

INTERVIEW WITH MICHAEL TOMASELLO

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Michael Tomasello is an American psychologist and language researcher who is currently a Professor at the Psychology and Neuroscience department at Duke University, North Carolina, USA. He is also *director emeriti* of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. He has dedicated part of his career, especially its beginning, to establishing his sociocognitive theory about the acquisition of human language, differentiating it from other forms of animal communication.

After conducting hundreds of experiments with both primates and children, he comes to the concept about the ontogenetic evolution that was presented, first, in his book 'The Natural History of Human Thought', and more recently improved this and other concepts in the book 'Becoming Human: A Theory of Ontogeny'. His ideas re-signified the studies in language acquisition and social psychology, in addition to being the theoretical basis for numerous studies developed in several reference centers in language acquisition in Brazil and in several other parts of the world. The concepts elaborated and discussed by Tomasello go beyond the acquisition of language and permeate questions that many researchers have already asked: despite having around 99% of genetic material similar to that of chimpanzees, why was only human beings capable of developing abilities to build extremely complex technological artifacts in a relatively short time from the point of view of species evolution? These and other issues are debated in this exclusive interview Michael Tomasello talks about his contribution in the field of language acquisition and the concepts developed by him through decades of studies and experiments with both children and chimpanzees. The psychologist also details about the ratchet effect hypothesis in human development that brings an explanation for the understanding of ontogenetic bases and presents his trajectory and contributions to research in this area.

The empirical work carried out by Michael directly contributes to the state of the art in in sociocognition studies, language acquisition and human development, from an ontogenetic perspective, thus creating the bases for a Socio-Pragmatic Theory of language acquisition, in opposition to the innatist theory of his contemporary and also a scholar of the subject, Noam Chomsky. Furthermore, Tomasello explains his view on the development of socio-cognitive capabilities through shared intentionality, another concept that he explains in the interview. At the end, the psychologist says he is very satisfied when he sees that in Brazil there are several laboratories in which people are developing research based on his theory.

Interviewers: Let's start with your book "*A Natural History of Human Thinking*", in which you re-signify the studies in language acquisition, bringing out a great discussion on the Theory of Ontogeny. Can you explain this Theory?

Tomasello: The book on the *Natural History of Human Thinking* is about evolution and then ontogeny is a part of evolution. In fact, it is about how humans came over evolutionary time to be able to put their heads together and do things in a group: to collaborate, to have a conversation like we're having now. I have a general theoretical proposal that human evolution happened in two steps: there was a first step, where humans learn to collaborate with other individuals in ways that other apes, for example, our nearest primate relatives, don't. So, this was something new in human evolution, and we have a lot of experiments showing how young children can collaborate with one another, how they coordinate, how they form joint goals and joint commitments to do something together. Besides that, how they monitor one another's behavior, how they share any resources that they gather in collaboration, they share them equitably, and so forth.

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Then, the second step is now, collaboration on the group level, which is culture and that's actually where I started: in the cultural aspects. I believe collaboration is a first step and the cultural part, that's where you get conventions, like the ones of the language, social norms and institutions, and all the kinds of things that are group-level. I mean, things that exist because humans agree to them and the whole group agrees to live by certain norms, and so forth. So, about ontogeny, my proposal, especially in the book *Becoming Human: A Theory of Ontogeny*, I say human children go through those same two steps.

They start by collaborating with others, in doing simple little tasks, building a block tower together, or Mom wants to get them dressed, they have to adjust, and they do it together: the kid does their part, Mom does her part; they roll a ball back and forth to somebody...and other similar activities. Even though these things seem to us fairly simple, childlike, the nature of the collaboration is different from what other animals do. So, since early, there is something special already going on with those young kids. Later, at around age three or so, we're going to get this more conventional cultural group-minded way of doing things, where the kids start interacting, understanding social norms, and doing group-like activities. After that, they'll be able to understand social and cultural institutions, etc. I am basically saying that ontogeny mirrors human evolution and presents those same basic steps. And this is all the theory that are uniquely human parts. And Vygotsky made that proposal in a general way, about what is unique in human beings: culture, cultural practices and activities. We have just done these comparative experiments between children and great apes, our nearest relatives, and tried to show that, indeed, he was right. These are the uniquely human parts and are all tied up with collaboration and culture. We sort of filled in the empirical work that Vygotsky didn't do and come up with these two steps where there's a collaboration before the cultural step. That is the overall theory of ontogeny: these two steps of how we put our heads together. You can think of other animals as mostly each one of them is on their own, to figure out how to do things, how to solve problems, and so forth. With humans, we couldn't do anything by ourselves. We do everything in a cultural context, in interaction with others. Even what we all do, we do our science, nobody does their science alone, we do it in teams. And so, everything is a matter of putting our heads together and being able to do more than any one person could do alone. And that's really what makes humans so different from non-human primates.

