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LINGUISTIC COMPETENCE

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The notion of linguistic competence as a cognitive system that produces knowledge not antecedently present in the mind of the subject, e.g., knowledge of grammatical relations in response to certain stimuli is an important contribution to philosophical understanding of linguistics, and of cognitive psychology in general. This notion has not been as well received as it should have been, in part because of certain false things that have been said about it. In particular, it has been said that a grammar of a language, conceived as a theory of linguistic competence, is an *idealization,* and that speakers *know* the rules of the correct grammar of their language. This paper shows that a theory of competence is not in any interesting sense an idealization, and that although a theory of linguistic competence, i.e. a grammar, aims at describing some real aspect of speakers, there is no reason to suppose that this is an aspect that would make it appropriate to say that speakers know the rules of the grammar.

† † †

Chomsky (1957) produced a revolution in linguistics, perhaps the only real scientific revolution in our lifetime. Transformational grammar was a theory of a new kind, much of it concerning subject matter on which there had been virtually no theory at all. Questions that had scarcely been asked before became the central areas of research. Methodology was fundamentally changed. All of this brought about a great increase in our understanding of natural languages, eventually reincorporating the insights of earlier theories.

Chomsky (1965:4 and 1966:9-10) introduced the notion of linguistic competence to explain exactly of what the grammar is a theory. This notion of linguistic competence is an important contribution to understanding language and linguistics. But it has been less well received by philosophers than it should have been, in part because of certain false things Chomsky said (1965:3-7, 1972, and 1980: passim) about it. In particular, he said (1965:3 and 1966:12) that the grammar of a language, considered as a theory of competence, is an idealization, and that speakers know the rules of the correct grammar of their language. In this paper, the notion of linguistic competence is explained in a way that makes clear what is essential to the notion. This will make clear that Chomsky should not have said that a theory of competence is an idealization, and that there is no reason to say that a speaker knows the rules of the grammar.

I

Central to Chomsky's work was the idea that the grammar of a language should say exactly what the sentences of the language are and describe the linguistic properties of each of these sentences.

There are infinitely many sentences in any natural language. There is no longest sentence, since all speakers know many ways of extending any sentence to make a longer sentence (and that means there are infinitely many). So the grammar cannot say what the sentences are by listing them. It is very natural to think that the grammar should be a system of rules that produces or generates the infinitely many sentences of the language together with a linguistic description of each. This is the most obvious way of describing all of the items in an infinite collection.

Once this point of view—that the grammar should generate in a precise way all and only the sentences of the language—is adopted, it is actually a rather short step to the idea that a generative grammar of a natural language must contain rules of a rather special and unusual sort, called transformational rules. Thus, the grammar of a natural language is a transformational generative grammar.

Chomsky (1965, 1972, and 1980) combined this with two philosophical views about linguistics. First, he saw linguistics as part of cognitive psychology. Linguistics aims at telling us something about the minds of language users. Knowing a language is, after all, fundamentally a mental matter. And the ability to learn languages is a mental ability.

Second, Chomsky wanted to be a scientific realist about linguistic theory. Linguistic theory aims at describing something that exists in nature and is correct only insofar as there is a mental or psychological reality corresponding to it.

Given these two things—the aim of describing all and only the sentences of, say, English, and the view that linguistic theory describes a mental reality—Chomsky faced questions that had not concerned linguists or philosophers of linguistic science for fifty years.

The grammar generates infinitely many sentences. Speakers, obviously, are finite. Most of the sentences generated by the grammar could not be used or understood by any speaker. This raises the question of how the grammar, with its infinite output, describes the finite mind of the speaker.

On the other hand, the grammar is supposed to generate all and *only* sentences of English. But many of the things fluent speakers of English say when speaking English, such as false starts, changes of thought in mid-sentence, spoonerisms and slips of the tongue, Freudian and otherwise, are not sentences of English, and therefore will not be in the output of the grammar. The speaker who says these things recognizes that they are not sentences of his language or dialect or idiolect.* These things will not be in the output of the grammar. The grammar is supposed to say something real about speakers. Clearly, it does not say what speakers of English do when speaking English.

This is where Chomsky's notion of linguistic competence enters the picture, and with it the distinction between performance and competence. A speaker can use and understand sentences that he has never before used or heard. In fact, most of the sentences a person encounters are encountered only once. Furthermore, people can use and understand sentences that are longer than any they have previously used or understood. Much linguistic information is brought to bear in understanding a sentence; for example, knowledge or recognition of grammatical relations within the sentence. Consider,

Nancy isn't going to watch Jane perform in the play, but she says it's okay of Ron does.

