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**Pointing and Mind Reading:  
On *Origins of Human Communication* by Michael Tomasello**

- Michael Tomasello, *Origins of Human Communication*. Cambridge, MA/London: The MIT Press 2008. XIII, 393 S. [Price: 27, 95 EUR ]. ISBN: 978-0-262-20177-3.

With *Origins of Human Communication* (2008) the experimental psychologist and director at the Max-Planck Institute for Evolutionary Anthropology, Michael Tomasello, finishes a kind of trilogy that started with *Cultural Origins of Human Cognition* (1999) and *Constructing a Language* (2003). In the first book he discussed important differences between human and primate cognition, in the second he dealt intensively with human language development. In *Origins of Human Communication* he evaluates three specific hypotheses on the phylo- and ontogenetic origins of human communication.

These hypotheses, put forth in the first chapter, »A Focus on Infrastructure«, can be summarized as follows:

1. Natural, spontaneous gestures, in particular pointing and pantomiming, constitute the phylo- and ontogenetic roots of human cooperative communication.
2. The latter is based on a psychological infrastructure of shared intentionality which has its evolutionary origin in the support of collaborative activities and comprises i) social-cognitive skills for creating joint intentions and joint attention with others, ii) pro-social motivations for helping and sharing (thoughts, feelings) with others.
3. Conventional communication as embodied in human language is possible only when participants already possess i) natural gestures and their infrastructure of shared intentionality, and ii) skills of cultural learning and imitation for creating and passing along jointly understood communicative conventions and constructions.

The central message of chapter one turns the Chomskyan perspective of universal, genetically predetermined language acquisition on its head: for Tomasello, human communication is a biological adaptation allowing cooperation and social interaction, while the more linguistic dimensions of language are culturally constructed and passed along by individual linguistic communities. The first part of Tomasello's claim finds support in empirical results discussed in chapter five, »Phylogenetic Origins«. The second part is supported by a recent article from Stephen Levinson's group at the Max-Planck Institute for Psycholinguistics showing that the 4000-8000 languages of the world differ so radically on all levels – phonology, syntax, and semantics – that Chomsky's universality thesis can be considered as falsified.

Starting from the insight that communication in the biological world does not need to be intentional or cooperative, in the second chapter, »Primate Intentional Communication«, Tomasello argues that many primate gestures are used to direct attention onto themselves or something else and to control the behavior of other primates. The deictic function that Karl Bühler has marked as a linguistic specialty in his pioneering work from 1934, *Theory of language*, plays a central role in this: chimpanzees use this gesture, for example, to signal that a human should give them food which is out of their reach. This represents a simple form of requesting, a communicative imperative, one of the three basic social motives that pre-linguistic, nine-month old children already possess: ›requesting‹ (help or information), ›in-

forming«, and ›sharing« (feelings or attitudes). Chimpanzees use the deictic function in a surprisingly flexible manner, for instance when pointing out the preferred food among alternatives. Their vocal skills, however, do not fulfil that function: their vocal signals seem extremely fixed (within their kind), largely involuntary, and almost exclusively serve as emotional expressions, independent of how potential recipients of the vocalization (e.g., a leopard alarm cry) might perceive the situation.

In this chapter – as in the whole book – Tomasello somehow fails to mention the work of his renowned colleague from Oxford, Robin Dunbar. In his recent review of Tomasello's book in *Current Anthropology*, Dunbar points out that the inflexibility thesis may be valid for chimpanzees but not for all primates. Gelada-baboons, for example, seem to have quite a flexible repertoire of contact grunts, varying with their emotional state, but, more importantly, also with the communicative intention of the primate. Because Tomasello also leaves unmentioned other empirical results which seem less compatible with his thesis – like some studies by Sue Savage-Rumbaugh on bonobos who were raised by humans and seem capable of what she calls intentionality of the 4th degree – the question arises whether this is a case of ›confirmation bias«, the tendency – to be found in all sciences – to prefer results that confirm one's own hypotheses. But perhaps Tomasello has good reasons to doubt these other results?

