

## ON A CONCEPT OF DEGREE OF GRAMMATICALNESS

The object of this paper is to clarify a concept of degree of grammaticalness that has appeared occasionally in the recent literature of generative grammar. I aim to make two points. First, the concept of degree of grammaticalness may be distinguished from any semantic concept of intelligibility. Second, it may be explicated in the light of a certain kind of confirmation-theory, the defining conditions for which turn out to explain the non-statistical character of generative grammars.

### I

In his seminal work *Syntactic Structures* (p. 35 f.) Chomsky pointed out that a sentence like

John enjoyed and my friend liked the play

was “much less natural”, as he called it, than the alternative

John enjoyed the play and my friend liked it.

Sentences of the former kind are generally marked, he claimed, by special phonemic features such as extra long pauses, contrastive stress and intonation, failure to reduce vowels and drop final consonants in rapid speech, etc. These features normally mark the reading of non-grammatical strings. “The most reasonable way to describe this situation would seem to be by a description of the following kind: to form fully grammatical sentences by conjunction, it is necessary to conjoin single constituents; if we conjoin pairs of constituents, and these are major constituents (i.e. “high up” in the [phrase-structure derivation] diagram) the resulting sentences are semi-grammatical; the more completely we violate constituent structure by conjunction, the less grammatical is the resulting

sentence.” Similarly, in a later chapter (p.78) Chomsky remarked that any grammar which distinguished abstract from proper nouns would be subtle enough to characterise the difference between two groups of sentences he listed, and he claimed that there was a clear sense in which the sentences of one group were more grammatical than those of the other.

Subsequently many critics of Chomsky, e.g. Jakobson<sup>1</sup>, remarked that sentences which he regarded at best as semigrammatical could in fact be given a meaning. The famous string

Colourless green ideas sleep furiously

was even incorporated into a poem. Also Hill’s results<sup>2</sup> suggested the unprofitableness of any attempt to construct, or appraise, a scale of grammaticalness on the basis of informants’ idiosyncratic acceptances or non-acceptances of individual strings of words. To these critics Chomsky replied<sup>3</sup> by granting them their premisses and denying their conclusion. Certainly, when given a grammatically deviant utterance we attempt to impose an interpretation on it, exploiting whatever features of grammatical structure it preserves and whatever analogies we can construct with perfectly well-formed utterances. But we must distinguish, said Chomsky, between a class of utterances that need no analogic or imposed interpretation and others that can receive an interpretation by virtue of their relations to properly selected members of this class. And Chomsky then proceeded to outline a measure of degrees of grammaticalness in terms of a hierarchy of the categories appearing in the rules of a generative grammar<sup>4</sup>. Katz<sup>5</sup> now claims that this measure is unsatisfactory. He points out that there are some pairs of strings [X, Y] such that Y is much more intelligible than X even though according to Chomsky’s example of an *n*-level hierarchy of categories X would have a higher degree of grammaticalness than Y. E.g. for X we may take

(1) The beef cut sincerity

and for Y

If there is any truth in what he says, it would be to insist foolish.

And Katz argues that indefinitely many counter-examples of this kind could be constructed, since for Chomsky a string fails to receive a representation at level *i* (and at all higher levels) if it violates even a single restriction holding between a pair of categories at this level. If of two strings, S and S’, S violates just one restriction which prevents it from reaching *i*-level grammaticalness, while S’ succeeds in reaching *i*-level grammaticalness but nevertheless has a great deal of structural distortion, then S may well be more intelligible than S’.

But the trouble is that Chomsky applied non-semantic criteria (e.g. phonemic features) in establishing the data about the greater or less grammaticalness that were to be explained by this theory of degrees of grammaticalness. Katz, on the other hand, is constructing his counter-examples with the aid of a semantic criterion – greater or less intelligibility. On the face of it, therefore, Chomsky's problem was not Katz's, and Katz's criticisms of Chomsky appear at first sight to arise from *ignoratio elenchi*. Perhaps it will be objected that Chomsky's problem ought to have been Katz's, and Katz's criticisms are thus justifiable. But I shall now argue that Katz's solution of his own problem shows up the difficulty of identifying degree of grammaticalness with degree of intelligibility.