"Ron" is understood as the grammatical subject of "watch"—and not of "perform" or "say"—although the sentence does not say Ron watches, only that he is permitted to watch. A person has a great deal of grammatical information of this sort about any sentence he understands.

Compare this with remembering telephone numbers. The telephone numbers a person remembers are stored in that person's mind in some way when he is not thinking of them, and they can each be brought to consciousness, if everything works right. Each number is stored as a separate item, distinct from the others. Something similar can be said about recognition of people, tunes, and so forth.

Knowledge of the linguistic properties of sentences cannot be stored in the mind separately for each sentence. In the first place, one has not heard all the sentences that he will ever meet. More importantly, there are too many sentences that could be used and understood for all of them to be stored in the mind. [Miller (1965) said that by "conservative calculation" there are at least 10^{20} sentences 20 words long.]

Linguistic information about individual sentences is not stored. At the time a sentence is used or understood the speaker has a great deal of information about that sentence. That knowledge must be produced right then, on the spot, when needed, in response to certain stimuli. This holds for every sentence that is understood. The linguistic knowledge involved in understanding the sentence was not stored in the mind prior to hearing and understanding the sentence, but that knowledge exists. So, it was produced on the spot. This means that each speaker must have a mechanism, or system of processes or principles, that produces knowledge of items of English. It is just this that a speaker of English has and someone who does not know English does not have. This system, whatever it is, that produces linguistic knowledge on demand, is what Chomsky called *linguistic competence,* and this is what the grammar of a language attempts to characterize.

But, of course, it does not always work. When a person is tired, or his attention divided, he may not understand sentences that he would understand under other circumstances. What linguistic knowledge is actually produced at a given time depends on non-linguistic factors such as memory, motivation, attention, and the peripheral nervous system, factors that can be affected by fatigue, drugs, environment, etc.

Thus, linguistic performance differs from time to time. The processes that produce linguistic knowledge remain the same; how they are utilized differs. So *performance*—what

*There is an interesting, though relatively superficial, related point about data. The things English speakers say when speaking English certainly count as part of the data on which a grammar of English is constructed. But a good deal of what people speaking English produce—slips of the tongue etc.—is not in the output of the grammar. Thus, the theory does not "account for" at least some of the data on the basis of which it is constructed.

(Note incidentally, that false starts, slips of the tongue, etc. are among the things children hear when they are learning a language. Only rarely, if at all, are they told that these are mistakes. But they learn the language in such a way that they end up knowing that such things are mistakes.)

speakers actually do or can do—is contrasted with *competence*—the system of processes that produces the linguistic knowledge involved in speakers' linguistic doings. (In this dichotomy the term "performance" is used for two things. When linguistic performance is spoken of as data, it is what the speaker actually does. But theories of performance are generally best understood as theories of a speaker's *capacities* to perceive, understand, etc. under various conditions.)

Now, the number of sentences one can understand under any given circumstances is large, but definitely limited. The processes that produce linguistic knowledge, on the other hand, can in principle lead to the understanding of any English sentence, no matter how complex. The processes are not limited. The speaker's use of them is limited by available time, memory, and so forth. For example, written sentences may be understood that could not be understood spoken. Written the whole thing need not be stored in memory to go back and check the beginning. Memory aids increase the number of sentences a person can understand, but they do not increase the number of sentences in the language. They do not change the processes that produce linguistic knowledge.

Compare arithmetic. What one knows about arithmetic implies infinitely many correct sums. One can do only a few of them. Use of pencil and paper increases considerably the number of computations one can perform. But buying a pencil does not increase knowledge of arithmetic. It increases the portion of knowledge that can be used. There is no theoretical limit to the extent to which memory aids can increase computational capacity.

The analogy is misleading in some respects. But the point is, in the case of both language and arithmetic, the processes have by nature an infinite output. The available output is limited by the processing capacity of the total psychological system of which they are a part.

II

Speakers do not have stored linguistic knowledge concerning individual sentences of their language. They have a great deal of linguistic information concerning the sentences they use and understand. It should, therefore, be *uncontroversial* that speakers *produce* linguistic knowledge concerning specific sentences when they are dealing with those sentences. And thus, it should be uncontroversial that there are some mechanisms or processes in speakers that produce this knowledge. Chomsky gave these mechanisms or processes the name "linguistic competence," and takes their study as the purpose of linguistic theory. It should be obvious that they are a worthy object of study.

