Dialogo filosofico con il Prof. M. Tomasello

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ABSTRACT

In questa conversazione filosofica il prof. Michael Tomasello affronta questioni di psicologia evolutiva connesse alla filosofia del linguaggio e all'ontologia sociale. I suoi studi sui primati e sui bambini hanno il pregio di dimostrare come l'universo pragmatico dei secondi venga rivoluzionato dall'acquisizione del linguaggio e dalla capacità di intraprendere complessi comportamenti cooperativi alla base dello sviluppo di capacità intellettive avanzate. A partire da queste evidenze Tomasello sostiene l'immagine di una evoluzione culturale del genere umano fondata sulla scrittura e sulla sua enorme capacità di conservare l'esperienza delle passate generazioni trasmettendola alle future, rendono così la nostra l'unica specie ad avere fatto della comunicazione e del dialogo potenti strumenti di prosperità e sviluppo. Il suo pensiero è stato oggetto di numerosi studi e dibattiti nell'ambito della cosiddetta ontologia sociale avendo contributo significativamente ad estendere la nostra comprensione sulla relazione tra pensiero, linguaggio e attività cooperative. Per i suoi meriti scientifici è stato insignito di numerosi e importanti riconoscimenti accademici internazionali.

Guido Seddone: Prof. Michael Tomasello you are director of the "Max Planck Institute for the Evolutionary Anthropology" in Leipzig; your empirical research about the development of cognitive abilities like language, thought, practices and culture in children and mankind implies also important philosophical results particularly about the shared Intentionality, which have many affinities with the Philosophy of thinkers like John Searle, Bratman, Gilbert, Tuomela and others. Moreover you demonstrated with empirical dates that the development of the cognition is close connected with learning the language and with sharing joint practices. In your book The cultural origins of the Human cognition by a precise and articulated examination of the development of the cognitive capacities you argue that one cannot treat them like mere natural capacities, but it's necessary to explain them by the role of the culture that we inherit. You compare also the empirical observations with children with observations with apes, bonobos and other animals and you argue in short that the key of the success of mankind is the capacity to share intentions, believes, goals, which stimulate the development of a common language and of complex cognitive activities like mathematics and moral judgements.

You hold that the most important difference that children show in comparison with Apes is the capacity to share intentions and to develop a shared intentionality. They show also the capacity to understand complex situations by the function of joint attention, which is the capacity to have with the adults a constructive, triadic relation in terms of language, intentions, goals and practices. Can you explain the difference you observed between children and Apes in terms of shared intentionality and joint attention?

Michael Tomasello: Yes, well if you just look at their everyday activities, apes do some things that you would want to call cooperative, but they don't have the same structure as the kinds of things that humans do, that we would call cooperation or even collaboration.

So young children, for example, work together either with adults or with one another with a joint goal. You can tell that because if the partner stops working, the child will prod them back to play their role again—"you're supposed to be working on this with me". Whereas the apes, when the partner stops, the ape just tries to do it by him or herself and doesn't feel like there's a commitment to do it together and that you ought to be doing it together. So we structure our collaborative activities with shared goals that actually even have a normative dimension—that one ought to be doing this and if you don't play your part then you're to be criticized for that or rebuked for that. So joint goals is, I think, the key organizing factor. When you have joint goals you also have separate roles. You play your role and I play my role in doing this activity together. Now joint attention, which you mentioned, is the perceptual or attentional side of that. So analogous to a joint goal, we have shared attentions; we have joint attention on something. So we're looking at something together. And analogous to roles we have perspectives. So we're looking at this together (*e.g.* a pen)—but you have your perspective on it and I have my perspective on it—we're doing a shared activity together but you have your role and I have my role. So it's this dual layer of a commitment to a joint goal or a shared attention to something, the different perspectives and different roles, and that two-level structure I think, does not organize great ape collaborative activities; it organizes human collaborative activities. And that allows us to do all kinds of things that involve mutual knowledge etc., ultimately social institutions. Ultimately, you get to the kind of cooperative social institutions that humans have that are only possible if we can operate with joint goals and commitments to joint goals and obligations to play our part and all that normative component.