Interviewers: It caught our attention that in this book you mentioned, *Becoming Human*, you affirm, in the conclusion, that you have a neo Vygostkyan theory. In what ways are your theory and his similar?

Tomasello: I would say that he had the hypothesis that I believe turned out to be correct. Even though, at his time, there was hardly any research with apes. I mean, he does actually refer to Wolfgang Köhler research with apes in a couple of his books, but he got it right. All we are doing is filling in the gaps, somehow. What I say in that book *Becoming Human*... is that, as I understand it, Vygotsky started by working with kids, who had various kinds of handicaps: physical and cognitive. He noticed that they got these tools to help them. Blind kids could read Braille letters and kids that have physical disabilities would have crutches or glasses. And humans have all of these prosthesis or tools for helping them. So, he said: "that's what all humans are doing, okay? Even the ones who don't have any obvious problems, we are depending on what the culture gives us: the tools, the symbols, the language". That was my starting point and I believe that it turned out to be true. He was right on with his theory and so what we have done differently from Vygotsky was just emphasize the cultural component. Humans could not develop the way they do without cultural support and without support from the cultural tools. Nevertheless, he didn't emphasize what human children do that allows them to soak up and benefit from culture. Many of us have pets that grow up in our house. I have a dog. The dog doesn't learn all of this culture. We treat the dog like a human, we talk to him. We thrill like a human... I'm sorry, but he didn't turn into a child. You have to have the biology component, the evolutionary skills and capacities to take advantage of culture. Of course, we know that there are some children, for example, with autism. We know that autism is a spectrum, but children with severe autism, have much trouble in taking advantage, of cultural things, in learning language, in playing collaboratively with others, and in understanding those group level activities. That's what we really added to our studies: to try to focus on those skills that are going to enable that. And this is another question someone has already asked me before; this is where this notion of shared intentionality comes in. In these two steps that I mentioned before: the collaboration and culture.

The technical terms that we borrowed are joint intentionality for collaboration and collective intentionality for culture. And each of these is a general term covering lots of skills. Joint intentionality, which emerges at around 9 months to one year, includes things like joint attention, pointing to share attention with others, imitation, and pointing to reach referential communication. I mean, cooperatively they point to say, "oh, isn't that interesting" or "look over there". Thus, all of these things are the specific skills that not just me, but we and other researchers have focused on that come under this general category of joint intentionality. Nobody had thought of these things or investigated them in Vygotsky's time. So, he didn't identify any of those.

He just had the general insight and similarly with collective intentionality as I mentioned before, things like understanding cultural norms and understanding conventions, institutions, as well as about groups, living in conformity to groups and teaching. One of the things that we, in our very first paper on cultural learning, that goes all the way back to the 1990s, pointed out was that to benefit from teaching, you have to have certain cognitive skills. Again, you can try to teach your cat something, I mean, you can train them, of course, you can train them with rewards and punishments, but they're not going to learn from teaching, just when you show them something.

And there is this research by Gergely and Scibra⁵ on the pedagogical stance that goes in this direction where you must have a kind of a theory of mind to know what the other person is trying to teach you and to be able to learn from it. So that's part of that second step with collective intentionality as well. So, we have focused on the evolution and development of the cognitive skills, social cognitive skills, the social learning skills, and the communication skills that enable you to take advantage of culture. In that way, we have specified Vygotsky's original insight in much more detail.