In the third chapter, »Human Cooperative Communication«, which is heavily influenced by Bühler's and Grice's theories of speech acts, as well as Herb Clark's book *Using Language* Tomasello impressively demonstrates, by help of a series of everyday examples, that there is a complex psychological infrastructure behind seemingly simple deictic acts and iconic gestures (pantomime). Both forms of communication can be accounted for by the aforementioned two social motives that our primate cousins lack: informing and sharing. Together, both generate a common basis between speaker and recipient, a common (back-)ground of knowledge about the world – analogous to Bühler's ›symbol field«: it transcends the limits of an egocentric perspective and thus creates the basis for larger social units.

Tomasello summarizes the differences in the psychological infrastructure of cooperative communication between apes, human children and adults in a table, in which he attributes intentional communication to apes, but not cooperative communication which young children are capable of in a rudimentary way at least. Adults are capable of fully cooperative communication thanks to recursivity: they can do ›recursive intention reading« (e.g., ›I think that she wants me to know that he thinks that ...«) which allows them to turn helping and sharing into mutual expectations or norms, and to turn the understanding of goals and intentions into joint ones. While chimpanzees only seem to know the motive of requesting, young children can also inform and share, and adults additionally have cooperation norms. As concerns intentionality, Tomasello attributes to both chimpanzees and young children an elementary understanding of goals, an understanding of the perception and practical thinking of others. Adults also have access to joint goals and communicative intentions; they can refer to a ›common ground« through joint attention and can think cooperatively (in contrast to mere practical thinking). Both children and adults have the communicative means that chimpanzees lack: ›imitation«. Moreover, recursivity enables them to adhere to communicative conventions. The surplus value provided by the deictic and pantomime functions for human communication is enormous.

In chapters four and five (»Ontogenetic Origins«, »Phylogenetic Origins«), Tomasello explains where these specifically human social skills come from. Chapter four offers a wealth of convincing examples and experimental results on pointing, a skill infants already master in a surprising breadth before their first serious piece of language acquisition. Two communicative

motives control these deictic acts: a ›declarative‹ one that can either be expressive (i.e., the child wants to share an attitude towards some referent with the adult) or informative (i.e., the child wants to provide an adult with the necessary or desired information), and an ›imperative‹ one. The latter is based on an elementary understanding that others can make things happen and the child uses pointing to control these causal agents. Pointing directs the other's attention to a given aspect of the environment and thus fixes a common frame of reference, a shared ›horizon of meaning‹ (Bühler). However, from the second year of life on, children can also evoke ideas in others by using iconic gestures, i.e. by pantomiming. Initially, this game of gestures mostly makes use of conventional gestures (e.g., head shaking for ›no‹); later on, more and more original gestures come into play (e.g., the boy fingers his chest, looking and smiling at Mom whose shirt has strings he likes to play with).

In the fifth chapter, Tomasello answers the Why-question of human altruistic forms of communication by help of the hypothesis that ›help = self-helping‹: initially, cooperative communication was used within the narrow frame of collaborative activities. These activities are adaptive because collaborative individuals generally produce more offspring. Helpful hints to conspecifics can have direct advantages, as the good cooperator becomes a good partner for reproduction. Both joint actions and cooperative communication are based on recursive mind reading and the innate tendency to offer help and information to others.

Only later (when exactly is not specified by Tomasello) does cooperative communication generalize to situations outside of jointly performed concrete tasks and to uncooperative aims such as lying or deceiving. According to Tomasello, primates can also ›understand‹ the actions of others, demonstrate social intentions, and engage in group activities. But their communicative gestures fail when it comes to shared intentionality: the recipients do not try to relate a gesture to the inferred intention of the other; they lack the common ground. Primates also do not point to each other, and when they point to a human tutor it is only for requesting something. The decisive phylogenetic leap thus was the one which enabled the human species to do recursive mind reading. How and when exactly this extraordinary new ›piece of cognitive machinery‹ evolved is mainly left open by Tomasello.

