ON SOME CONTROVERSIAL ISSUES OF TRANSFORMATIONAL GENERATIVE GRAMMAR THEORY

An Interview
with the American Linguist
Professor Noam Chomsky
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By

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A linguistic theory, as the Danish linguist Hjelmslev perceived it, is led by an inner necessity to recognize not merely the linguistic system in its schema and in its usage, in its totality and in its individuality, but also man and human society behind language in order to achieve its final goal, i.e., humanity and universality. Although linguistic theory could reach that goal, we still have a dialectical conflict between man and reality.

It was a great opportunity for me to interview Professor Noam Chomsky and ask him several questions concerning current issues in linguistic theory. Professor Chomsky, one of the world's most eminent modern linguists, kindly explained a part of the ongoing debate over his controversial theory of language and showed how it relates to the general structure of any adequate theory of language.

I am very grateful to him for reading through the interview and making a number of valuable corrections and clarifications.

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AN INTERVIEW WITH THE AMERICAN LINGUIST NOAM
CHOMSKY ON JANUARY 31, 1980 AT THE MASSACHUSETTS
INSTITUTE OF TECHNOLOGY IN CAMBRIDGE, MASSACHUSETTS

QUESTION 1

*During my interview with the French linguist Andre Martinet at the
Fifth International Congress of Applied Linguistics in Montreal, Canada
in 1978, he opposed your theory on the grounds that your theory is based
on the English language, so we cannot apply that theory to other languages. What do you think ?*

Any theory is based on research on certain languages, and it is
true as far as my own personal work is concerned that primarily it is
concerned with English. But it is certainly not true that the work in
generative grammar or transformational grammar has been based on English. In fact, I am surprised that Martinet should have said that since
much of the best work in the field has actually been done in France, on
French. There has been extensive work on Romance and many other
languages, mostly Indoeuropean, but not all. There has been a great deal
of work on Japanese. There is work on American Indian languages and
there has been for the past twenty years or so. In fact, there is just simply
no truth to the assertion.

There is a point there, however, and that is that this kind of work
cannot be based on superficial knowledge of a language. You cannot do
serious work in generative grammar simply on the basis of a small amount
of informant work. You really have to have a rather far-reaching knowledge
of the facts of the language before you can hope to do work of this kind.
In fact most of the work is done by people who are native speakers of
the language in which they work and that has often led to some distress
on the part of linguists who are used to working in a rather different
way-on the basis of informants in a language which they really do not
master. But I simply do not feel that it is possible to test far-reaching
hypotheses about a language without a very extensive knowledge of the
facts of the language, the kind of knowledge which really is available only
to a native speaker.

QUESTION 2

*Andre Martinet claims that you are not a linguist but you are a
mathematician and logician, because you look at language from the mathematical perspective, not from the linguistic scope. Would you please
comment ?*

I have no idea what that means. I am working on principles of language and of course I would like to make them as clear as possible and
as precise as possible. I am also quite convinced that the structure of
language is an intricate structure with all kinds of abstract inter-connec-

tions. The theory of language has a deductive structure, in the sense that the complex phenomena of particular languages can be explained in terms of the interaction of quite general unifying principles. Ultimately, one hopes to characterize all of this in terms of mathematical systems which capture essential properties. You might just as well say that biologists are not biologists, they are mathematicians, because they try to make their theories precise. Any scientist willetry to make his theories precise. The more precise they get the more it becomes possible, occasionally, to consider mathematical models that have some of the properties of these theories, that is, to consider some of the properties of these theories from an abstract point of view.

QUESTION 3

André Martinet claims that Transformational Generative Grammar Theory is too narrow to handle the language phenomenon. He gave an example of subject-predicate criteria. Your theory says that a sentence consists of subject-predicate elements. But in French sometimes we have a sentence without a subject, e.g., « il-y-a du soleil » (There is some sun). What do you think ?

