

entreviSta GEORGE P. LAKOFF

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George Lakoff is one of the most widely recognized and celebrated scholars in the field of Cognitive Linguistics in the world today. And with good reason, because Lakoff not only helped pioneer this field from its earliest beginnings, but also he has guided and shaped its development down to the present day. Currently Professor of Cognitive Science and Cognitive Linguistics at the University of California at Berkeley, where he has taught since 1972; he has previously taught at both Harvard University and University of Michigan. George Lakoff is a man of far ranging intellectual interests who has demonstrated a remarkable talent for applying the concepts of Cognitive Linguistics to other fields of academic discipline, including: Political Science, Literature, Mathematics, Philosophy and Psychology. Within the field of Cognitive Linguistics, he is renowned for his work with: the embodied mind, how metaphorical thought works, and how meaning structures language. A gifted speaker, Professor Lakoff has lectured to audiences around the world and has frequently appeared on television and radio programs where his ability to explain in clear and ordinary language some of the most profound concepts of his academic discipline have allowed him to reach an audience of ordinary citizens as well as academic scholars. A prolific author, Professor Lakoff has written

hundreds of articles and numerous books, including a New York Times best seller entitled *Don't Think of an Elephant*, which applies the concept of framing, from Cognitive Linguistics, to political communication strategies. Many of his works are considered “classics” within the field, and are frequently required reading for students in both undergraduate and graduate Cognitive Linguistics courses at universities all over the world. In addition to his work as scholar and writer, Lakoff has for decades provided leadership and support to a number of professional organizations, including: The Neural Theory of Language Project at the International Computer Science Institute at Berkeley, The International Cognitive Linguistics Association, and The Cognitive Science Society. Professor Lakoff is currently working with Sriniv Narayanan on a new book, soon to be published, which brings together Neuroscience, Neural Computation, Cognitive Linguistics and Experimental Embodied Cognition.

Revista Linguística: You started your career at the MIT. Can you tell us about how you changed your trajectory and about what made you move from Generative Linguistics to Cognitive Linguistics?

George Lakoff: At the MIT I majored in mathematics and English literature, particularly poetry. Those are two things I love. In my last year, it was the beginning of Chomsky's department at the MIT. And to celebrate the beginning of the department, they got Roman Jakobson from Harvard to come and give a course on poetics. So, my advisor told me, “You have to take this course, but to understand what he is saying you have to take the Introduction to Linguistics course”. So I took the introductory course from a teacher who was one of the first generation of Chomsky's graduate students. And then I took this course from Jakobson, who was really who got me into linguistics. Jakobson, in talking about poetics, went through a lot of phonology. This was a course at the MIT, but I was the only MIT student there. The others were all from Harvard, coming from Slavic literature or something, to study with Jakobson. As I was an MIT student taking the basic linguistics course, I could actually read all the papers he assigned us for homework, and I was the only one to do all his homework. I also went to all his office hours [the time when teachers answer students' questions and try to solve their doubts]. I was also taking a course on Yeats, who was his favorite English poet. Jakobson would assign us homework doing analysis of poems he was teaching, and I was the only one who actually did them. One week he came in and said to me, “I will not be in class this week. Would you like to lecture on your analyses of Yeats?”. I was twenty years old and he asked me to lecture to all Harvard graduate students. So, my first lecture [the way they call classes at the universities in the USA] was substituting for Jakobson, when I was an undergraduate.

Then I took the course by Chomsky the next semester. It was a very strange course, because half was the mathematical foundation of his theory, which was coming out of a mathematical theory of recursive function theory. But I was studying mathematics, so it wasn't a big deal for me. The other people were about seventy students from Harvard and the six new graduate students from the MIT. I sat in the front, and whenever he said something that wasn't clear, or if he made a mistake I would raise my hand and ask, “Don't you mean so and so?” and he didn't like me very much [laugh out loud]. And the second half [of the classes] was on rules of stress in English. So I wrote a paper on the poetry of two great English poets who used special markers to indicate where stress should change. Chomsky didn't know about poetry and didn't care. But I got a good grade.

