

QUESTIONS - SÃO PAULO *

1. What is the place of the Minimalism Program in the Generative Grammar tradition?

Modern Generative Grammar has joined with the sciences, in some respects, one of them being that everything that is in print is outdated. If you are a physicist, what you look at is the letters that appear in *Physical Review*, because they are telling you about the unpublished articles and the latest experiments which are really important. I wouldn't say that Linguistics is Physics, far from it, but it is moving in that direction in some ways. So things change very fast. If people are still teaching the same thing they taught twenty years ago, either the field is dead or their brain is dead. Things are just changing all the time, as in the Natural Sciences. The Minimalist Program is one of the recent changes. I wouldn't even say it's a change. It's an idea, maybe completely crazy. We'll know in a few years whether it makes any sense. It's based on a very strange idea. Language is a very funny biological object. It doesn't have the properties of most of the biological world and this proposal says it's even stranger than we thought: it's perfectly designed. If you ask some super-engineer to take a primate like us, but without a language faculty, and to insert a language faculty into it, the device would have to meet certain design specifications. It has to work with other parts of the brain, to access them. So you take the design specifications, give them to the super-engineer and ask him to do it in the best possible way, forgetting about the properties of the brain or anything else. The question is: how close does language come to that? My own personal suspicion is that language design comes surprisingly close to that. Where there seem to be imperfections, they really are imposed by the design specifications. If that turns out to be anywhere near true, it would be extremely surprising. Biological systems typically don't have such properties. That is just a program, a research program, with a good deal of ongoing work. There is by no means a consensus, even among my own friends and associates. Far from it.

* Technical problems with the tapes and their posterior re-edition may have caused discrepancies between the gist of some questions and their answers, for which I apologize. Nevertheless, irrespected of this, the texts presented reflect faithfully the expression of the author. Cristina Altman

2. What's the interest of the artificial languages, like Esperanto, for e.g., for the scientists. Would it be possible a universal language in this sense?

People especially in Esperanto circles have the illusion that Esperanto is a language with a well-defined grammar. But that's not true. Nobody has ever written a grammar of Esperanto and nobody would know how to write one. The reason is that Esperanto borrows unconsciously the principles of the languages from which it was constructed and nobody knows those principles. Esperanto is more or less based on Romance languages, and it eliminates some of the odd details like strange inflection of the verb "to be" and so on. But the principles of Esperanto are the principles of Portuguese, Spanish, French, Japanese and other languages, and we have only a limited understanding of what they are. The purpose of the study of language is to discover those principles. Something is known about them, but most of them are still unknown. There's an awful lot of work to do. So, if the Minimalist Program turns out to be correct, Esperanto would be a perfectly designed language, because it's the way the world is, but nobody knows that. People think they know the rules of Esperanto because they unconsciously know language; it is in their head somewhere. But that's like saying that the study of vision is just the study of whether this thing is near me or far from me. That's not the study of vision. The study of vision is what's going on in my brain, and I have little idea what that is. That's a topic for a scientist to discover. The same is true for the study of language. Esperanto is of no particular interest for the study of language, as far as I can see. It may be useful, it may not be, that's a problem of social utility. It may be useful for people to learn Esperanto as a second language, which eliminates some of the odd details of particular languages that had developed at their time. But it's just an ordinary language, with principles that are mostly unknown, as the principles of any other language. So, I don't think it has any intellectual interest. The question about Esperanto is like a question about a hammer. If it's useful, use it, if it's not useful, don't use it. But it has no intellectual interest.

3. What is the future of the automatic translation æ what is the relationship between the computer languages and the natural languages?

When we talk about artificial languages and computer languages that's a little bit like talking about whether submarines swim, or whether airplanes fly. Natural language is a biological phenomena. It is like the circulatory system of your body, it's just there. There are other things that have some of those properties. People design things that have some of those properties, like a bulldozer, it knocks down trees, lifts earth, it's something like a person; a person can knock down trees or lift earth too. So, maybe we decide to call a bulldozer a strong person. That would be like calling a computer language a language. These systems have some vague similarity to language, but it does not reach very far. Artificial languages and computer languages, don't have to meet the design specifications of natural language and they don't have many of the properties of natural languages. They don't have phonology, they don't have morphology, they have a very simplified artificial syntax of a kind that natural language doesn't have at all. They have a semantics which a natural language does not have, they haven't any pragmatics. This is very remote from natural language.

When you ask what's missing for a computer to speak, or to translate, what's missing is a mind like humans. Nobody knows what that is. The Cartesians didn't know, we don't know, it's a mystery. There is something about our mind that enables us carry out this, what you and I are doing, this free, creative use of language. Nobody understands it. If you do understand something, you can program a computer to do it. A computer isn't a mystical object. When you talk about what a computer does, it's not really what the computer is doing, is what a program is doing. The computer just executes the program, which is a theory, with a very strange notation, so that the computer can use it. Maybe it is a good theory, maybe it is a bad theory, but it's just a theory, like somebody else's theory. The question is: can we have a theory of speaking or translating? That's hard, way beyond anything that scientists hope to achieve now. Today scientists are very much puzzled trying to explain the behavior of a little thing called a 'nematode', a little tiny worm which has about 1000 cells. It's an interesting animal, because the nervous system is completely

understood, you know entirely the whole wiring diagram. But it is hard to explain why the thing does what it does, like why it decides to turn left at some point, whatever nematodes do. This is a very hard problem for a 1000-cell organism, where we know everything about its nervous system. To talk about the explanation of human behavior is completely hopeless for the present. We may never understand it. If we do it, that is great. We could then get a machine to speak, or translate, because we would have a theoretical understanding of these matters. We don't have such a theory. We have a theory of some of the mechanisms that enter into these actions, as in the study of vision or organization of motor behavior.