Let me put it this way. Every basic structure in the language has to be captured by the generative grammar of the language. Producing an example tells us nothing. We do not know how the example is related to the rule structure of the language. If one proposes a theory of the rule structure of French which aims to characterize the knowledge of the speaker of French, one can then take the sentence « il-y-a du soleil » and ask how that sentence is embedded into the rule structure of French, whether it is embedded within a subject-predicate framework (as I suppose is true in this case) or within some other framework. But without a characterization of the rule structure a set of scattered examples is meaningless. It is as if someone came to a physicist and said : here is a funny thing that happened, how do you account for it ? Off-hand, he does not know how he accounts for it. You have to ask how that particular funny thing that happened is related to the system of rules and principles and laws that function in the system. If Martinet has a theory of rule structure which in French incorporates that sentence, then one can look and ask whether it is the right rule structure or not, and if Richard Kayne proposes his transformational grammar of French as a theory of French structure, one can ask how that sentence would fit into the rule structure that he postulates. But there is no real issue about the question of generative versus nongenerative grammar. I mean, everyone is doing generative grammar if they are being careful. That is, anyone who is trying to capture the knowledge of the language that an individual has is doing generative grammar. That is, he is trying to discover the rule structure that constitutes linguistic knowledge, and naturally that rule structure will have to capture all of the phenomena in one way or another. If it turns out that some of them are based on structures that are not of the subject-predicate

form, fine. It is just a fact of that language, which may tell us something about the general principles of language. But we cannot tell anything by looking at an isolated example.

QUESTION 4

Andre Martinet does not believe in the notion of deep structure. He deals with language from the surface notion. Do you think that the surface criteria is enough to handle the language phenomenon ?

I think the real difference between, say, what Martinet does and what generative grammarians do has nothing to do with deep structure versus surface structure. It has to do with the goal of the research. The goal of the research in generative grammar is to characterize knowledge of language. You are a native speaker of Arabic. That means that there is something represented in your mind, ultimately in your brain, which determines the form and the meaning and the interaction of form and meaning for an infinite variety of sentences. The only possibility is that what you have in your mind and brain is a system of rules. You cannot have a list of all the structures because there are infinitely many of them. So you have to have a system of rules. We therefore face the question : what is that system of rules ? It has to be a finite system of rules which somehow operates to characterize an infinite class of structures that you use freely when you speak and understand Arabic. Now, the primary difference between Martinet's work and generative grammar is that he is not interested in the system of rules. Therefore there is no way to compare what he is talking about with what a generative grammarian is talking about. They are just in different fields. The generative grammarian is interested in knowledge of language, not simply in making comments about some of the structures of the language. And if another person is not interested in this, fine. He is just working in a different field. Now, suppose you are interested in the question : What is it that a person knows when that person knows a language ? Or : What is the system of rules that enables the person who knows a language to speak freely and to express his thoughts and to understand over an unbounded domain ? Then you ask yourself : Does this system of rules incorporate a deep structure or does it not incorporate a deep structure ? But if you do not ask yourself that first question, then the second question, namely, is there a deep structure or not, does not even arise. So, Martinet cannot ask the question — « Does deep structure exist ? » — because he has not accepted (nor need he, if he wants to do something else) the primary assumption : namely, that we are trying to capture what it is that a person knows, what is the nature of knowledge of a language, what is the psychological form in which this knowledge is represented. If one is interested in this question, fine. If one is not interested in it then the question of the existence of deep structure simply does not arise. You can describe the phenomena in any way that you like if you are not interested in the underlying system of rules that determines and characterizes knowledge of language.

QUESTION 5

We Arabs believe that the efforts which the Arab linguists in the Middle Ages made in the field of linguistics are important and contributed a great deal to modern linguistics. What are your thoughts on this matter ?

I should say that before I began studying general theoretical linguistics I was doing Semitic linguistics. I remember studying the Al-Ajurrumiyyah* many years ago, more than thirty years ago I suppose, with Franz Rosenthal who is now at Yale University. I was then an undergraduate student at the University of Pennsylvania, and I was quite interested in the tradition of Arabic and Hebrew grammar of the Medieval period and much of my own thinking about language actually was influenced by some of that work. But I do not feel that I am enough of a scholar to be able to say what contribution this work has made in general.

QUESTION 6

It is said that Chomsky is a sun approaching its setting. What direction do you see your work taking following your Transformational Generative Grammar Theory ?

At the moment, in fact, I think that the field of transformational grammar is in perhaps its most exciting period, for the following reasons. In the earliest stage, say 25-30 years ago, the major problem that was faced was to develop certain concepts of linguistic rule and linguistic structure, including the concept of grammatical transformation, that would be rich enough to enable us to capture an array of phenomena that were simply far too complex to be incorporated within the framework of ideas of structural linguistics. They could not be dealt with in a serious way. So the problem was to develop concepts like transformation which were rich enough to enable us to describe a complex array of structures.

