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Two traditions are distinguishable in modern linguistic theory: the tradition of "universal grammar" which flourished in the 17th and 18th centuries, and the tradition of structural or descriptive linguistics which reached its peak 15 or 20 years ago. Universal grammar was concerned with (1) the relation of deep structure to surface forms and to the use and acquisition of language, (2) the act of perception, and (3) the acquisition of knowledge in general. Structural linguistics, on the other hand, has been particularly valuable for providing a methodology for the recording and study of factual language data. The linguists of today can begin to utilize the methods developed by structural linguists to scientifically investigate the problems which concerned the universal grammarians. We may well witness, then, a synthesis of these two traditions in language study which will allow our students to have insight into the complexities of the grammar they use unconsciously and its relation to the mysteries of the human intelligence itself. (DL)

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The Current Scene in Linguistics: Present Directions

NOAM CHOMSKY

THE TITLE OF THIS PAPER may suggest something more than can be provided. It would be foolhardy to attempt to forecast the development of linguistics or any other field, even in general terms and in the short run. There is no way to anticipate ideas and insights that may, at any time, direct research in new directions or reopen traditional problems that had been too difficult or too unclear to provide a fruitful challenge. The most that one can hope to do is to arrive at a clear appraisal of the present situation in linguistic research, and an accurate understanding of historical tendencies. It would not be realistic to attempt to project such tendencies into the future.

Two major traditions can be distinguished in modern linguistic theory: one is the tradition of "universal" or "philosophical grammar," which flourished in the seventeenth and eighteenth centuries; the second is the tradition of structural or descriptive linguistics, which reached the high point of its development perhaps fifteen or twenty years ago. I think that a synthesis of these two major traditions is possible, and that it is, to some extent, being achieved in current work. Before approaching the problem of synthesis, I would like to sketch briefly—and, necessarily, with some oversimplification—what seem to me to be the most significant features in these two traditions.

As the name indicates, universal grammar was concerned with general features of language structure rather than with particular idiosyncrasies. Particularly in France, universal grammar developed in part in reaction to an earlier descriptivist tradition which held that the only proper task for the grammarian was to present data, to give a kind of "natural history" of language (specifically, of the "cultivated usage" of the court and the best writers). In contrast, universal grammarians urged that the study of language should be elevated from the level of "natural history" to that of "natural philosophy"; hence the term "philosophical grammar", "philosophical" being used, of course, in essentially the sense of our term "scientific." Grammar should not be merely a record of the data of usage, but, rather, should offer an explanation for such data. It should establish general principles, applicable to all languages and based ultimately on intrinsic properties of the mind, which would explain how language is used and why it has the par-

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ticular properties to which the descriptive grammarian chooses, irrationally, to restrict his attention.

Universal grammarians did not content themselves with merely stating this goal. In fact, many generations of scholars proceeded to develop a rich and far-reaching account of the general principles of language structure, supported by whatever detailed evidence they could find from the linguistic materials available to them. On the basis of these principles, they attempted to explain many particular facts, and to develop a psychological theory dealing with certain aspects of language use, with the production and comprehension of sentences.

The tradition of universal grammar came to an abrupt end in the nineteenth century, for reasons that I will discuss directly. Furthermore, its achievements were very rapidly forgotten, and an interesting mythology developed concerning its limitations and excesses. It has now become something of a cliché among linguists that universal grammar suffered from the following defects: (1) it was not concerned with the sounds of speech, but only with writing; (2) it was based primarily on a Latin model, and was, in some sense "prescriptive"; (3) its assumptions about language structure have been refuted by modern "anthropological linguistics." In addition, many linguists, though not all, would hold that universal grammar was misguided in principle in its attempt to provide explanations rather than mere description of usage, the latter being all that can be contemplated by the "sober scientist."

The first two criticisms are quite easy to refute; the third and fourth are more interesting. Even a cursory glance at the texts will show that phonetics was a major concern of universal grammarians, and that their phonetic theories were not very different from our own. Nor have I been able to discover any confusion of speech and writing. The belief that universal grammar was based on a Latin model is rather curious. In fact, the earliest studies of universal grammar, in France, were a part of the movement to raise the status of the vernacular, and are concerned with details of French that often do not even have any Latin analogue.