Katz sets out to explicate the concept of a semi-sentence, where a string is said to be a semi-sentence of the language  $L$  if and only if it is not generated by an optimal grammar of  $L$  and has sufficient structure to be understood by the speakers of  $L$ . He claims that a speaker knows (in the sense in which he knows the rules of the grammar of his language) a system of rules – transfer rules – that enables him to associate a non-null set – comprehension set – of grammatical sentences with each semi-sentence. This association is performed on the basis of the structure that the semi-sentence has; and the speaker's understanding of the semi-sentence is nothing other than his understanding of the sentence in the set with which the semi-sentence is associated. So that a semi-sentence is ambiguous  $n$  ways if and only if its comprehension set includes at least one subset of  $n$  sentences, none of which is a paraphrase of any other, and includes no subset of more than  $n$  such paraphrase-independent sentences. Katz concludes that a theory of semi-sentences cannot be solely a syntactic theory but must contain a semantic component rich enough to provide some means of deciding when two sentences are paraphrases of each other.

But what role does this measure of ambiguity have in Katz's theory of semi-sentences? Katz does not explicitly state that it is to be regarded as a measure for degree of grammaticalness. So let us suppose that it is not to be so regarded. Then Katz's theory suffers from two defects. First, it treats the concept of semi-sentencehood qualitatively, and not comparatively or quantitatively. It has no means of distinguishing between semi-sentences in respect of their degree of failure to be fully grammatical. Secondly, it introduces the concept of a comprehension-set with varying numbers of paraphrase-independent members, and yet assigns no relevant function to this variation other than as a measure of ambiguity.

Let us therefore suppose instead that this measure of a semi-sentence's ambiguity is regarded by Katz as a measure of its intelligibility and thus, for him, of its degree of grammaticalness. But there are several difficulties here too.

First, there seem to be some direct counter-examples, e.g. our intuitions about semi-grammaticalness would normally lead us to suppose that

(2) Three men has left

and

(3) The men has left

have precisely the same degree of grammatical deviance, or conceivably we might suppose that (2) is worse than (3) because the error of putting a singular verb-form with a plural noun-form is made even more glaring by the presence of a plural numeral as well. Yet on the proposed interpretation of Katz's theory (3) is less grammatical than (2) because, while (3) is ambiguous between

The men have left

and

The man has left,

(2) is scarcely ambiguous at all.

Secondly, ambiguity exists even among fully grammatical strings. Indeed some fully grammatical strings are more ambiguous than some semi-sentences. E.g.

(4) He looked over his desk and set out his case

is more ambiguous than (3) and much more so than (2). It seems intuitively objectionable to select as a measure of semi-sentences' degree of grammaticalness a feature that some, but not all, semi-sentences share with some, but not all, full sentences.

Thirdly, even as a measure of intelligibility Katz's theory is not wholly satisfactory. The extent of a semi-sentence's ambiguity is equally affected, on his theory, by any difference of meaning whatever that prevents one sentence in the semi-sentence's comprehension-set from paraphrasing another. But it is easy to find examples that make this egalitarian attitude towards paraphrase-breakdowns seem implausible. E.g. take the semi-sentence

(5) Man bit dog

It has a comprehension-set that contains at least

The man bit the dog

A man bit a dog

The man bit a dog

A man bit the dog

Now, *pace* Katz<sup>6</sup>, none of these sentences are exact paraphrases of one another. But the differences of meaning between them are so slight that some speakers of English might be tempted, like Katz, to treat them as paraphrases of one another. Consider, on the other hand, a semi-sentence like

(6) A man a dog bit

It is not unreasonable to assume in this context that the comprehension-set for (6) need contain no other sentences than

A man bit a dog

A dog bit a man.

Yet the difference of meaning between these two sentences seems intuitively greater than that between any of the sentences contained in the comprehension-set for (5). Correspondingly one would suppose (6) to be less intelligible than (5), though Katz's theory implies the opposite. It looks as though any measure of semi-sentences' intelligibility that appealed to a comprehension-set would have to pay regard to the semantic distance, as it were, between the paraphrase-independent members of this set as well as merely to the number of these members.

Perhaps, however, it will be urged that semi-sentences' degree of grammaticalness might still be identifiable with their degree of intelligibility, provided that the latter be measured in some way that avoids the difficulties encountered by Katz's measure. Even Chomsky<sup>7</sup>, it may be pointed out, intended his procedure for projecting a hierarchy of categories from a grammar to be construed as part of the explanation of how speakers acquire the ability to comprehend deviant strings. If such a projection-procedure is a component in a language-learning device, then according to Chomsky that device acquires the automatic ability to comprehend deviant strings – deviant in the sense determined by the hierarchy of categories – when it learns the grammar of a language. But Chomsky intended his procedure only as a part of the explanation of how speakers

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