G.S.: You argue unlike Searle that the animals that have a social behavior like apes and dogs, learn from others through what you call emulative learning. Human beings instead learn by what you call imitative learning. This difference is largely responsible for human culture and the extraordinary development of human cognitive capacities, which are not comparable with the cognitive capacities

of the other animals. Moreover this problem is connected with the bootstrapping question. Can you explain the difference between these two forms of social learning?

M.T.: What we call emulation learning, I think, humans engage in quite frequently and apes pretty much all the time. That is, you see somebody change the world, say a mother chimp lifts up a log and finds some insects, and the child may come along later and lift up the log and find insects also. But the child wasn't really watching what the mother did; she just learned that there were ants under the log. So she learned something about the world by watching the mother's manipulations, and then used her own behavior to recreate that effect. That's fine and that's something humans do and it's an important form of social learning. But imitative learning is when you actually are paying attention to the behavior or the behavioral strategies—the process by which somebody produces the result. So if the mother used a special technique for lifting the log—let's say that the log was heavy and she needed a stick or something like that—and you actually copy the technique for moving it, then you would be doing imitative learning in our definition. So emulation learning is outcome-focused and imitative learning is process-focused. To get a lot of the social conventions that humans have, like arbitrary conventions, e.g. calling this a table in English and some other word in some other language, you have to do it the way other people do it. Conventional behavior is by definition—it doesn't matter how smart you are, you can't figure out what this [table] is called in Italian if you are not an Italian-speaker—you have to hear other people do it and you have to do it the way they do it. So some things like tool-use you can learn quite effectively with emulation learning—some parts of it, not the strategies but the general outcome—but social conventions you actually need imitative learning to do it in the same way. We humans do that, and not only that. This is supplemented by another motive for imitation. Humans also imitate one another just to be like others and to be one of the group. All the fads and fashions we have, why we dress certain ways and do certain things—marketing people take advantage of this and know what kinds of fads and fashions people will follow—and so

we copy other people not just to be able to engage in some instrumental behavior more effectively by copying experts; we just want to be like other people. Within cultures we behave like others in the culture operate, but then there are differences between cultures. So we have a conformity motive as well as using other people as useful resources for doing things in a better way. In addition to the conformity motive we've done some studies in recent years showing that children jump to a normative conclusion, that this is the way we do it, this is the way it ought to be done, this is the way it's done. So if you show a three-year-old or four-year-old child how to do something with a new toy or something. And then somebody else comes along later and does it in the "wrong" way, the children will actually intervene and say: "No, no, no, it doesn't work like that, it doesn't go like that!" Not only do they want to do things like others but they actually jump to the conclusion that this is the right way to do it. I think the right way to do it, social norms are tied to particular groups—our norms work for our group, other groups have other norms—so I think the appropriate kind of gloss for that is that children are in essence saying, "this is the way we do it, this is the way one does it." Human social learning—I've called it cultural learning—is not only about emulating outcomes; it's about copying processes, and it's also about copying other people to be like them, and it's also about jumping to this conclusion that this is the way we do it; it's the way it ought to be done. In human cultural transmission you get a lot more powerful transmission of things across generations than you do simply by weaker forms of social learning like emulation. What children begin to do is, of course, they begin to internalize all of this stuff. So at one time the adults are showing them how to do things and teaching them things, and the children are internalizing all of these norms, values, techniques and strategies that they observe in others. And they internalize them and regulate their own behavior by that.

G.S.: In your book you argue that the development of complex forms of thought is the result of the capacity to share mental contents; you write also that the cultural evolution that human beings have in comparison with other primates cannot be explained only by

the genetic differences. We have to consider also the role of culture and of the linguistic tradition to clear these differences. What does link up shared intentionality with culture and human cognitive development?