As to the belief that modern "anthropological linguistics" has refuted the assumptions of universal grammar, this is not only untrue, but, for a rather important reason, could not be true. The reason is that universal grammar made a sharp distinction between what we may call "deep structure" and "surface structure." The deep structure of a sentence is the abstract underlying form which determines the meaning of the sentence; it is present in the mind but not necessarily represented directly in the physical signal. The surface structure of a sentence is the actual organization of the physical signal into phrases of varying size, into words of various categories, with certain particles, inflections, arrangement, and so on. The fundamental assumption of the universal grammarians was that languages scarcely differ at the level of deep structure—which reflects the basic properties of thought and conception—but that they may vary widely at the much less interesting level of surface structure. But modern anthropological linguistics does not attempt to deal with deep structure and its relations to surface structure. Rather, its attention is limited to surface structure—to the phonetic form of an utterance and its organization into units of varying size. Consequently, the information that it provides has no direct bearing on the hypotheses concerning deep structure postulated by the universal grammarians. And, in fact, it seems to me that what information is now available to us suggests not that they went too far in assuming universality of underlying structure, but that they may have been much too cautious and restrained in what they proposed.

The fourth criticism of universal

grammar—namely, that it was misguided in seeking explanations in the first place—I will not discuss. It seems to me that this criticism is based on a misunderstanding of the nature of all rational inquiry. There is particular irony in the fact that this criticism should be advanced with the avowed intention of making linguistics "scientific." It is hardly open to question that the natural sciences are concerned precisely with the problem of explaining phenomena, and have little use for accurate description that is unrelated to problems of explanation.

I think that we have much to learn from a careful study of what was achieved by the universal grammarians of the seventeenth and eighteenth centuries. It seems to me, in fact, that contemporary linguistics would do well to take their concept of language as a point of departure for current work. Not only do they make a fairly clear and well-founded distinction between deep and surface structure, but they also go on to study the nature of deep structure and to provide valuable hints and insights concerning the rules that relate the abstract underlying mental structures to surface form, the rules that we would now call "grammatical transformations." What is more, universal grammar developed as part of a general philosophical tradition that provided deep and important insights, also largely forgotten, into the use and acquisition of language, and, furthermore, into problems of perception and acquisition of knowledge in general. These insights can be exploited and developed. The idea that the study of language should proceed within the framework of what we might nowadays call "cognitive psychology" is sound. There is much truth in the traditional view that language provides the most effective means for studying the nature and mechanisms of the human mind, and that only within this context can we perceive the larger issues that determine the directions in which the study of language should develop.

The tradition of universal grammar came to an end more than a century ago. Several factors combined to lead to its decline. For one thing, the problems posed were beyond the scope of the technique and understanding then available. The problem of formulating the rules that determine deep structures and relate them to surface structures, and the deeper problem of determining the general abstract characteristics of these rules, could not be studied with any precision, and discussion therefore remained at the level of hints, examples, and vaguely formulated intentions. In particular, the problem of rule-governed creativity in language simply could not be formulated with sufficient precision to permit research to proceed very far. A second reason for the decline of traditional linguistic theory lies in the remarkable successes of Indo-European comparative linguistics in the nineteenth century. These achievements appeared to dwarf the accomplishments of universal grammar, and led many linguists to scoff at the "metaphysical" and "airy pronouncements" of those who were attempting to deal with a much wider range of problems—and at that particular stage of the development of linguistic theory, were discussing these topics in a highly inconclusive fashion. Looking back now, we can see quite clearly that the concept of language employed by the Indo-European comparativists was an extremely primitive one. It was, however, well-suited to the tasks at hand. It is, therefore, not too surprising that this concept of language, which was then extended and developed by the structural and descriptive linguists of the twentieth century, became almost completely dominant, and that the older tradition of linguistic theory was largely swept aside and forgotten. This is hardly a unique instance in intellectual history.