Then I went to Indiana to go to graduate school in English. And I didn't like it, because English graduate school in 1962 was not what I liked. At one point, I was teaching freshman composition and I got fired. Let me explain how it happened. It was 1962. On the week of the Cuban missile crisis, the assignment was to read an essay by George Orwell on the Spanish Civil War. No one in the class in Indiana had ever heard of the Spanish Civil War. It wouldn't be taught at high schools there. So I explained what the war was about, and that Orwell saw that the Communists were the heroes and the Nazi were the thugs. This explanation happened during the Cuban missile crisis. Someone wrote home to their parents and said that a communist was teaching the class. Then I got fired.

Meanwhile, I was taking the most advanced linguistics classes they had, because I'd come from the MIT where I'd learned all that stuff, and nobody there, even on the faculty, really understood what Chomsky was doing in 1962. So what happened was that while I was taking the class I was also teaching the class. Every class they would go through this thesis they were reading and they wouldn't understand, and the thesis would have mistakes and I would get up and correct their mistakes and explain what was going on. I basically taught the class.

I got to know the chairman of the department because he was interested in discourse, I was too, so I used to go there talk to him. When I got fired, I went there and talked with him, and he said, "I'm here because I got fired from a higher state last year for taking part in a civil rights demonstration". In 1962 that was what America was like. So, at this point, the phone rang, and it was somebody turning down a major fellowship to the Linguistics Department. So the chairman said, "Somebody turned down a fellowship. Would you like to come into the Linguistics Department?" I said, "OK" and I became a linguist [laugh out loud]. Twenty-five years later I found out who turned down the fellowship... Ron Langacker [more laughs]. Life is that way.

So I went into linguistics and I came in as a Chomskyan. A lot of people in the department didn't like Chomsky, or they thought they understood Chomsky and they didn't, and so on. So I got into a lot of trouble in the department, but everybody knew I was pretty smart, I had a fellowship, so it was fine. Then I got married to Robin and I went off to write my thesis at Cambridge, Massachusetts, while she was still at Harvard, and I got a summer job at the MIT making mechanical translation. They gave me the following job: they said, "We've just written a little program that will generate baseball games, because there are simple rules, and we can generate a random sequence of a random baseball game. We'd like you to take Generative Grammar and take the input as a baseball game and give the sentences as output". I said "OK". So I looked at the first sentence. It was about a [baseball] player who later got into the Hall of Fame. The sentence was "Has Shamsky doubled to the left?". How can you handle this in Generative Grammar? You couldn't, because in Generative Grammar you can only look at the symbols and the grammar. "To the left" is a phrase that indicates direction. There are constraints in grammar on directional adverbs that go with verbs of motion and they modify things that move in that direction. But if you say "Shamsky doubled to the left", what moved to the left field is the ball, and not Shamsky. But the ball is not even in the sentence. So, it's in the meaning of the sentence. And that makes you look at the meaning to know what direction adverbs go. And that is not possible in Chomsky's theory. So I said,

“Aha! We need to have semantics built into the theory”. And that was where Generative Semantics came from. That was in 1963, and I wrote a paper called *Toward Generative Semantics* and added some other examples. I showed it to Chomsky and he hated it.