M.T.: Human cognition I would say is a collective enterprise. All of the greatest inventions and achievements of humans cognitively are not things that individuals have done; they are things that groups of individuals have done, and over time they learn from one another and build on what one another have done. Isaac Newton is famous for saying that "we all stand on the shoulders of giants" when we invent something. And that process is one in which human beings create these artifacts, and the artifacts can be material artifacts like tools, or symbolic artifacts like natural languages or arabic numerals for doing math. And they create these things and then they are aids to cognition; they create new kinds of cognition. There are certain kinds of cognition that would not exist without arabic numerals, or something equivalent. We wouldn't have algebra and calculus with roman numerals; we have to have Arabic numerals or something like them. Children grow up in the midst of these artifacts and symbols, and by learning to use them, they learn to think in ways that they wouldn't think if they didn't have these artifacts. Then this spiral goes on because they can then invent something new—e.g. some new mathematical technique or some new use of a tool or some new piece of language—and then if that spreads in the group, then the next generation learns the new version. And—we call it the ratchet effect—then things ratchet up in complexity over generations. So in the biological world, this human culture is a special case of what's sometimes called a "niche construction". Ants build anthills and then baby ants are adapted for living in anthills. They constructed their own environment and then biological evolution has followed behind the niche construction and led to individuals that adapted to that. We believe that humans are adapted for living in cultures with artifacts. So the biological adaptation is a very general one for learning things socially, for collaborating with others, for communicating with others. But they're not specific things. The biology is quite general for learning things in the cultural group. Then,

the cultural group may invent. For example, arabic numerals are only invented in some cultures; there are other cultures that don't use arabic numerals. They've spread from their original place, but they haven't spread everywhere among all people in the world. So some people don't use them. This coevolution, as it's sometimes called—this co-evolution of genes and culture—is that culture sets the conditions for the biological evolution, but again it's in a very general way of what we've called sometimes "cultural intelligence", "cultural learning", and then when things like arabic numerals are invented, that's a creative process that cannot be predicted from biology in any way because it didn't occur in all human groups; it only occurred in some of them that had a particular need, etc. Much of Western mathematics was created for specific problems of navigating, surveying land, money, and there are some cultures that don't have those problems and so they don't invent those things. So culture does have things that happen independent of biology and we are adapted biologically for participating in that process, but the outcome of the process is in no way determined ahead of time. You have to take account of cultural evolution as well as the biological evolution.

G.S.: In your description of cognitive development you note that we can distinguish two different kinds of engagement that the child shows to have in his development: dyadic engagement and triadic engagement. Can you explain these different engagements?

M.T.: Pretty much all of the most interesting and important cognitive things that we do involves this triadic attention with other people. We're paying attention with someone else some third thing. Young babies engage with others dyadically, as you said, face-to-face, and they already have social relationships with people when they are a few months old. But at around nine months or so they start doing things like holding up objects and showing them to people, and pointing to objects, and following an adult's gaze somewhere, and imitating others' actions on objects. All of these require the child to coordinate attention both to the external object and to the other person. More specifically, there is a recursive structure

that no one really knows how to describe or explain theoretically, but that, when you and I have joint attention to this book, I'm aware of the book and I'm aware that you're paying attention to the book also, but you're paying attention to me paying attention to the book. And I'm paying attention to you paying attention to me paying attention to the book. And this can go on. There have been many philosophical discussions of the so-called problem of common knowledge and that kind of thing. I don't have an explanation for it, but it is absolutely central to being able to establish joint attention and what's sometimes called common ground or common knowledge that is the background for everything we do socially—this shared experience that we have within our culture and which everything else builds on. Other animal species I do not believe have this same capacity to do this. I think our research has shown that chimpanzees understand— if I'm a chimp and you're a chimp, I can look at you and say, "he sees the monkey", but I don't think that the chimp says, "he sees me seeing the monkey"—I don't even think they do one step of the recursion. This triadic attention or joint attention is not just you and me looking at the same thing at the same time; there's a connection between me monitoring you and you monitoring me and us monitoring one another's attention to one another. That begins to emerge in young children nine months to twelve months and it sets the stage for language acquisition and cultural learning of tools and everything else. So that really is the period where humans really start to become different from other primates when that emerges around—a little bit before their first birthday—and now they can become real cultural beings and learn through others how to use tools, how to use symbols and all of the things that go into becoming a cultural being.

G.S.: Let's turn to the language, because your research is also related to the symbolic nature of the human beings. What is there before language learning, is there may be a form of original aperture to world?