Structural linguistics is a direct out-

growth of the concepts that emerged in Indo-European comparative study, which was primarily concerned with language as a system of phonological units that undergo systematic modification in phonetically determined contexts. Structural linguistics reinterpreted this concept for a fixed state of a language, investigated the relations among such units and the patterns they form, and attempted, with varying success, to extend the same kind of analysis to "higher levels" of linguistic structure. Its fundamental assumption is that procedures of segmentation and classification, applied to data in a systematic way, can isolate and identify all types of elements that function in a particular language along with the constraints that they obey. A catalogue of these elements, their relations, and their restrictions of "distribution," would, in most structuralist views, constitute a full grammar of the language.

Structural linguistics has very real accomplishments to its credit. To me, it seems that its major achievement is to have provided a factual and a methodological basis that makes it possible to return to the problems that occupied the traditional universal grammarians with some hope of extending and deepening their theory of language structure and language use. Modern descriptive linguistics has enormously enriched the range of factual material available, and has provided entirely new standards of clarity and objectivity. Given this advance in precision and objectivity, it becomes possible to return, with new hope for success, to the problem of constructing the theory of a particular language—its grammar—and to the still more ambitious study of the general theory of language. On the other hand, it seems to me that the substantive contributions to the theory of language structure are few, and that, to a large extent, the concepts of modern linguistics constitute a retrogression as compared with universal grammar. One real advance has been in universal phonetics—I refer here particularly to the work of Jakobson. Other new and important insights might also be cited. But in general, the major contributions of structural linguistics seem to me to be methodological rather than substantive. These methodological contributions are not limited to a raising of the standards of precision. In a more subtle way, the idea that language can be studied as a formal system, a notion which is developed with force and effectiveness in the work of Harris and Hockett, is of particular significance. It is, in fact, this general insight and the techniques that emerged as it developed that have made it possible, in the last few years, to approach the traditional problems once again. Specifically, it is now possible to study the problem of rule-governed creativity in natural language, the problem of constructing grammars that explicitly generate deep and surface structures and express the relations between them, and the deeper problem of determining the universal conditions that limit the form and organization of rules in the grammar of a human language. When these problems are clearly formulated and studied, we are led to a conception of language not unlike that suggested in universal grammar. Furthermore, I think that we are led to conclusions regarding mental processes of very much the sort that were developed, with care and insight, in the rationalist philosophy of mind that provided the intellectual background for universal grammar. It is in this sense that I think we can look forward to a productive synthesis of the two major traditions of linguistic research.

If this point of view is correct in essentials, we can proceed to outline the problems facing the linguist in the following way. He is, first of all, concerned to report data accurately. What is less obvious, but nonetheless correct, is that the data will not be of particular interest

to him in itself, but rather only insofar as it sheds light on the grammar of the language from which it is drawn, where by the "grammar of a language" I mean the theory that deals with the mechanisms of sentence construction, which establish a sound-meaning relation in this language. At the next level of study, the linguist is concerned to give a factually accurate formulation of this grammar, that is, a correct formulation of the rules that generate deep and surface structures and interrelate them, and the rules that give a phonetic interpretation of surface structures and a semantic interpretation of deep structures. But, once again, this correct statement of the grammatical principles of a language is not primarily of interest in itself, but only insofar as it sheds light on the more general question of the nature of language; that is, the nature of universal grammar. The primary interest of a correct grammar is that it provides the basis for substantiating or refuting a general theory of linguistic structure which establishes general principles concerning the form of grammar.

Continuing one step higher in level of abstraction, a universal grammar—a general theory of linguistic structure that determines the form of grammar—is primarily of interest for the information it provides concerning innate intellectual structure. Specifically, a general theory of this sort itself must provide a hypothesis concerning innate intellectual structure of sufficient richness to account for the fact that the child acquires a given grammar on the basis of the data available to him. More generally, both a grammar of a particular language and a general theory of language are of interest primarily because of the insight they provide concerning the nature of mental processes, the mechanisms of perception and production and the mechanisms by which knowledge is acquired. There can be little doubt that both specific theories of particular languages and the general theory of linguistic structure provide very relevant evidence for anyone concerned with these matters; to me it seems quite obvious that it is within this general framework that linguistic research finds its intellectual justification.