Interviewers: We have another question about this shared intentionality, you have already mentioned, but could you explain it a little bit better and the importance of the common ground to this intentionality?

Tomasello: Yes, yes. I am going to start with an example and then I'll come to shared intentionality, Let's pretend we're in the same room and I say "oh, look" and you look over there [*pointing to bookcase*], you see this bookcase with hundreds of books in it and you say "okay, I have no idea what you're pointing to, I don't know why you're pointing, I don't know what you're pointing at." So, children learn to understand what people are communicating to them with the pointing gesture, but you can't just look in the direction of the point. I, sometimes, gloss the pointing gesture as "look over there and you'll know what I mean". So, let's just say that we've just been discussing my book *Becoming Human* and you all have it and you know what it looks like. And I go, like that [*pointing at the bookshelves*] just as we're talking about it and, of course, that's the relevant thing and so you know exactly what I'm pointing at and why I'm pointing at it. Where did that come from? That's not in my "finger", right? You're just looking over there, so that's our common ground because we know what we're talking about. We have a background and human communication depends on that. So, the pointing is obvious, but there's no content in the pointing finger and it's also true in language. If you transcribe your own speech or the speech of anyone else you interact with, in an hour, I bet you would have thousands of examples of pronouns: 'he', 'she' and 'it'. Well, how do you know what "it" is? If I just say, "oh, it happened". Okay, what happened, do you know it? However, if we have just been talking about some storm or something, and I say "hey, it's happening". You know what I'm talking about. So, the common ground is that we both know where we are. We both know what we're thinking about, what we are saying in our minds, what we're paying attention to and, therefore, the communication works in a way that it wouldn't without that, and pronouns are a great case. Also in discourse, in conversation, we have what are sometimes called bridging inferences where I say something like "do you want to go to the movies tonight?" And you say, "oh, I have to get up early in the morning" or, even better, "I have a test tomorrow" if you're a student, and I say "oh, okay". So, I understand that you mean 'no'. How do I understand that you mean "no"? Because taking a test in the morning means studying tonight, studying tonight means you can't go to the movies, all that's got to be our common ground that we both know those things. And that's why I know that when you say "I have a test in the morning" it means "no", otherwise how can I figure it out? So, pronouns and discourse filling in the gaps, all of that depends on aspects that we can just assume we know. We had an experiment with three-year-olds. We just walked into a room and there were two little dolls and one of them was Santa Claus. So, there was a Santa Claus doll and there was this ordinary doll and we looked right between them, so there was no reference, and said, "oh wow, I know that guy and can you give it to me?" and all the children handed the Santa Claus. Because they know that, in our culture, you must know Santa Claus. That's the common ground that they can infer without even having a common experience with an individual. They infer it from being members of the same culture. Thus, the common ground is this kind of hidden dimension of shared knowledge about the world and shared conventions and shared perspectives that our communication depends on. Our communication could not work without that. And, again, I would just point to the pronouns, which are in every other sentence we say, and we wouldn't know what it was referring to if we didn't have this common ground of the moment.

Interviewers: Do you mean that... with one-year-old kids, intentionality has to do just with their nearest people (their tutors, their mother, father) or does it happen with everybody with whom they get in touch?

⁵The author is referring to the text: "Taking the intentional stance at 12 months of age", by G. Gergely, Z. Nádasdy, G. Scibra and S Biró, published in 1995 on *Cognition Journal*.

Tomasello: That's where the two steps come in. We have lots of experiments that the children at one year or, what we call toddlers, and, maybe two-year-olds, understand common ground with other individuals. If you and I share this object [*showing a pen*] “oh, it's nice, cool”. And then we share this object [*showing a pair of glasses*]. “Okay, isn't that nice?” And now I leave the room and you share with somebody else this object [*showing a different pen*]. And now they're all three sitting in front and I come back in the room and I say “oh wow, what is that?” They know that I'm excited and surprised about the one that we didn't experience together. So, these young children, the one-year-olds know what the two of us have experienced together, but they don't really have this idea of cultural common ground.