The observation that there must be such processes was an important contribution to the understanding of human language and complex psychological phenomena in general. It is a more than reasonable conjecture that similar systems of competence are involved in many areas of human and animal activity—complex physical skills such as playing ping pong, driving an automobile, building a nest, and stalking prey, as well as areas like visual perception and the making of moral and aesthetic judgments. Any such system deserves to be called a cognitive system, because it produces cognitive states—perceptual states, belief states, or the like.

The notion of competence came into linguistics with transformational grammar, and remains after the decline—disintegration—of classical transformational grammar, although even in linguistics there is some reactionary criticism. But the notion has not achieved the prominence it deserves in cognitive psychology, outside of psycholinguistics. And it has come in for a good deal more abuse from philosophers than it deserves (*cf,* for example, Harman, 1967; Hiz, 1967; Stitch, 1971).

One reason for this philosophical abuse lies in some things Chomsky said about linguistic competence. In particular, he said the grammar is an idealization, and that the speaker knows—albeit tacitly—the rules of the grammar. It would seem that these remarks cannot both be true. If it is an idealization, then it does not characterize the actual speaker; in particular, it does not characterize his knowledge. But, in fact, they are both false.

Chomsky (1965:3) made the following fairly typical remark about idealization:

> Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community, who knows its language perfectly and is unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance.

There are two very different kinds of idealization involved here. When he said the ideal speaker is "unaffected by such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic) in applying his knowledge of the language in actual performance," this suggests that the grammar is a theory of possible performance, but for an ideal speaker, not for any actual speaker. An analogy from physical science would be the ideal gas laws, which relate pressure, volume, and temperature, Boyle's law, for example. Frictionless planes and perfectly rigid rods are others. These gas laws are ideal laws.

They do not describe the behavior of any actual volume of gas. They describe how a gas would behave under ideal conditions of—*inter alia*—molecular uniformity. But all gases deviate to some degree from uniform molecular composition—and hence from the ideal gas laws—depending on the gas, pressure, and temperature.

This analogy might be tempting to someone who wants to be a realist about linguistic theory. A realist concerning physical theory will certainly regard the ideal gas laws as a proper scientific theory, although they do not describe the behavior of any actual object. They describe an ideal, to which the behavior of an actual object approximates more or less depending on conditions, and for this reason they can play a role in describing the behavior of certain actual objects.

Similarly, a theory of linguistic competence does not describe the behavior of any actual speaker, but it does describe an ideal to which the behavioral capacities of actual speakers approximate, more or less depending on conditions, and hence, it plays a role in predicting their actual behavioral capacities.

But it is a bad analogy. The theory of competence—the grammar—is not an idealization in the way the ideal gas laws are. The ideal gas laws do not aim at describing anything that exists in nature. In particular, they do not aim at describing something that exists *in* volumes of gas. But it is clear that Chomsky intended a theory of competence to aim at describing something that exists in each speaker. There are processes *in* each speaker that generate his actual linguistic knowledge—when the rest of the system cooperates. The theory of competence aims at characterizing those very processes, not some ideal to which they approximate.

So the linguistic theory of competence is not an idealization in the sense that it is *merely* a theory of performance for an ideal speaker; that is, one without non-linguistic performance limitations.

The other sort of idealization mentioned in this passage is quite different, and quite innocent. An ideal speaker is a speaker "in a homogeneous speech community, who knows its language perfectly." The linguist is typically interested in the language of a community, and small differences in vocabulary, pronunciation, or syntax are of little interest. For this reason, the linguist does not describe any particular speaker. He abstracts from these small differences. But the linguist could describe the linguistic competence of a particular speaker, with whatever idiosyncrasies it might have. Given time and patience enough, the linguistic competence of each member of the linguistic community could be described. So this kind of "idealization" is convenient, but hardly necessary or an interesting feature of linguistic theory. Furthermore, the fact that linguists ignore small differences among speakers does not help at all to explain what the grammar says about individual speakers.

Chomsky said the grammar describes the speaker's knowledge of his language. It is true that a person knows English if and only if he has a system of linguistic competence that generates knowledge of English sentences. But what does the speaker have when he has a system of linguistic competence? Chomsky said he has knowledge of the rules of the grammar. But, of course, the speaker cannot say what the rules of the grammar are—even under hypnosis, or psychoanalysis. So Chomsky said we have *tacit* (or unconscious) knowledge of the grammar. At places he said this both about the rules of the grammar and about the linguistic information that the grammar generates—such as, that "Ron" is subject of "watch."

What should be made of tacit knowledge? Locke said that he could not understand innate knowledge and innate ideas. Leibniz replied (Remnant and Bennett, 1980:I, i, 5) that not all acquired knowledge is conscious at once, that what is not conscious must be stored in the mind in some way, and that it was at least understandable that there should be unacquired knowledge represented in the mind in the same way at birth.