However, at the same time, the goal of the theory was to reach what was called explanatory adequacy, that is to be able not only to describe the phenomenon with a rich system of rules but to explain why the phenomena are the way they are. Now the schematism for explanation in linguistics is pretty obvious. What you have to do is explain how it is that a person can know what he does know. Now the child is presented with a certain amount of data. He is not presented with the rule structure of the language. Nevertheless, he develops in his mind a grammar which characterizes an infinite array of data of which only a tiny fraction has ever been presented to him. So the problem of explanation is to determine what is intrinsic to the child's mind that enables him to make this tremendous leap from the data presented to the knowledge that is attained.

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* Al-Ajurrumiyyah is the name of the famous Arabic grammar compendium : the author was Ibn 'Agurrum a 14 th century Moroccan grammarian. It was translated into latin by the 16 th century.

At this point a tension arises between the task of description and the task of explanation. In order to describe the richness of phenomena we would seem to need richer and richer notions. But in order to explain the phenomena we need more and more restrictive notions because the only way to account for the move that the child makes from data to specific knowledge is to assume that the initial potentialities are very limited, so that there are not too many possibilities for the child to consider. If there were a vast number of possible grammars for the child to consider, he could never select or learn any of them. And the fact that he does acquire knowledge of one of them on the basis of a relatively small amount of data must mean that he is preprogrammed ; in a sense, that he is organized in advance. Part of our human endowment is to limit us to specific types of grammar. But that means that the range of descriptive devices must be very restrictive and narrow. So here there is tension between the desire to have rich descriptive devices for descriptive adequacy and the need to have narrow descriptive devices for explanatory adequacy.

The early stage of the field was largely concerned with enriching the class of descriptive devices, but gradually over the years there has been more and more work devoted to restricting the range of devices available to the language faculty. This work is now reaching, I think, a very interesting phase in which quite general principles have been formulated which govern the functioning of rules, were these general principles have a certain limited range of variability. For example, there are principles that say that transformations cannot move things too far, they only move things a short distance. They are sometimes called « locality principles ». But these locality principles can vary very slightly from language to language. For example, the grammars of English on the one hand, and Italian and French on the other, seem to differ very slightly in the manner in which the general principle of locality applies. Because of the intricacy of the system of shared general principles, this slight variation leads to what appear superficially to be very different phenomena in these languages. Now such principles as locality and others like them which have been discovered in recent years enable one to very sharply restrict the class of descriptive devices.

Let me take a concrete case. Take the work of 30 years ago. It was noticed that one could form questions in English, and in many languages, by taking some noun phrase and replacing it by a question word such as, « who » or « what : Take « You saw John », replace « John » by « who », and a movement rule yields : « Who did you see ». The movement rule and other mechanical changes yields a question. That is quite general, but you cannot always do it. For example, if you take the sentence « Your interest in him surprised me » and try to replace « him » by « who » and move it to the front of the sentence, you derive the expression « Who did your interest in surprise me ? » which is not a sentence of English. So that is a case in which you cannot do it.

In the early work the transformation itself was made sufficiently complex to account for that fact. The transformation of wh-movement in the earliest work incorporated a set of concrete contextual restrictions and so on which made it work in the right places and not in the wrong places. But in order to enable transformations to do that, the concept « transformation » had to be a very powerful and rich device with a lot of potential variability. There had to be many possible transformations, hence an enormous range of possible grammars. In recent work it has been found that some general principles, like the principle of locality that I described, suffice to explain why movement is possible in some cases and not in other cases. That means that we no longer have to build into the transformation the specific contextual restrictions. Correspondingly, the range of possible transformations is very sharply limited. There are very few possible transformations, all of them subject to general principles which have a certain limited degree of variability.

In the last ten years there has been work, which seems to me very promising, on systems of general principles, each of which has a limited range of variability, which allow one to very radically simplify the rules. In fact, it may be that the transformational rules for a sort of basic core grammar can be reduced to the single rule that says « move any category ». The general principles will interact to control the movement so as not to permit wrong structures to be formed. In the course of this work quite a large number of new phenomena have been investigated. The descriptive scope of the work has extended considerably, first of all, in English and a few other well studied related languages, but also in a number of other language types. We can now envision a theroy of generative grammar which is much more advanced and sophisticated than any one that was considered in earlier years. It will be a theory which has a system of general principles such as principles of locality and others with a fairly significant deductive structure to them. That is, these principles will interact in such a way that we can deduce many complex consequences from them. The principles are open to a limited degree of variability — they have certain parameters — since obviously there are different languages. Assuming that the principles are part of the child's initial endowment, the task of the child learning the language is to determine how the parameters are fixed for the particular language, to determine just which of the permissible options is selected in the particular language presented to him. When a number of these decisions are made, the principles have been fixed, and one can deduce a very complex variety of facts about the language.