In 1965 I finished my dissertation while I was working at IBM. IBM allowed people to go to Harvard and listen to lectures. So I went to a lecture at Harvard on Computational Linguistics. When I was in Indiana I got bored a lot, so I read everything on Computational Linguistics, which was about three books. [laugh out loud] In 1965, that’s all there was. So, I went to hear this talk, I knew everything about the talk. I raised my hand after the talk, and said, “I know that you’re working on the framework so and so, and within that framework this would make sense, but there are some counter examples”. And I gave him a list of ten counter examples. Susumu Kuno, who was running the project, turned around and looked at me very strangely. After each talk at Harvard, they had a sherry hour. That’s Harvard. So, I went to the sherry hour, and at that time, I had just gotten married and I had almost no money. I had the last part of my fellowship, I was getting my degree and I was going to lose my fellowship. So, I went to the sherry hour, and Susumu started asking me who I was, and bla-bla-bla, and then he said, “Are you interested in getting a job, doing some research?” And I said, “Yes, I am”. So, he had me come to his office. I went to his office, and told him about my dissertation, and so on, and he said, “Well, here is our last project report. Read it and come back. We’ll talk next week”. I read the project report and it was awful. They were doing traditional 1965 Natural Language Processing, not vey good. So, I went back to his office, and I said, “Look, I need the money, but I read your project and there are a lot of things wrong with this”. I showed him all the things I found needed to be worked on. He said, “Would you like a full time job?” And I said, “OK!” [laugh out loud] And I got hired to Harvard.

And I stayed there for four years, until it became politically impossible. Because I had convinced Haj Ross of Generative Semantics. When Chomsky went on leave, Haj Ross was hired as an assistant professor at the MIT, and we taught courses together at Harvard and the MIT, and when Chomsky got back he was furious, that Haj Ross had gone against his theory. And he started attacking me in his writings. And then I answered, because I wasn’t going to take it [laugh out loud]. That was when the Linguistics Wars started. He started attacking me, and I answered by writing a parody of him. He had no sense of humor, and he thought I was copying him. [laugh out loud] But, anyway, he used his influence to make sure that I got fired at Harvard. I had a choice, actually. If I could find another department that would give me tenure there, I could stay. Otherwise, I had to leave. I got an offer from the English department, and I could stay at the English department teaching style, but I didn’t want to stay at the Harvard English department, so I said “No”.

That day I got a call offering me jobs at two universities, Texas and Michigan, because Tom Denver, who I had argued with years before, was on the job market, and he was going to places where no one knew any Generative Linguistics. And he knew that, even if he disagreed with me, I knew Generative Linguistics. So, he said, “Hey, if you’re going to hire me, you need to hire someone who knows some Generative Syntax”. So they called up and they offered me jobs. And then I said, “I have to get something for my wife, who is getting her PhD at Harvard, and so Robin and I were both offered

jobs at the University of Michigan, and so we left for the University of Michigan, and it was very nice. And then I came to Berkeley, as the Chomskyan who didn't believe Chomsky [laughs]. They didn't believe Chomsky, but they needed someone who could teach it, and so I did. I came and taught introduction to syntax, semantics and logic and all those things, in 1972.

In 1975, I got a grant for a summer seminar at Berkeley for eight people who were in philosophy, logic and artificial intelligence, and I had the opportunity to hire some research assistants, and one of them, a graduate student then, and he had previously run rock bands. When he came out there, we formed the Underground Linguistics Institute, and he told a lot of people about this, and 188 people came. He rented out sorority houses and formed communes. The rules were that everybody could give a talk with three days' notice. We would listen to talks six days a week from 10:00 a.m. to 10:00 p.m. and Sundays at the beach. [laughs] So, that summer, I heard talks by Paul Kay on color, Charles Fillmore on Frame Semantics, Eleanor Rosch on Basic Level Categories and Leonard Talmy on Cognitive Primitive Space. And all of them required embodiment. And I got deeply depressed, because I saw that logic was not going to work. I had a terrible depression, and I went hiking with two friends for two weeks. I came back and I could no longer teach what I used to teach.