This idea that information or beliefs must be represented in the mind in some way when not in use is the right way to think about the question of tacit knowledge. Many ordinary beliefs are represented in the mind when we are not thinking of them. We know that our knowledge of individual sentences is not represented in the mind except when the sentence is used or understood. If the rules that produce this knowledge are represented in the mind in much the same way as ordinary beliefs, then the speaker knows these rules. But if they are not, it is inappropriate to say the speaker knows the rules.

Saying we have *tacit* knowledge of the rules of the grammar amounts to saying we have representations of these rules similar to representations of beliefs, but that they cannot be brought to the surface the way familiar beliefs often can.

There is one phenomenon that might make it seem that speakers have tacit knowledge of the output of the grammar. Consider, for example, the sentence, "Time flies." This sentence is ambiguous. At first, most speakers recognize only the sense of the cliché, as in "My how time flies." They do not recognize that this sentence is also an imperative that might be used to give a command to an official at the insect races. It is not necessary to explain the imperative sense to a speaker who has not recognized that sense. It suffices to suggest an appropriate context. For this reason, it might be thought that this latter sense was known all along but required a reminder to be recalled, the way the first line of a song or poem can

bring back the entire work. Such a conclusion would not be correct, however. Knowledge of the imperative sense of "Time flies" is not stored in the mind like the poem would have been. It is certainly not the case that every sentence that a person can understand with prompting is stored in the mind. Knowledge of what "Time flies" means was not given the reader. It was produced as if inferred from knowledge of the language when the reader was put in the right frame of mind. Indeed, some philosophers (e.g., Graves et al., 1973) have used this as an argument for tacit knowledge of the rules of the language. That from which the specific knowledge has inferred must have been known.

But this is not the right picture either. This knowledge was not *inferred* although it was produced. Imagine a computer that derives sentences using a transformational grammar. It is turned on and just starts churning out what that grammar claims are sentences. This might be done to examine the output, as a test of the grammar. Such things have been done. If this were to be done today, it would be on some big, general-purpose computer with a program containing the rules of the grammar. The rules would be represented at some point in the program.

Suppose a special-purpose computer just to generate sentences by this grammar were to be built. The rules of the grammar would not have to be represented. The machine could be constructed so that it would act in accordance with the rules but not contain a representation of the rules. Similarly, a simple arithmetic calculator operates in accordance with the rules of arithmetic but does not contain a representation of addition and multiplication tables. These tables are not written in the calculator in any form. If it is an electronic calculator, it does binary arithmetic. There must be a structure that takes 0 and 0 and gives 0, takes 0 and1 and gives 1, etc. But nowhere in the machine does it say, "0 plus 0 is 0," etc.

So a person is (in part) a device that generates linguistic knowledge and must contain structures that operate in accordance with the rules of its grammar. But it does not follow that a representation of those rules is contained in the person. It is possible that they are. That is an empirical question. But the notion of competence does not demand that they are. In fact, if Chomsky was right in his insistence that human beings are, so far as language is concerned, special purpose devices, it would seem most likely that they do not contain representations of the rules. If not, it is inappropriate to say that they have tacit knowledge of the rules of the grammar.

It should not be concluded that the speaker knows the rules or the output of the grammar of his language. The grammar does characterize the knowledge of the speaker in one way. It says what linguistic knowledge the speaker will have, given the right circumstances. But it does not do *just* that. Realists about linguistic theory should say that it also aims at characterizing the inner processes by which this linguistic knowledge is generated when the speaker does have it. In a grammar a sentence has a certain derivation, a sequence of structures determined by the rules of the grammar, including the particular structures that characterize the linguistic knowledge a speaker has about that sentence. If the grammar is correct, a concrete realization of the structures in that sequence should occur in the mind of the speaker when he uses or understands that sentence.

In pointing out the existence of this cognitive system which he called linguistic competence—and the existence of others like it—Chomsky made a significant contribution to understanding of language and other complex psychological phenomena. He pointed out something real and important. But this contribution has been less readily accepted than it should have been because of some false things Chomsky said about linguistic competence. Among these, of particular interest is the occasional claim that a theory of competence is an idealization, and the persistent claim that speakers know (tacitly) the rules of their language—that is, the true theory of competence of their language. But a theory of competence is not an idealization in any sense relevant to Chomsky's purposes. It is not necessary that speakers know or believe the rules of their language in order for the grammar to describe some real aspect of the speaker.

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