In the sixth chapter, »The Grammatical Dimension«, Tomasello outlines his three-stage theory of ›simple‹, ›serious‹, and ›fancy‹ syntax. He relates these progressively complex syntactic degrees to the three social functions of ›requesting‹, ›informing‹, and ›sharing‹. The starting point of this evolutionary grammar of gestures is constituted by the natural gesture sequences of primates which possess no syntactic structure at all. Requesting happens in the here and now, typically involves only two individuals, and the action which one of them wants the other to do. A simple grammar of deictic sequences and intention-movements that parses experience into events and participants and combines gestures towards a single goal suffices for this. If we wish to inform others about useful things, all kinds of possible events and participants come into play which also can be shifted in time and space. For that purpose, a serious syntax that marks (case) roles in events and identifies participants in a joint attentional frame is necessary (who does what when to/with whom). A mixture of gestures and vocal expressions – typical of children when they begin to learn a language – now is the means to the end. Finally, if the communicative motive is sharing feelings or attitudes with others, for instance when telling a story with many participants, events, and spatio-temporal references, the fancy syntax of spoken language is required in order to relate events in narrative and track participants across events. In contrast to standard Chomskyan theory, Tomasello claims that communicators do not need separate lexical and syntactic ›modules‹ to express themselves. They possess prefabricated ›constructions‹, internal meaning structures for use in recurrent communicative situations, among them words or phrases like ›How ya

doin’?< or more abstract patterns like the English passive construction ›X was VERBed by Y<. Here Tomasello stands on the shoulders of theoretical linguists like Langacker, Fillmore, or Goldberg, but – despite his interesting hypotheses – does not provide the interested scholar with a satisfying account of how exactly a simple grammar of gestures evolved into the highly complex language constructions invented by a Thomas Mann or James Joyce. But perhaps his book’s main addressees are not expert (psycho-)linguists?

In the seventh and last chapter, ›From Ape Gestures to Human Language«, Tomasello summarizes his arguments around the core notion of human ›language as shared intentionality<.

## Conclusion

The two key notions of this book, i) language is based on communication which is itself primarily cooperative and less manipulative, and, ii) gestures – and not vocalisations – are the phylo- and ontogenetic roots of spoken language, are not new. Bühler, Wittgenstein, Austin, Grice, or Searle already saw language as a means for doing things and coordinating social actions, while Chomskians considered it mainly as an instrument for processing and externalizing thoughts. Condillac, Wundt, Arbib, Rizzolatti, or Corballis already ventured the idea that language evolved from gestures, not from grunting sounds or alarm cries. What makes Tomasello’s recycling of these ideas so attractive and plausible is the combination of creative observational and experimental studies with children and primates, many of them carried out in his own lab, that concretise and support these notions. The accurate observation of how children acquire language and of what distinguishes their language acquisition from chimpanzees’ is an original contribution of Tomasello’s group to psycholinguistic and developmental psychology research. The focus on comparative developmental behavioral studies on the one hand, and on pragmatic and prosodic aspects of language development on the other hand, reflects Tomasello’s core competences and the development of his career well. Still, from a contemporary book entitled *Origins of Human Communication* one could also expect that it devotes more extensive and detailed consideration to the two other basic sub-domains of psycholinguistic research, semantics and syntax, than is the case in chapter six. Moreover, the fast-growing scientific community of neuroscience, neuropsychology, or genetic psychology could have expected some information on what studies and results from these fields say about the key hypotheses of the book.