This is all work that has been done in the last ten years and in my opinion, it moves linguistics into a new phase which it has not been previously able to approach. I think myself that that is where the future of the subject lies.

QUESTION 7

What is your opinion of the work in « Case Grammar » which was done by Walter A. Cook, specifically his « Case Grammar Matrix Model » (1970-1978) ?

I am not familiar with Cook's work on case grammar. I am familiar with work of Fillmore in case grammar. It seems to me that it is basically a system of descriptive semantics of a sort that is really common to everybody's work. Eevery theory of descriptive semantics assumes that there are semantic relations such as agent and instrument and so on, and that these semantic relations hold between verbs and certain noun phrases. So if we consider the sentence « John broke the window with a hammer », we would say that « John » is the agent of the action that « a hammer » is the instrument of the action, and that « the window » is the patient of the action. Now that much is common to every theory of descriptive semantics. Different terminology is used in different theories. So, for example, in the work of Gruber and Jackendoff in the mid-sixties, these were called « thematic relations ». In the work of Katz they were called « semantic relations ». In the work of Fillmore they were called « case relations ». But it is common to everyone, more or less.

I do not really think there is such a thing as « case grammar ». It is just one of the many notations for descriptive semantics. The problem is how to work these systems of descriptive semantics into a theory of he rule structure of language. Here theories begin to differ My own view is that what Fillmore called case relations (semantic relations, thematic relations, whatever term one wants) are determined by certain formal grammatical structures interacting with intrinsic properties of lexical items. In fact, a great deal of my own work, and the work of most of the people in the field, has been to try to show how what Fillmore calls « case relations » fit into the system of rules that determine the syntactic and semantic structures of a language.

QUESTION 8

Semanticists have said that your theory needs a serious modification which led them to establish what is nowadays called « Generative Semantics ». Do you think this model is a part of your theory or a separate approach toward languages ?

This question is more or less academic because generative semantics has essentially disappeared, as far as I can see. I do not think that anyone works in generative semantics anymore. At least I cannot think of anyone who does. About ten years ago there was a position that you could call « generative semantics », but at the moment I would not know even what the term describes. I think that the position that existed, say ten years ago, was interesting but wrong for the reasons that I discussed in a paper on it in a book called *Studies on Semantics in Generative Grammar*. It was a wrong theory but an interesting one. But since then the theory has disappeared anyway. There is nothing to discuss.

QUESTION 9

What do you think about the linguistic work of Prague school ?

There are many different facets to it. First their work in phonology in the thirties was extremely influential and important and worked its way into everyone's later approach. There has been quite interesting work in syntax, in fact, in the last 20 or 30 years by Prague linguists who have studied many questions, questions about linguistic function, about focus, and so on. They have done a lot of quite interesting descriptive work in many languages, among them English. So I find it very useful work, but I do not find it very interesting theoretically. I think it often has provided a lot of insight into linguistic phenomena. It is very good descriptive work.

QUESTION 10

How do you perceive linguistics as a scientific study of languages in the future ?

In my view, linguistics should be conceived as part of psychology, ultimately part of human biology. That is, as I see it, linguistics is part of the study of one particular capacity of the human mind. This capacity is a specific and as far as we know unique feature of the human mind which enables a human being to acquire knowledge of language, this enormously rich system of expression. It is unique to humans as far as we know. The study of language is on a par with the study of the visual system. Just as one can try to find out how the human visual system works, as distinct from the visual system, let's say, of a bee, so one can try to find out how the human language faculty works, this being a system which, as far as we know, is unique to the human species. The further direction in the field might be along the lines that I just described, that is, finding the rules and principles that are intrinsic to the system, and finding then the parameters that permit languages to vary, so that one or another language is determined within that fixed system of rules. Ultimately, we would hope to be able to show how the language faculty interacts with other systems of the mind and how they are physically represented in the brain. These are long-term directions in which linguistics could proceed.

QUESTION 11

What do you think about the significance of computational linguistics in the field of linguistics ? Do you see it playing an important role in the future ?

It could very well. Computational work could prove useful for testing theories that are too complex for us to be able to determine their consequences simply by inspecting them. So when theories become really rich

and complex and we want to know what their consequences are over a large domain it sometimes becomes useful to test them through computational means. Furthermore studies of algorithms, that is, techniques for carrying out computations, might very well lead to some understanding of linguistic processing, of how language knowledge might be organized and how different parts of that knowledge ought to be accessed and used in computations. I do not think such work has contributed very much so far but I would expect that in the future it could be important.