At every level of abstraction, the linguist is concerned with explanation, not merely with stating facts in one form or another. He tries to construct a grammar which explains particular data on the basis of general principles that govern the language in question. He is interested in explaining these general principles themselves, by showing how they are derived from still more general and abstract postulates drawn from universal grammar. And he would ultimately have to find a way to account for universal grammar on the basis of still more general principles of human mental structure. Finally, although this goal is too remote to be seriously considered, he might envision the prospect that the kind of evidence he can provide may lead to a physiological explanation for this entire range of phenomena.

I should stress that what I have sketched is a logical, not a temporal order of tasks of increasing abstractness. For example, it is not necessary to delay the study of general linguistic theory until particular grammars are available for many languages. Quite the contrary. The study of particular grammars will be fruitful only insofar as it is based on a precisely articulated theory of linguistic structure, just as the study of particular facts is worth undertaking only when it is guided by some general assumptions about the grammar of the language from which these observations are drawn.

All of this is rather abstract. Let me try to bring the discussion down to earth by mentioning a few particular problems, in the grammar of English, that point to the need for explanatory hypotheses of the sort I have been discussing.

Consider the comparative construction

in English; in particular, such sentences as:

(1) I have never seen a man taller than John

(2) I have never seen a taller man than John

Sentences (1) and (2), along with innumerable others, suggest that there should be a rule of English that permits a sentence containing a Noun followed by a Comparative Adjective to be transformed into the corresponding sentence containing the sequence: Comparative Adjective–Noun. This rule would then appear as a special case of the very general rule that forms such Adjective-Noun constructions as "the tall man" from the underlying form "the man who is tall", and so on.

But now consider the sentence:

(3) I have never seen a man taller than Mary

This is perfectly analogous to (1); but we cannot use the rule just mentioned to form

(4) I have never seen a taller man than Mary.

In fact, the sentence (4) is certainly not synonymous with (3), although (2) appears to be synonymous with (1). Sentence (4) implies that Mary is a man, although (3) does not. Clearly either the proposed analysis is incorrect, despite the very considerable support one can find for it, or there is some specific condition in English grammar that explains why the rule in question can be used to form (2) but not (4). In either case, a serious explanation is lacking; there is some principle of English grammar, now unknown, for which we must search to explain these facts. The facts are quite clear. They are of no particular interest in themselves, but if they can bring to light some general principle of English grammar, they will be of real significance.

Furthermore, we must ask how every speaker of English comes to acquire this still unknown principle of English grammar. We must, in other words, try to determine what general concept of linguistic structure he employs that leads him to the conclusion that the grammar of English treats (1) and (2) as paraphrases but not the superficially similar pair (3) and (4). This still unknown principle of English grammar may lead us to discover the relevant abstract principle of linguistic structure. It is this hope, of course, that motivates the search for the relevant principle of English grammar.

Innumerable examples can be given of this sort. I will mention just one more. Consider the synonymous sentences (5) and (6):

(5) It would be difficult for him to understand *this*

(6) For him to understand *this* would be difficult.

Corresponding to (5), we can form relative clauses and questions such as (7):

(7) (i) something which it would be difficult for him to understand

(ii) what would it be difficult for him to understand?

But there is some principle that prevents the formation of the corresponding constructions of (8), formed in the analogous way from (6):

(8) (i) something which for him to understand would be difficult

(ii) what would for him to understand be difficult?

The nonsentences of (8) are formed from (6) by exactly the same process that forms the correct sentences of (7) from (5); namely, pronominalization in the position occupied by "this", and a reordering operation. But in the case of (6), something blocks the operation of the rules for forming relative clauses and interrogatives. Again, the facts are interesting because they indicate that some general principle of English grammar must be functioning, unconsciously; and, at the next level of abstraction, they raise the question what general concept of linguistic structure is used by the person learning the language to enable him to acquire the particular principle that

explains the difference between (7) and (8).