We didn't actually run them in the experiment about the Santa Claus, but the prediction would be, they would fail it because they haven't got the ability to think “oh, everybody knows about Santa Claus”. They just know that you and I either have or haven't experienced Santa Claus together. So, the exact prediction would be that a one-year-old would know if you and I have experienced this Santa Claus altogether, but they wouldn't make the generalization to the cultural group at large. It's true that some children use things that we consider linguistic conventions that are shared in our common ground. But they don't really understand them as conventions until about age 3. So, if you make up some name and you call this [*showing a pen*] a “*toma*” or something, it's only at about age 3 that the children will make the inference that everybody in the group knows that, and that somebody speaking a foreign language doesn't know it. They can distinguish between people who know the convention and people who don't know the convention. Again, you get this difference in understanding about common ground and all of these aspects from the first stage, at about nine months and another step at about three years. So, in this case, it would be: personal common ground between the two of us and cultural common ground, which are things we all share in the culture.

Interviewers: In your opinion, regarding this first step you mentioned, does it happen the same in with all children, all over the world?

Tomasello: Yes. I would say: all typically developing children. We haven't tested, of course, all the different cultures, but I believe so. And one of my beliefs is that the pointing gesture seems to be universal. Of course, we haven't looked at all the cultures, but I'll tell you an interesting anecdote - remember that pointing depends on common ground - You can't communicate with pointing without common ground. I think it's interesting to say that there are some cultures where the adults don't actually point, and they tend to do things like this with their chin [*moving the head to use the chin to point at something*]. So, I had some anthropological friends, who said, “oh there are some cultures where they don't point”, and I was just surprised at that! I guess it's because I'm a psychologist and I think in terms of universal, the human species... and I was surprised. And so, I told this person: “next time you go there, watch the children for me, please. Specially the infants, the one-year-olds”. It turns out that mothers point for their one-year-old infants, even in these cultures where the adults don't point. And the kids point! But then, it becomes impolite or whatever, and they drop it sometime. We have done a study with Western kids from Canada first and then, two kids from very small-scale cultures, one in India and one in Peru, and they were non-literate cultures, small-scale subsistence farming. And when you look at what I call “one-year-old things”: joint attention imitation, collaboration, pointing gesture. We tested these attitudes in kids, in these three very different cultures. Not only did the kids in all three of the cultures do them, but they come out at roughly the same age we tested them. With three-year-old things, they might start to be very different because they're understanding their culture more and they are developing several abilities. We actually did an experimental test with one-year-old-kids: we had them comprehending the pointing gesture, we had them imitating things, we had them collaborating. So, I believe the one-year-old things are universal. With three-year-old things, the basics are universal, in the sense of thinking about conventions and all that, but, of course, the conventions in any culture are different. The social norms in each culture are different. Therefore, I do think there are some universal capacities, even in the three-year-old transition. But then, of course, the content becomes very different in different cultures after three years of age and into childhood.

Interviewers: That's what we were thinking because we know gestures are very cultural. Every culture has different kinds of gestures. That's why we thought “does it happen the same way in all countries?”, but now we understand that one-year-old things are different from three-year-old things.

Tomasello: Yeah, but again the particular gestures might be different even for one-year-olds. The point is, they do these things, and they learn them by imitating adults doing them and all that. By the way, I don't believe they learn pointing by imitating adults. We don't know for sure, but we have a study where we gave children extra pointing. We enlisted the mothers to have a 30-minute session every day where they did extra pointing for eight-month-old babies who were not yet pointing, and then the other mothers in a controlled condition, they played music with their kids, or something that wasn't pointing, as a control group. And the kids started pointing at the

same age! We tried to give extra experience to one group and see if that had an effect and it didn't. So, I think the pointing gesture comes naturally. And then, the kind of gestures you're talking about, that are particular to particular cultures, they're going to be learned the same way you learn words. They're going to be learned by, you know, observing other people using them for particular purposes. You understand what the purpose is, or the intention and you use it when you have that intention yourself. Children use gestures in relation to other people the same way they use towards them.

Interviewers: So far, we are talking just about children, but we know that you have many experiments with primates, right? In your opinion, what differentiates the human primates from non-human primates?