QUESTION 12

To what extent has the traditional Jewish literature in linguistics contributed to your Transformational Generative Grammar Theory or to your Transformational Generative Phonology Theory ?

As I said, my earliest training actually was in Medieval Hebrew grammar. My father was a specialist in Medieval Hebrew and Arabic grammar and I studied it with him. Later, as a student in college I studied Arabic grammar and Medieval Arabic grammars as well. I have actually written about this if you want more detail in the Introduction to the book *The Logical Structure of Linguistic Theory*. I discuss there how some of my early studies, just as a child really, in Medieval grammar led to some ideas about rule systems which then entered into my work on generative phonology and language systems. In fact, these were the relevant models that were used in the 1940's. The first work that I did myself in generative grammar was on the generative grammar of Hebrew based in part on these ideas. This was in the late 1940's.

QUESTION 13

Some people say that Chomsky is the Aristotle of the twentieth century. What do you think ?

I do not think so. I do not think that linguistics has yet undergone its real scientific revolution. I think it is approaching it and maybe one of these days will achieve it but I think we are really groping in advance. We are really doing groundwork from which I think a major scientific revolution may sooner or later take place. I would put it in different terms. I would say that we are waiting for our Galileo, to bring about a galilean revolution. That is on the horizon, maybe.

QUESTION 14

Your philosophical points of view are to focus theory on reality but not vice versa, and this is what you did in linguistics : you focused the linguistic theory on the linguistic reality to apply your Transformational Generative Grammar on languages. Do you think that the linguistic reality enhanced your theory and shaped it differently from the first version ?

Every paper that I have written or anyone has written has used empirical materials from language to provide some insight into the principles of language, that is, linguistic theory. Theories are not simply spun out of one's imagination. They are based upon careful inspection of available facts. So I do not understand the dichotomy, really. I do not think that any such dichotomy can be made between reality and theory. Theoretical work is an effort to capture the basic properties of reality using data relevant to it.

QUESTION 15

When somebody introduces himself in a party as a doctor, people will wonder in which hospital he works, and when somebody introduces himself as a lawyer, everybody willt hink when he has a legal problem, the lawyer would be able to help. But when you introduce yourself as a linguist people will be astonished and ask what do you mean by linguistics ? And when you try to explain to them that linguistics is a scientific study of language, they will say, « Well, why do you bother and study languages since we speak them naturally ? » Do you think that linguistics can change people's opinions one day, and do you think the study of linguistics is important ?

In our own intellectual tradition going back to the Greeks it has always been assumed, and I think correctly, that the most important topic to study is the human being, the question what is the nature of humans, and in particular, how the huhman mind works. There can hardly be a more significant topic for investigation for us than the human mind and how it functions. The most interesting aspects of the human mind are those intellectual achievements that are carried out naturally, that seem so obvious to us that we cannot even see at first that there is a problem to be studied. The first difficulty that you have to overcome if you want to study human beings is to try to attain a sense of wonder and surprise at the fact that you are able to do what you are able to do normally. If you do not think about it, it seems obvious that you just talk and say what is on your mind. But the question is : How are you able to do this ? What is it about a child that makes it possible for the child to acquire this ability but that does not make it possible for an ape or a dog or any other organism to acquire this ability ? What is that capacity ? What underlies it ? What are its properties ? What are its features ?

The psychologist, Wolfgang Kohler, once remarked that it is necessary to develop a kind of « psychic distance » from the acts that you perform naturally. You have to be able to look at them as it were from the outside, to recognize how amazing they are, before you can begin to try to find out what are the capacities on which these acts are based. It is not a problem when you study, say, physics because, since we are studying something that is external to us, we already have psychic distance. We do not move the planets so therefore the fact that the planets move already seems remarkable. But since we are the ones who are doing the

speaking, what we are doing sometimes does not seem remarkable, but rather somehow obvious. However, it is really much more remarkable than the fact that the planets are moving the way they are.

What one has to do is to first achieve sufficient psychic distance so as to be able to look at one's own achievements and ask how is it possible to perform them, just as one looks at the motions of the planets and asks why does it work that way ? And only when one attains that level of psychic distance from the phenomena can one begin to undertake an inquiry which will lead to an understanding of how the human mind works.

There are many aspects to the way the human mind works but certainly language is one very central aspect. There is no doubt, I think, that the enormous biological and cultural success of the human species is largely based on its possession of language, which has provided an instrument of thought and understanding that is simply not available to any other organism. So at the heart of any inquiry into human nature I would think would be the study of language.