M.T.: Yes, I think the crucial thing is this joint attention, that we have the ability to share attention to other things. That sets the stage

because language is about you and me discussing some topic. In Martin Buber's terms it's I, Thou and it—this triangle. That's what discourse is about: You and me talking about some third thing. So the absolutely fundamental is joint attention or common ground. Children also communicate without language with gestures before they come to language, and that actually is the topic of my newest book, that we can mean quite complicated things by pointing. I've used a lot of examples, but let's just say that you and I are walking to the library and I point to some bicycles leaning against the side of the wall. Well, without any shared context, you don't know what I mean, you don't even know what I'm pointing to. But if we've been wondering if the library is open, maybe my pointing to the bikes would indicate, "see, there are a lot of people here, the library must be open". Or maybe it's your girlfriend's bicycle, and so I'm pointing out to you that your girlfriend is probably at the library. So with a simple pointing gesture, with no semantic content in the gesture, I can mean quite complex things again triadically—you and me and I direct your attention to something. You ask yourself, "why does he want me to pay attention to those bicycles?" And in answering that question, it's not just that you attend to the bicycles, you ask yourself why I wanted you to attend to the bicycles, and when you answer that question, then you come up with the meaning, "oh, it's my girlfriend's bicycle, he must want me to know that my girlfriend's in the library"—or something like that. That's prior to language. All of that is prior to language. I have fought for many years against the idea that language does all of this stuff. A lot of people when you ask them what makes humans unique, they say: language. But language doesn't come from nowhere. It builds on this prior social cognitive capacity for sharing attention and sharing common ground and directing one another's attention and asking questions about why people are directing our attention in this way. All of that is in place before children learn language. They already communicate complex messages, complex meanings with pointing before they ever get to language. And then language itself is a form of shared intentionality, I would say. So, unlike other species, when we are communicating, the linguistic interaction itself is a collaborative activity. I try to adjust my language for you

so you'll comprehend and you say things like "yeah" or "no" or "uhuh" or whatever, and you're giving feedback and we're working together to make sure that you get the message. And if you don't understand you'll ask, "huh?" or whatever. No other species—in some ways this is kind of obvious—asks for correction—they're not working together to get any messages across. One of them is giving a vocalization or a gesture and the other one responds. But they're not working together to get the message across. Linguistic communication is inherently a collaborative activity with a joint goal and different roles. Our joint goal—if I'm the speaker— is that you get my message or meaning. And each of our roles is: I'm doing the speaking and I'm trying to adapt to you and you're giving me feedback and trying to comprehend. In addition, this all rests on the common ground—we can't really use language unless we share some background knowledge—and it also rests on cooperative motives. Much of human communication is about me simply informing you of things helpfully. I just tell you, "oh, there's a new book out by John Searle and it's that interesting." And I'm telling you that just because I think you'll find it interesting. So in some sense it's an act of altruism. I'm giving you information not for my own benefit but for your benefit. That's actually extremely rare in the animal kingdom, to just share information freely and for the benefit of the other. So it's a collaborative activity itself; it's a motive to share; it rests on common ground, and then of course ultimately, linguistic symbols as opposed to other forms of communication are conventions. And conventions are shared by definition. They are things that you and I both share and we use them the same way together. I can play either the role of the producer or the comprehender and so can you. So these conventions basically rest on our implicit understanding of a shared learning history in the culture— so if you're a non-native speaker of English, and I use a very rare word I'll be cognizant that you may not know this word because you didn't grow up in the same learning environment that I did as a native speaker. Conventions are built on shared experience with the language and the culture. I would actually claim that language is a form of shared intentionality; it's a special form of shared intentionality and communication. It is shot through and through with things that are shared and motives

that are cooperative and joint goals, and it would be impossible to even conceptualize language as somehow a competitive or isolated, individualistic activity. It's inherently collaborative and so it rests on all these other abilities we have for sharing and collaborating and doing things together.