Tomasello: Well, it's all this shared intentionality stuff where the shared intentionality is the broad overall term but that encompasses lots of different things. And I would just say this: I watched chimpanzees for about a month in Africa. I went there and did some field work and observed them. And I promise you if I drop you in the jungle, with the chimpanzees, you will be lost in about one minute, and you won't be able to find food, you won't be able to climb trees like they can or nothing like that. So, these are incredibly confident creatures that use tools, the way they use tools, the way the adults use them, they've been using them for years. They use them more competently than you could use them. They navigate the forest more competently than you could do. And we've done experiments showing they actually understand that others have goals, and they are working towards that... They have a kind of a theory of mind. Not a human theory of mind, but a kind of theory of mind. They can learn things from others. They are incredibly competent as individuals. But it's this putting-you-heads-together thing. One of the examples that I use to bring that point, exactly the Vygotskian point. Imagine a child raised on a desert island, completely isolated out of culture, out of human interaction, altogether. That child would have no language, that child would not know numbers or Arabic numerals. They wouldn't learn anything from books. No pictures. They wouldn't know about history; they wouldn't know anything. And my bet is: they would be very similar to chimpanzees and other apes. Yes, they would probably be a little bit different for sure, but basically humans are adapted for growing up in a culture, putting their heads together, learning things, and communicating, as well as socially learning and cooperating with all the other people in the culture. And if you took that away, they would still have this capacity. They would have these skills, but there would be no way to exercise them. So, they would be more similar to non-human primates than to us. An analogy for this would be: if you brought up somebody in total darkness, by the time they were adults, their eyes would be atrophied, so they wouldn't be able to see. They have the capacity to see but they didn't get to exercise it. So, you just asked about the general comparison to non-human primates, and this is what I just want to stress: how intelligent and competent they are as individuals but they somehow don't put their heads together: both to collaborate and then to form cultures and to create cultural products that children could learn by teaching and imitation. Thus, the shared intentionality is all about putting your heads together, joint attention, linguistic, communication, conventions, norms. All these things that are part of the everyday life of human children in every culture, I believe, they just aren't a part of the life of these apes.

Interviewers: So, you mean that the first phase you mentioned for children is the same for chimpanzees and other non-human primates? I mean, they just make gestures to communicate. Are there any similar gestures?

Tomasello: They do make some gestures, but this is a good example: they don't point. So, what do they do? They do gestures, but, for example, the human gesture that is quite common, let's say, an eight or nine-month-olds, if they want Mom to pick them up and they go like this, right? [*raising up his arms*]. That's universal because it's part of life, reaching up and crawling and lifting your arms, so Mom can lift you up, and all that. That's what the apes are doing, and this is very interesting. As I was saying, they're incredibly intelligent! They can do this, but they're not referential. For example, you and I may share attention to something over there, and they don't point. And not only that, but all of their gestures are also imperatives: "do this?" "Okay, pick me up." And they do hygiene and play, and it's "do this". The message every time they're communicating is: "do this". And human children say, "oh look isn't that interesting?" So, the human gestures are referential. They share attention. You and I are sharing attention. I've sometimes called it, the referential triangle, you me and the thing we are communicating about. And the apes don't have that triangle. Also, the motivation is just to share attention and not just because you want something. So, almost every one of these things I've mentioned, you can do that detailed comparison between the apes and the children. And you find that the difference is always about shared intentionality, you and I sharing a goal, attention, a convention, a group. We know that we're sharing it, we have common ground about it and that goes through all the different activities in which we both engage. I will say this one thing in another way, of maybe bringing the intuition and making it more concrete. I hadn't really thought about it before until somebody asked me to write a paper just a year or two ago. Let's imagine that you were to go outside and climb a tree, to make it more realistic, let's say something was chasing you, and so you don't even have

time to think. You're just climbing the tree. I would say, whatever's going on in your head is very similar to what a chimp is doing when they're climbing a tree, right? Yes, of course, the culture people, the anthropologists, say: "you can't get away from culture". "You're always in a culture" and I agree with that. But I'm just saying that, in that moment, when you are running, climbing up the tree, your psychology, your thinking, your everything... is very individualistic. You're not collaborating with anybody, you're not thinking about other people, you're not employing conventions and norms and language and things like that. You're just climbing a tree, like the apes do. Or swimming, or running through the forest or maybe even using a tool like chimps where they use something to crack open a nut. I mean, they're going to be cultural things going around you all the time, of course, but if you can narrow it down, you're trying to break this nut open. Then, the cognitive processes involved in activities are probably the same with humans and with apes.

