate* to the extent that it correctly describes the intrinsic competence of the idealized native speaker. The structural descriptions assigned to sentences by the grammar, the distinctions that it makes between well-formed and deviant, and so on, must, for descriptive adequacy, correspond to the linguistic intuition of the native speaker (whether or not he may be immediately aware of this) in a substantial and significant class of crucial cases.' Here, the term 'linguistic intuition' can refer to three different things: (a) the speaker's ability to distinguish grammatical from ungrammatical, to identify meanings of different sentences, and to distinguish meanings of the same sentence; (b) the speaker's or the linguist's more or less sophisticated hunches about the structure of the sentences of his language (it is in this sense that one speaks of counter-intuitive solutions); and (c) the mental structures constituting his tacit knowledge, or competence, of his language. (a) and (c) are closely related.

Lees, in his review of Chomsky's *Syntactic Structures* in *Language* 33.3 (1957), p. 376, already calls attention to a possible confusion in the term 'intuition'. Speaking of the native speaker's judgements constituting the available evidence, he says: 'These judgments are sometimes referred to as linguistic intuitions. They are part of the linguistic data to be accounted for, and they must be distinguished from the intuitive or prescientific perceptions which the linguist, qua scientist, has about the data, and which he renders explicit or formalizes, and thus eliminates, by means of his linguistic theory.'

No matter how obscure the quoted passage from Chomsky's *Aspects* is, it is clear from other places that Chomsky intends descriptive adequacy to cover also the requirement of simplicity. In *Current Issues* he writes (p. 28) that a grammar is descriptively adequate if it 'gives a correct account of the linguistic intuition of the native speaker, and specifies the observed data (in particular) in terms of significant generalizations that express underlying regularities in the languages'.

It is interesting to know that it can be proved mathematically that a universal base is possible and that various universal bases can be set up which will allow for a finite sequence of transformations covering all the data of any particular language. This confirms the frequently expressed feeling that transformations

are so powerful that they will do almost anything one wants them to do. But it does not follow that the criterion of descriptive adequacy as currently applied excludes the possibility of deciding between descriptions which are adequate to the extent that they cover the data. It is the application of the simplicity principle which provides exactly such a criterion. Generally, if a particular generalization or class of generalizations is not expressed, the hypothesis must be rejected as being incorrect, and if it cannot be expressed in terms of a particular theory, the theory is inadequate. Saying, as Chomsky does, that there is no descriptively adequate grammar containing a universal base, or, for that matter, a base which provides all semantic information of the sentences generated, amounts to saying that any such grammar will lack in simplicity, i.e. will miss out relevant generalizations. It appears, therefore, that there is no need for 'restricting transformational theory more tightly than the currently available version': this version is already more restricted than Peters and Ritchie say it is.

The real issue is the justification of the simplicity criterion. There are generalizations which cannot be missed on pain of leaving the grammar factually incorrect. Thus, to give a few trivial examples, any grammar of English will have to state somehow that, but for a few exceptions, the finite verb form gets the sibilant suffix if the subject is third person singular; or that a class of time adverbials, such as *tomorrow*, is incompatible with the past tense. These generalizations are justified by their very nature, since, if they are missed, the grammar will make wrong predictions. Other generalizations, however, are not necessary for this reason, but for the avoidance of needless repetitions or lists. Why the economy principle should be adopted is a non-trivial question. Occam's razor has undeniably led, through the ages, to many important insights which would have been missed without it. The reason for this is probably that every generalization is a bit of explanation, provided it is part of a deductive system of generalized statements. The more facts are covered by one generalization, the higher its explanatory value. And explanation is the ultimate aim of science. Some generalizations will be irrelevant because they follow automatically from other generalizations which have been formulated for reasons of factual correctness or explanatory power.

There is, then, the question of valid inference with respect to the object of enquiry. According to Chomsky, and this has been generally accepted, 'a grammar of a language purports to be a description of the ideal speaker-hearer's intrinsic competence' (*Aspects*, p. 4). This can only be done by setting up hypotheses. One might infer that if the linguistic judgements given by a native speaker reveal certain regularities, he apparently has at his disposal, 'in his mind', the principles accounting for these regularities, although he cannot formulate these principles. Therefore, 'any interesting generative grammar will be dealing for the most part, with mental processes that are far beyond the level of actual or even potential consciousness' (*Aspects*, p. 8). But this inference may not be valid:

different native speakers may have different internalized grammars, which may even differ, in detail, as to their factual predictions. This might explain the limbo of troublesome 'unclear cases' of grammaticalness. It seems that external evidence, to be drawn from historical linguistics or from psycholinguistic experiments, might help to decide.

If it can be shown that further restrictions on the mathematical definition of grammatical rules will provide a valid criterion, independent of simplicity, for deciding between competing grammars, this will be a major contribution to theoretical linguistics.

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