Then, a couple of years later, I discovered metaphor. In the meantime, I realized that this was about embodiment. Mark Johnson, when I was working on metaphor, happened to come through Berkeley. He was teaching in the Midwest, and he got a job teaching for one quarter at Berkeley at the Philosophy Department. On his way out, he happened to stop at the University of Chicago, where he had been a graduate student and he met Jim McCawley. He asked Jim if anybody at Berkeley was studying metaphor, because he [Johnson] had written a dissertation on the philosophy of metaphor, and Jim said that I was. I got a call from Mark, and it turns out he had an apartment three blocks from my house. He reached the same conclusions that I did about embodiment, and metaphor, and conceptual metaphor from a philosophical point of view. We ended up working together, first writing a paper and then doing *Metaphors We Live By*. And I found out about metaphor because I was teaching a graduate seminar, and one of the students in the class came in, I was reading a paper on metaphor and she said, "My boyfriend said this metaphor that really upset me and maybe you guys can understand it". That's where the LOVE IS A JOURNEY stuff came from. That is what happened. So, from 1975, with Fillmore's Frame Semantics and so on, I didn't understand what it meant, but it came through that it had to do with embodiment. When I did metaphors, it was clear that Frame Semantics and Neural Theory was necessary for color, that we had to have neural embodiment. And it changed philosophy and it changed all kinds of things, and it's in *Metaphors We Live By*.

Revista Linguística: How can we define Cognitive Linguistics? Some people have difficulties drawing a line between Cognitive Linguistics and other areas, like Usage-Based Models. What is the difference between these areas of Linguistics?

George Lakoff: For me, from the beginning, Cognitive Linguistics was neural, because of the color,

it was embodied, because of Eleanor Rosch's work on embodiment, and Len [Leonard] Talmy's embodiment and Chuck [Charles] Fillmore Frame Semantics. So, it had to have embodied cognition, it had to eventually have a neural theory, it had to include frames, conceptual primitives, and basic level and prototype categories. It was defined from the beginning, in 1975, from me, that way.

Ron [Ronald] Langacker had a different view: he was looking at various Native American languages and looking at spacial relations, just as Talmy had here, and he came up with spacial relations, and basic spacial relations for the basis of grammar in general. And he came up with something called Space Grammar, which I thought was a terrible name, because it sounded too "spacey", and I said, "Take Cognitive Grammar". I had previously written a paper called Cognitive Grammar, having to do with showing that you can have a grammar that was a processing grammar, but was also a structural grammar at the same time. I called it Cognitive Grammar because it was both processing and structural, whereas Chomsky had to separate them, and I showed you didn't have to do that. And I wrote this paper with Henry Thomson in 1975.

Langacker was a field worker, and so, he had this notion of a Usage Based Model, which was that you learned language by using it, which isn't false, but it missed all of the embodiment, and all of the neural stuff, and then when I discovered metaphor, he missed that too. But he kept his view of Cognitive Grammar going, and he is still doing it, and his Usage Based Model says if you use things you've just learned, you just somehow learn them and they become conventionalized, and so on. Whereas that, as you know, from the book that I'm doing with Srimi [Srimi Narayanan], is not how it works, at all. What happens is that there was a split between me and Langacker on those issues: one, embodiment; two, the neural basis; and three, metaphor. But I decided that, if we were going to have Cognitive Linguistics, we shouldn't be fighting. Langacker was very smart, he was really insightful, his book has great insights into the language, and I respect him and I use a lot of these insights, and I just went beyond doing other things. He didn't want to and he did what he did, and Talmy did what he did, and then, I had known Gilles Fauconnier for a long time, and I can tell you how Mental Spaces started.

It started from a paper I wrote in 1968 taking Possible Worlds Semantics and saying that they had to be cognitive, and they had to be part of your mind, based on McCawley's example, "I dreamed that I was Brigitte Bardot and I kissed me", not "myself". You can't say "I kissed me", but you can in that context, and what you're doing is imagining your mind and transfer to that. There had been a logic invented by David Lewis called Counterpart Theory, and I took his theory, and I wrote a paper called *Counterparts*, on how you would handle these sentences. And I said that Possible Worlds were not worlds, they were part of cognition, and that you have connections across them. And I gave one of the papers to Fauconnier, and he turned it into the Theory of Mental Spaces, very brilliantly. Fauconnier is an absolutely brilliant linguist. I knew him when he was a graduate student, and he was a good friend. So, when we started to form Cognitive Linguistics, those were the people I contacted, Talmy and so on. Chuck [Charles] Fillmore did *not* want to become a Cognitive Linguist at all. He was against it.