Notice that there is nothing particularly esoteric about these examples. The processes that form comparative, relative, and interrogative constructions are among the simplest and most obvious in English grammar. Every normal speaker has mastered these processes at an early age. But when we take a really careful look, we find much that is mysterious in these very elementary processes of grammar.

Whatever aspect of a language one studies, problems of this sort abound. There are very few well-supported answers, either at the level of particular or universal grammar. The linguist who is content merely to record and organize phenomena, and to devise appropriate terminologies, will never come face to face with these problems. They only arise when he attempts to construct a precise system of rules that generate deep structures and relate them to corresponding surface structures. But this is just another way of saying that "pure descriptivism" is not fruitful, that progress in linguistics, as in any other field of inquiry, requires that at every stage of our knowledge and understanding we pursue the search for a deeper explanatory theory.

I would like to conclude with just a few remarks about two problems that are of direct concern to teachers of English. The first is the problem of which grammar to teach, the second, the problem why grammar should be taught at all.

If one thinks of a grammar of English as a theory of English structure, then the question which grammar to teach is no different in principle from the problem facing the biologist who has to decide which of several competing theories to teach. The answer, in either case, is that he should teach the one which appears to be true, given the evidence presently available. Where the evidence does not justify a clear decision, this should be brought to the student's attention and he should be presented with the case for the various alternatives. But in the case of teaching grammar, the issue is often confused by a pseudo-problem, which I think deserves some further discussion.

To facilitate this discussion, let me introduce some terminology. I will use the term "generative grammar" to refer to a theory of language in the sense described above, that is, a system of rules that determine the deep and surface structures of the language in question, the relation between them, the semantic interpretation of the deep structures and the phonetic interpretation of the surface structures. The generative grammar of a language, then, is the system of rules which establishes the relation between sound and meaning in this language. Suppose that the teacher is faced with the question: which generative grammar of English shall I teach? The answer is straightforward in principle, however difficult the problem may be to settle in practice. The answer is, simply: teach the one that is correct.

But generally the problem is posed in rather different terms. There has been a great deal of discussion of the choice not between competing generative grammars, but between a generative grammar and a "descriptive grammar." A "descriptive grammar" is not a theory of the language in the sense described above; it is not, in other words, a system of rules that establishes the sound-meaning correspondence in the language, insofar as this can be precisely expressed. Rather, it is an inventory of elements of various kinds that play a role in the language. For example, a descriptive grammar of English might contain an inventory of phonetic units, of phonemes, of morphemes, of words, of lexical categories, and of phrases or phrase types. Of course the inventory of phrases or phrase types cannot be completed

since it is infinite, but let us put aside this difficulty.

It is clear, however, that the choice between a generative grammar and a descriptive grammar is not a genuine one. Actually, a descriptive grammar can be immediately derived from a generative grammar, but not conversely. Given a generative grammar, we can derive the inventories of elements that appear at various levels. The descriptive grammar, in the sense just outlined, is simply one aspect of the full generative grammar. It is an epiphenomenon, derivable from the full system of rules and principles that constitutes the generative grammar. The choice, then, is not between two competing grammars, but between a grammar and one particular aspect of this grammar. To me it seems obvious how this choice should be resolved, since the particular aspect that is isolated in the descriptive grammar seems to be of little independent importance. Surely the principles that determine the inventory, and much else, are more important than the inventory itself. In any event, the nature of the choice is clear; it is not a choice between competing systems, but rather a choice between the whole and a part.

Although I think what I have just said is literally correct, it is still somewhat misleading. I have characterized a descriptive grammar as one particular aspect of a full generative grammar, but actually the concept "descriptive grammar" arose in modern linguistics in a rather different way. A descriptive grammar was itself regarded as a full account of the language. It was, in other words, assumed that the inventory of elements exhausts the grammatical description of the language. Once we have listed the phones, phonemes, etc., we have given a full description of grammatical structure. The grammar is, simply, the collection of these various inventories.