And, as soon as you start teaching somebody about it, or you start talking about it or referring to it, suddenly, now you're in the cultural realm and you're in a world that doesn't exist for the apes.

Interviewers: You talked about the ratchet effect in human development. You said that is an explanation for understanding the ontogenetic bases for human development, right? Can you explain this ratchet effect for us?

Tomasello: It's a metaphor... ratchet is a tool. If you're working on a car engine. you can't do the wrench around like this [*making a circle*] because there's not enough room, so you go and then back [*demonstrating with gestures*] and it only goes forward and when you go backwards it's doing nothing, you need to move it forward, and it can only turn it forward. Thus, it only goes better. Okay, that's the point. So, the ratchet metaphor was that - all the way back to Charles Darwin- when Darwin was saying that humans are part of evolution like every other species and the citizens in Victorian England are going, "what are you talking about? We have telescopes, we have the Opera, we have the British Parliament. And the apes are out in the jungle. We're so different. How could it possibly be part of the same process?". And coming back on other people's work and to my 1999 book *The cultural origins of human cognition* we can see that ideas are never totally original, right? You are always borrowing from other people all the time, and with that I developed the idea that what's different is that humans have a kind of a second line of evolution, which is cultural evolution. Now, you may have heard chimpanzees live in cultures and all that. People sometimes say other animals have culture, but whatever they're doing, it doesn't build up over time, they're socially learning some things, but you don't see this accumulation. But in humans, you see the accumulation of artifacts, so that, the telescope that the Victorians are talking about, somebody didn't sit down one day and invented a telescope, right? Probably they had the lenses for looking at things and a microscope... so the telescope has a history. The British Parliament has a long and complicated history of councils of local places. Languages have histories. Thus, what we have is: you have a group of people doing something in one way, using a tool in a certain way, and one individual has a brilliant invention. Humans are built so that they all learn it immediately and this guy might even teach it to everybody. Now we're in a new place and, again, some other individual can come up with some brilliance and everybody learns from them and then another individual... so, you don't have to be smart, you don't have to be a brilliant genius yourself. You just have to be able to participate in this process of learning from the brilliance of others and maybe, occasionally, contributing yourself with something that everybody else can learn. This is, again, I think even way back there, I don't know if I actually used the metaphor before, but putting our heads together and, even if we're not in the moment intentionally collaborating, as we repeat other people's inventions, the ways of doing things, we are collaborating with them in a way, with the people that came before us. Because we are helping things move forward. So, if you look at your country, you have many forager groups in the middle of the Amazon who don't have telescopes and who don't have the British Parliament and don't have anything that are even sort of close to that. Why? They don't need them. They lived a life where they don't need them. Each culture develops these things as they need them. Why the Western World needed them is a question for the social sciences in general, I guess. But, in any case, the cultures developed the things they needed. A lot of the things that the Amazonian foragers have were built up by the ratchet effect, a bow and arrow, for example, one person didn't sit down and invented them in one minute. The bow and arrow have a history, and it has improved over time to work better. And maybe they have some social structures like leadership, who's the chief, and the council to discuss problems. And that may have evolved over historical time to work in a better way. So, all cultures have the process of ratcheting up as a capacity because it requires individuals to be able to socially learn from one another. I actually think the ratchet requires teaching because other animals don't teach one another, they don't teach their offspring in the same way that we do. We have adults that make sure our children learn things, right? We make sure they learn it and that helps the ratcheting because we assume that everybody's learning and then it can move up. This way, the ratchet effect was my proposal... first in 1993 and, then, in 1999, to explain how it is that humans look so different from other primates. And it's been a very short time evolutionarily saying, only a few million years and we look so different. When you look at other animals that are only separated a few million years ago, they look fairly similar... horses

and zebras, for instance, we know they're different species. They look different, they act different, but their cognition... is it really that different? Probably pretty similar. Here we are as close to chimpanzees as horses are to zebras and we have telescopes in the British Parliament and they're in the jungle. This is the explanation for why it looks so different. That it's based on these fairly subtle psychological processes of social learning conformity. That is teaching that leads to this whole other evolutionary process of cultural evolution, cultural history, ratcheting... and those processes do not exist in the other species.