Language is fundamentally cooperative, and I even argue in the book that you can't even conceive of something that's even close to human language in a competitive context, because if you don't even trust that I'm going to tell you something that's useful or true—if you absolutely are trying to outsmart me and not believe anything I say and not do anything I request of you—how could language possibly evolve in the case where we have competing motives? Now we use language for all kinds of selfish purposes. I can lie to you, but lying presupposes cooperative communication. Lying only works because you have a tendency to trust me and I have a tendency to tell the truth, and then the lie works. If you never even thought for a moment that I was telling the truth, and you didn't trust me at all, then lying could never get off the ground. It could never happen. Lying works because it's relatively rare compared to the normal case, which is cooperative, truthful and trustworthy. We have layers of intentions and we can have a selfish deceitful intention at the very top but still we work to get the message across. If I tell you, "the money is over there", when I'm lying and it's really somewhere else, you're still saying, "where, where did you say?" You're still working cooperatively to get the message across even if I have some higher-level motive that's competitive. So I would say that human communication evolved in cooperative contexts for cooperative purposes and later in evolution we learned how to use it to lie.

G.S.: You observe in your experiments the behavior of children and also apes and other animals. Can you explain how does your method work, since, before you, pedagogues like Piaget used mainly verbal experiments, to understand the child cognition.

M.T.: There are three kinds of methods that people use with children these days, young children especially. One of them is, as you say, the verbal method, where you ask children to explain their

understanding of something. And those are wonderful methods that Piaget pioneered and that have been used by many people, but they presuppose your ability to talk about things in a very sophisticated way. I think all of us can know that there are lots of things that we understand but that we have trouble explaining verbally. It's a very demanding method of children. On the other end, there are some simple methods that are used with infants that are looking-time measures where infants will be looking at a display and something will change and they measure whether the infant shows some sign of a surprise or violation of expectation. And those are very un-demanding measures because they just have the infant register. They just see something wrong; they just see something different. Our methods have tended to be in the middle between those. They're based on action. They're based on children making decisions and making choices and communicating and the reason we believe that level is the most informative level is because that's the level that evolution works at. In the very first psychology class I ever took, my instructor said—he was talking about the evolution of cognition—and he says, "it's not enough to know that the predator's coming, you have to be able to get out of the way"—the lesson being that I could have some brilliant cognitive skill, but evolution can only do something if it leads to adaptive action because evolution works on action. So we are focused on children's adaptive actions, on them responding to things we present them in experiments, making choices, indicating things, choosing things on a behavioral level. And we think that's the level that evolution works at and therefore that that's the most appropriate method. We work very hard to try to get a natural situation. So in most of our experiments we talk and plan for weeks before the child comes in the room so that every detail is planned and when the child comes in it just feels like he's just coming to do his play-thing. Our young children at one year-old and two years-old—they have no idea they're being observed, they have no idea it's an experiment—they're just playing a cooperative game; they're just communicating with us as normal. So we choreograph the situation quite carefully, but the children are…—hopefully, it has complete feel of naturalness. Quite often one of our scientists, or even myself on occasion, will come in the

room playing the role of the child and say, "does this feel right?", "does this feel natural?" And we go with the most natural feeling situations we can get—the ones that make pragmatic sense—and we study their action.

G.S.: Is it possible to relate your enquires with the recent discoveries in Neuroscience, like the studies about Mirror neuron?

M.T.: Well, mirror neurons are a hot topic and they obviously are going to be important in the end in us figuring out all of these kinds of things, because the kinds of things I was talking about before—about sharing intention and taking the perspective of others and stuff—mirror neurons obviously would seem to be related to that in some way. However, we are still a fairly long way away. The mirror neurons were discovered in species— rhesus macaques—that don't even imitate and don't engage in all of this stuff. So it's not totally clear exactly how they work and contribute to this. In terms of brain development in general, I think the most interesting and important thing that we know is that the ontogeny of brain development is pretty different in humans and their nearest primate relatives. So our brains grow much slower than do the brains of great apes. With great apes something like 85 or 90 percent of their brain growth is complete by one year, and with humans it's only about 50 percent. So they're moving much faster—our brains are not 95 percent grown until adolescence. Our brain development is much slower, our brains are three-times larger than great apes, so we have larger brains that grow at a slower rate and that presumably is related to our long history of dependence on adults, dependence on the culture to be able to soak up the culture and learn everything that we need to learn from the culture. And we don't know so much about ape brains. We can't really do neuroimaging studies with apes the way we can with humans, and so the knowledge that we have of the brain right now is not really sufficient to be helpful in detail about what's going on in differences between humans and apes.