This observation suggests a way of formulating the difference between generative and descriptive grammars

erative and descriptive grammars
terms of a factual assumption about
nature of language. Let us suppose
a theory of language will consist o
definition of the notion "grammar,"
well as definitions of various kinds
units (e.g., phonological units, morp
logical units, etc.). When we apply s
a general theory to data, we use
definitions to find a particular gram
and a particular collection of units. C
sider now two theories of this sort
differ in the following way. In one,
units of various kinds are defined in
pendently of the notion "grammar";
grammar, then, is simply the collect
of the various kinds of unit. For exam
we define "phoneme," "morpheme," e
in terms of certain analytic procedu
and define the "grammar" to be the c
lection of units derived by apply
these procedures. In the other theo
the situation is reversed. The not
"grammar" is defined independently
the various kinds of unit; the gramma
a system of such-and-such a kind.
units of various kinds are defined
terms of the logically prior conc
"grammar." They are whatever appe
in the grammar at such-and-such a le
of functioning.

The difference between these t
kinds of theory is quite an import
one. It is a difference of factual assur
tion. The intuition that lies behind
scriptive grammar is that the units
logically prior to the grammar, wh
is merely a collection of units. The int
tion that lies behind the development
generative grammar is the opposite; i
that the grammar is logically prior to
units, which are merely the elements t
appear at a particular stage in the fu
tioning of grammatical processes.
can interpret this controversy in terms
its implications as to the nature of l
guage acquisition. One who accepts
point of view of descriptive gramm
will expect language acquisition to b
process of accretion, marked by grad

growth in the size of inventories, the elements of the inventories being developed by some sort of analytic or inductive procedures. One who accepts the underlying point of view of generative grammar will expect, rather, that the process of language acquisition must be more like that of selecting a particular hypothesis from a restricted class of possible hypotheses, on the basis of limited data. The selected hypothesis is the grammar; once accepted, it determines a system of relations among elements and inventories of various sorts. There will, of course, be growth of inventory, but it will be a rather peripheral and "external" matter. Once the child has selected a certain grammar, he will "know" whatever is predicted by this selected hypothesis. He will, in other words, know a great deal about sentences to which he has never been exposed. This is, of course, the characteristic fact about human language.

I have outlined the difference between two theories of grammar in rather vague terms. It can be made quite precise, and the question of choice between them becomes a matter of fact, not decision. My own view is that no descriptivist theory can be reconciled with the known facts about the nature and use of language. This, however, is a matter that goes beyond the scope of this discussion.

To summarize, as the problem is usually put, the choice between generative and descriptive grammars is not a genuine one. It is a choice between a system of principles and one, rather marginal selection of consequences of these principles. But there is a deeper and ultimately factual question, to be resolved not by decision but by sharpening the assumptions and confronting them with facts.

Finally, I would like to say just a word about the matter of the teaching of grammar in the schools. My impression is that grammar is generally taught as an essentially closed and finished system, and in a rather mechanical way. What is taught is a system of terminology, a set of techniques for diagramming sentences, and so on. I do not doubt that this has its function, that the student must have a way of talking about language and its properties. But it seems to me that a great opportunity is lost when the teaching of grammar is limited in this way. I think it is important for students to realize how little we know about the rules that determine the relation of sound and meaning in English, about the general properties of human language, about the matter of how the incredibly complex system of rules that constitutes a grammar is acquired or put to use. Few students are aware of the fact that in their normal, everyday life they are constantly creating new linguistic structures that are immediately understood, despite their novelty, by those to whom they speak or write. They are never brought to the realization of how amazing an accomplishment this is, and of how limited is our comprehension of what makes it possible. Nor do they acquire any insight into the remarkable intricacy of the grammar that they use unconsciously, even insofar as this system is understood and can be explicitly presented. Consequently, they miss both the challenge and the accomplishments of the study of language. This seems to me a pity, because both are very real. Perhaps as the study of language returns gradually to the full scope and scale of its rich tradition, some way will be found to introduce students to the tantalizing problems that language has always posed for those who are puzzled and intrigued by the mysteries of human intelligence.