The latter desideratum can be exemplified by the non-novel notion of ›mind reading< as a basic skill for social interaction, which is central to the book. From the very first experiments of Jean Piaget on perspective taking via Premack’s ›theory of mind< to Wimmer and Perner’s groundbreaking experiment on false belief many scientists have used this idea in various theories on perception and action, imitation learning, empathy, emotion, or aesthetics. It is a bit of a surprise that Tomasello does not respond to such kindred theories, as little as he mentions Rizzolatti’s work on mirror neurons which for many researchers represents the neural correlate of the human skill to run mental simulations and thus reconstruct observed actions, sensations, or feelings. Eminent scientists like Arbib, Rizzolatti, or Corballis see in the mirror neuron system the very basis of shared intentionality, the notion on which Tomasello grounds his theory. Perhaps in doing so Tomasello simply remains true to himself and his classical experimental psychology training, referring only to results from observational and behavioural studies to test and support his arguments. For whatever reasons, he thus renounces the possibility of offering answers to questions left open by his book, at least if one accepts the opinion of scholars like Robin Dunbar or Nick Enfield, in particular the puzzling issue of how and why a system based on mimic and gestures finally ends up using almost exclusively the vocal

channel and develops a mental apparatus that creates the marvellous richness of literal and figurative meanings of language.

Michael Corballis constructs *his* answer to this question around the gene FOXP2 which is also sported by apes, song birds, or crocodiles, and which, as a transcription factor, regulates other genes. Renowned colleagues from Tomasello's institute, Wolfgang Enard and Svante Pääbo, think that the decisive gene mutation happened at the same time or shortly after the origin of the (neuro-)anatomically modern man, i.e. about 100.000 to 200.000 years ago. A possible consequence of this FOXP2 mutation could have been a better control of the mouth and face muscles. Corballis argues that FOXP2 and other genes caused the transition from hand to mouth communication when the selection pressure on these energetically costly communication tools became too heavy, the necessity to communicate also at night and across bigger distances too apparent, and the advantages of the free hands for using tools too obvious. Although Tomasello cites Corballis in his book as chief witness for his hypothesis on the gestural origin of language, he does not mention the FOXP2 idea: is this ›too much of biology‹ and ›too little of culture‹ for him?

Another question that one might want to ask Tomasello after reading his book concerns his exclusive focus on a domain-general skill as the silver bullet to the specific human nature. Does he not believe that apart from our talent for shared intentionality some other domain-general or – specifically cognitive – emotional skills also distinguish us from our simian cousins? Not only Hauser, Chomsky, and Fitch in their much debated paper from 2002 claim that our numerical abilities, our capacity for navigation, our talent for mental time travels (Corballis), for versatile social relations, and, of course, also our presumably innate skill for recursion play important roles in the evolution of human language. By sticking consistently and forcefully to his ›one-dimensional‹ position, Tomasello motivates alternative opinions and that should be good news for research generativity.

Tomasello's book stands on the shoulders of many predecessors, among them Premack and Woodruff's pioneering work on the question whether chimpanzees have a ›theory of mind‹, as well as Arbib's, Axelrod's, Bühler's, Burling's, Corballis', Dawkins', Deacon's, Donald's, Dunbar's, Givon's, Hauser's, McNeill's or Wildgens' theories on the evolution of communication, culture, cognition, and cooperation. He successfully integrates many of their assumptions into a coherent framework and supports it by comprehensible empirical results. His entertaining style facilitates fluent reading-and thus makes the issue ›What makes man unique?‹ more accessible to a wider public. In short, his book offers the essence of good reading: acquisition of knowledge and pleasure. His focussing on positive evidence for his theory, his abstinence from discussing alternative theories or results that fit his own theory not so well make it easy for readers to follow (and adopt) his arguments. We humans are unique because we are interested in the goals, intentions, feelings, wishes, and beliefs of our sisters and brothers, and because we can read their minds, because we not only expect help from them, but also offer them help. In stark contrast to our simian cousins, this allows us to imitate and thus to learn and teach all cultural goods the history of mankind has produced, above all: to speak!

›Cooperation and altruism‹ instead of ›fight for survival‹; we like such stories, in particular when they are told by such a renowned scholar and talented narrator as Michael Tomasello.

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