4. Is there a future for the automatic translation?

When I was employed by MIT, back in 1950s, I had no particular profession, and I was hired in an Electronics Laboratory to work on a project on automatic translation. I told the director of the laboratory that I thought that the project was pointless, and that I was not going to work on it, but if they wanted to hire me to do what I wanted to do, I would not object. He thought that was nice, so he hired me. I still think it doesn't make much sense. I mean, it's like a bulldozer. We don't have the kind of understanding of language that allows us to comprehend what those people over there are doing. We don't begin to understand what they are doing. So, if you want to make something useful, you do it by brute force. That's maybe worthwhile, maybe not worthwhile, but it is of no intellectual interest. It's like chess playing machines. When people started programming machines to play chess at first, they started trying to duplicate what a grand master does, how they think and so on. That turned out not to work at all, because nobody has any idea what they do. We understand virtually nothing about human thought. So, what they started doing was just using brute force. They used the fact that a computer is extremely fast and has a huge memory, and it is completely stupid. And, if you make it fast enough and huge enough, it will probably be better than a chess champion someday, which is about as interesting as the fact that a bulldozer can push things that a weight lifter can't push. It has no interest. Machine translation is something like that. Very boring topic, but maybe useful. Sometimes boring technology turns out to be useful. It's nice to have bulldozers. So maybe this thing will do something someday, but in very dumb ways.

5. What's the relationship between Linguistics and other sciences æ like Mathematics, Physics, Biology. In this case, to do history if linguistic is to do history of science?

We can study language from many points of view. It makes perfect sense to study language as historical, or social, or political phenomena. I happen to be talking about it from one particular point of view, as a biological phenomenon. These are not conflicting approaches. They help each other, they are mutually supportive. For example, if you are studying bees, you can study their social organization, their means of communication, the way they eat, all kind of things. Those are not in competition. A sensible study of any one of them would draw from the others. But in studying human beings, people often become extremely irrational, for some reason, I don't know why. Therefore, when people study sociolinguistics, that is supposed to be in conflict with studying linguistics as a biological phenomenon. It's completely senseless. When you study the social organization of bees, it's not in conflict with studying their inner nature. The inquiries learn from each other. As for the history of linguistics, it is part of the History of Science, or the History of Knowledge. It should be part of the general culture, accessible to anyone, just like the study of discoveries of any other field. Also one should remember that most discoveries are probably false. They may be improvements, maybe we are getting closer to understanding, but in the past, even in the hard sciences, they have always been wrong, at least partially. It's very hard to understand the world.

6. There is another set of questions in the field of language apprenticeship. What's the weight of the biological environment and the cultural environment in language acquisition?

Since time is short, let's keep to normal cases, not the pathological fringe, in which there is some learning deficiency. In the normal case, even the term "learning" is misleading. I mean, a child acquires a language, the same way the child grows. If you put a child in a certain environment, in which there is food and sympathy and care, the child will grow. Take away those factors, it won't grow. Don't give it food, don't give it care, interaction between mother and child, and, it's not going to grow. It may grow in some way, but not properly. If you put a child in a environment where language is going

on, it gets language, it's just another form of growth. There is no learning in any general sense of the term. You can try to teach the language if you want, but all you do is to distort the normal process, and probably the child will not pay any attention. Children typically talk like other children. They don't talk like their parents. I talk like the children of my street, where I grew up. I don't talk like my parents, who were first-generation immigrants, with a Russian accent and so on. That's normal, normal language growth is just something that happens. What about second language? That's harder. Like other kinds of growth, language acquisition happens easily at a certain age, but not later. There comes a time when the system doesn't work anymore. There are individual differences æ those translators are perfect, they keep learning languages somehow, I don't know how æ but for most people, after adolescence, it becomes very hard. The system is just not working for some reason, so, you have to teach the language as something strange. Then the question is, what's the best way of doing it? The best way of doing it, as far as anyone knows, is to have people interested in it. If they are interested, they will learn, if they are not interested, it doesn't matter what method you use. And that's true in the other fields too. There's no method for teaching chemistry. The method for teaching chemistry is making people interested in it, make it look exciting, intriguing to learn chemistry, Then they will learn it. After that there's no methods. I think language is pretty much the same.

As for compromise between behaviourist and cognitive perspectives in language teaching, I don't think it's easy. I don't have much to say about this topic. The behaviorist perspective is particularly bad, because, for one reason, it's just false. There is no use in methods that are based on false assumptions. Even a primitive animal, say a mouse, doesn't work by the principles of behaviorist psychology. So, if you try to teach language that way, there will be a number of problems: one, the theory is wrong and second, even if the theory was right, it wouldn't be of much help, because most of learning is just interest, motivation, that sort of thing, just common sense. Science has not much to say about this, in my opinion.