Interviewers: As you're mentioning your works from 1993 and 1999, we would like to ask you: have there been any changes regarding your studies on language acquisition from the beginning of your research to today?

Tomasello: Oh yes. It is true that I have not been working on language acquisition as much as I did some years ago. In the past decade, or so, I have been focused on other things. So, let's just think about acquiring words and acquiring grammatical constructions (I'll define what a construction is in a minute). Regarding to learning words, I still have the same theory I had decades ago, it's sometimes called the Social Pragmatic Theory and it includes joint attention, so you say to me "oh, look at the *toma*". I have to have common ground with you about what you're referring to me to. I have to know your intention and direct my attention over there. Thus, I acquire the words by social learning, but resting on joint attention and common ground. I really emphasize the pragmatic dimension of the process. And that theory was in competition with the constraints approach of Markman, and I feel like we won the argument. But I haven't done word learning research in a number of years now, so I'm not sure. But when I first was working on language acquisition, I didn't really have the notion of construction. Adele Goldberg wrote a book in 1995, called *Constructions*⁶ and that book was very influential for me and by the 2000 or so, the notion of construction was very central to me. Let's see what's key about the notion of constructions. I'm going to say an example, something like "*the toma mibbed the gazzer*"⁷ and you know what's happening, right? If you know anything about English, you know that "*the toma*" is doing something to "*the gazzer*", because is in the formal pattern, in the construction of noun-verb-noun, the way English grammar works. And if I say "*the toma was mibbed by the gazzer*", that's a passive construction and I know that the gazzer did something to the first mentioned then, okay? And if I say "*the toma mibbed the gazzer a glock*" that means he transferred or gave him something. So, these constructions have meaning, that's the key insight, that's what's transformed my thinking. So, we want to do away with the notion of rule. Grammatical rules are things that were invented for prescriptive grammar. "How to learn Latin grammar or something. Here's the rule, here's how you do it correctly". That's fine for language pedagogy, but we don't want that. When children are learning language, they're not learning prescriptive rules. They're learning patterns, right? They are learning patterns and schemas that have meaning, they are constructions. They are learning them. My hypothesis was that they started out very concretely: they learned that "X hits Y" means that "X" does this action on "Y" and X gives "Y" a "Z", they know that that's transferring and giving somebody something. They learn it initially for individual verbs and then, they find the patterns. Ultimately both learning words and learning constructions is learning a pairing between a form - a linguistic form - and a function or a meaning. And it's just that in the case of words, their concrete phonological aspect, like the word 'rock' or something and the meaning is a concrete referent. And in the case of constructions, everything is more abstract. You have a pattern of the way things fit together, and it goes with an abstract meaning like 'somebody did something to someone', right? It's still a form function pairing. At a general level, you can now look at the learning of words and the learning of grammar or grammatical constructions in a usually similar way. They both require joint attention and understanding the communicative intentions of the person using it and all of that. That was the big insight for me and that all was pretty much put together in the 2005 book on constructing a language. In that book, I tried to come up with some attractive way of summarizing it all. In that book, I say that it relies on two sets of skills, what I call intention reading and pattern finding. Intention reading includes joint attention and all the pragmatics, which is about what your communicative intentions are. So, intention reading, and pattern finding are at work in both learning words and learning constructions, just in different ways and maybe in different degrees. Thus, you're finding patterns, even in word learning, and even in construction learning, there is also the intention reading. When you use a certain construction, I have to understand why you're constructing it, why are you talking in the passive and why are you saying: "the man got hit by the truck or something" instead of "the truck hit the man". Well, it's because the topic

⁶ Tomasello refers to the book "Constructions: A Construction Grammar Approach to Argument Structure" by Adele E. Goldberg, published in 1995. Ten years later, in 2005, Michael Tomasello, himself, launches the book: "Constructing a Language: A Usage-Based Theory of Language Acquisition".