We were trying to get to work together on Construction Grammar, because we had the idea that meaning came in there, I had accepted his Frame Semantics, and he didn't accept the metaphor stuff at all. But we accepted Frame Semantics in Construction Grammar. And we were working on a notation for Construction Grammar in my backyard one day, and we had a disagreement about the notation. So, I said, "This notation should reflect how people think, it should reflect cognition", and he said, "No, it shouldn't". And I said, "Why?", and he said, "Construction Grammar is about lexicography. What you want to do is make linguistic descriptions that can be put in dictionaries and in written grammar, so that people can understand it easily and can be taught". And I said, "Wait a minute, language is about cognition, about the way you think, and he said, "No, it isn't. It's about words and how you put them together". And then, we just had two different versions of Construction Grammar. He never adopted Metaphor Theory or Cognitive Primitives or Image Schemas in his theory of Frame Semantics.

Revista Linguística: You mentioned your new book, co-authored with Srini Narayanan. Could you summarize some of its contributions to the field?

George Lakoff: That is a hard question, because every day I rewrite the preface. [laugh out loud] First, I asked Srini how he would describe it, and he said, "It's about the fact that we think with neural structures, neural circuitry, but thought is not in the brain. Thought has to be embodied, has to be part of the body, because the neural circuitry runs throughout your body. If it were just in the brain, you'd have nothing to think about. You couldn't have any meaning at all. Meaning has to come through the body, but not just that. Because it comes through the body, it has to connect to the physical world, because you get feedback in the physical world, and because you connect to other people. It's a physical and a social world, so meaning has to do with neural structure in the brain *and* the body as it reacts to, and functions in, the physical and social world". That is Srini's way of thinking about it, and it's true, but I don't think it's good enough.

I'm trying to think about a better explanation. There are several ways to think about it. One, is that ideas don't flow in the air, they have to come through neural circuitry, and the question is how it is possible. And the book explains it. That is an amazing thing to me. We have a theory of how it works – not everything, but a lot of it – and it shows something that we know from the study of frames and metaphors, that there are learned frames and metaphors. The conceptual system is learned before you learn language, but the same kind of neural mechanism works in language and in thought. They are linked together in a certain way, and we study how they are linked together. This has a lot of consequences. First, the theory we have uses neural computation as a bridge between Cognitive Linguistics and Neuroscience. And what it is doing is *modeling* certain things that a computational system can model. It models the functional computational properties of neural systems. There are metaphors mapping this computational system onto Cognitive Linguistics on the one hand and the neural system on the other, and that makes a bridge between the two. What are the computational properties? Every conceptual structure that you have is a circuit, and now the question is what the circuits look like, and we can model the structures of those circuits. Two, we can give a theory of how the activation of one circuit, one concept, can activate another one. Because they are connected

to each other, how activating certain things relate to other things and give you inferences and also sequential activations. Srimi has shown, also, that the motor system has a certain computational structure which is exactly the same as aspect [in language] and the structure of events and actions in the world, so that we could then use that as a model both of how the body works and how thought works and model many aspects of embodiment. We also show how Conceptual Integration could be modeled neutrally and a lot more.

The book is about what happens. What does meaning become? What does thought become? What does politics become? What does language look like when you think about it this way? And it looks very different. It doesn't look at all like traditional Cognitive Linguistics in 1975. It has changed a lot. There kinds of neural circuitry that you can now characterize and explain certain things, and the biggest thing that can be explained is why you have the sources and targets you have in metaphors. And that is explained in terms of Spike Time Dependent Plasticity, which is a property of change at the individual neuron level. It is astonishing that something that happens at an individual neuron level can explain things like what the sources and targets in metaphors are. We've known for some time that 98% of thought is unconscious, and the reason to that is that it's all in this neural circuitry that you can't have access to consciously.

Out of all these studies, you come out with a very different understanding of what thought is. Thought is neural, it's hierarchical, and it's grounded in things in the body, it works by chemistry, and it has at least the following kinds of functional computational structures, and that explains all sorts of details of language. So, that is what the book is about.

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