⁷ These are made up words to illustrate that people understand phrase constructions regardless of their content.

of our conversation was the man not the truck and so forth. So, intention reading, and pattern finding are our summary terms for the processes that go on in both the learning of words and the learning of constructions.

Interviewers: Okay, and do you mean that these constructions are acquired (learned) or are children born with them?

Tomasello: No, they learn them. However, there may be some universals because they are based on universal human understanding of the way the world works. When you say, you know, this transitive construction like, you know, “*the gazzer mibded the toma*”. He did something to cause it. People around the world think in terms of cause, an agent causing something to happen on an object. We have some cognitive universals that are underlying the acquisition of these constructions, and we have some pragmatic or social, communicative universals. So, in all languages we highlight things, and we background things, right?

I know nothing basically about Portuguese, but I'm sure you have a construction that is similar in one way or another to, in English, what's called a cleft construction. So, instead of saying ‘John broke the window’, I say, ‘it was John that broke the window’. Alright? You may have something like that. So, when do I use that? Well, when somebody else says ‘Mary broke the window’ and I say ‘no, you're wrong, it was John that broke the window’. It's a very odd construction, actually, because you're putting the main information in a relative clause, “it was John that broke the window”, so your relative clauses are back rounded, the action is in the background, but the reason you put John in the foreground is because this person thought Mary did it. And it was John. Each language has its own version of these constructions, but the idea is that they are commonly understood, in terms of cognition, communication and pragmatics. And also, in terms of foregrounding and back grounding, highlighting, back grounding... all of those are universal human capacities and they get channeled into the learning of language and the building of constructions in unique ways in different languages. And that's why the study of linguistic typology is so important... it is to find out what the parameters of variability are, how much variability can there be and what kinds of variability can there be or cannot. Chomsky and some of the formal linguists, are fond of saying there are certain kinds of languages that can't exist, and they have an explanation, but I would say it's because they're outside the realm of human capacities in general, not because of universal grammar or anything like that. So, yes. The specific answer to your question is that the constructions are specific to languages, but there are some universals that come out of universal human cognition, social cognition and communication.

Interviewers: We're almost running out of time, but we have a last question. We know that there are several language acquisition research centers everywhere in the world that use your theories as a basis for their research. For example, in João Pessoa, there is LAFE - the speech and write acquisition laboratory and whose coordinator is Professor Marianne Cavalcante. And we have several research developed at LAFE from your theoretical methodological proposal. That means we have trained many masters and doctors in this lab. How do you feel about your original contribution to the state of art in language acquisition?

Tomasello: Well, in the United States and in Europe, which is what I know better because I worked for many years in Germany and in the US, one of the reasons for this is that the psychologists and the speech pathologists are the ones who study language acquisition. They tend to focus on learning words, on pragmatics, discourse, and all the fun and interesting stuff. They leave grammar to the linguist and in America and Europe that means the Chomskyan linguistics. They don't have any notion of function, pragmatics, learning, perspective-taking, intention reading or pattern finding. So, I get very frustrated that in America and most of Europe the study of syntax and grammar is not moving along this construction grammar direction. There are other things that are interesting. I'm doing research with the apes and so, I just gravitated in a slightly different direction, I may have stuck more with the language acquisition if there had been more discussions about that. I do know there are a number of people in Scandinavia who are using the theory in some language pedagogy, with various kinds of children who have language problems. And I recognize that some of the people from your country are also using it. Thus, it is being used around the world, but the basic research of the type that I did, how do typically developing children at one and two years of age, how do they learn constructions is not being done as widely as I think it deserves. But I'm very gratified when it is used by you and other people. It would be great if people picked up on that strand a little bit more and went forward.

Interviewers: Well, we thank you for being with us, for all your time and for all the answers you gave us today. They will really help us to better understand your research, your ideas and all your work. We are very grateful for your participation in the interview. I hope you have a good day and continue doing the amazing work you do for a long time to come.

Tomasello: Thank you very much. It was a pleasure talking to you and I hope you do a good job with the interview. Thank you for all the effort you put into sharing ideas and disseminating information. Thanks.