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Book Review of “Becoming Human: A Theory of Ontogeny” by Michael Tomasello. 2019. The Belknap Press of Harvard University Press: Cambridge, Massachusetts. \$35.00 (Hardback), pages i-x, 1-379.

For about 30 years, including 20 years as Co-Director of the Max Planck Institute for Evolutionary Studies (1998 to 2018) Michael Tomasello led an observational and experimental search for the fundamental differences in developmental psychology between humans and our closest living cousins the chimpanzee and bonobo. This book is a summary of the research methods and findings. In a word, Tomasello and colleagues were ‘In Search of Human *Uniqueness*’ – the title of Chapter 1 with emphasis added. The word ‘unique’ is used multiple times in every chapter to describe human differences from the non-human apes. Their effort adds to a noble quest for the Holy Grail question of ‘What is humanness?’, a question that winds its way through hominin philosophy, science, religion, and art since the earliest representations of being a person more than 40,000 years ago.

Tomasello built his quest on ideas developed in the early 20th century by Lev Vygotsky. In a life cut short by tuberculosis (dying in 1934 aged 37), Vygotsky created a sociocultural theory of human development which hypothesized that infants and children acquire their cultural values, beliefs, and problem-solving strategies through socially-mediated collaborative dialogues with more knowledgeable members of society, especially adults (McLeod, 2018). In contrast to other influential developmental psychologists, and Tomasello specifically mentions Jean Piaget who proposed that human cognitive development is programmed (genetically one presumes) and universal to all people, Vygotsky and his followers placed more emphasis on the social and cultural milieu affecting cognitive development. Vygotskian hypotheses also placed more emphasis on the role of language and interactions with adults on cognitive development.

There is too much research available to review here that is supportive of the Vygotskian perspective. The research by Tomasello and colleagues extends and supports Vygotskian hypotheses by examining in close detail the, “...ontogeny of uniquely human psychology...” (Tomasello, 2019, p. 301). The ontogenetic time that Tomasello considers is birth to age 6 or 7 years. For humans, these are the years that are defined in terms of growth rate, feeding style, motor development, and language abilities as infancy, birth to ~2.9 years, and childhood, ~3.0-6.9 years (Bogin, 2021).

The book has 12 chapters with the first devoted to the background of Tomasello’s purpose and Chapter 2, titled ‘Evolutionary Foundations,’ providing a brief review of human evolution and human ontogeny. Tomasello correctly states that human cognitive abilities and human culture are part of human biological evolution. Human biologists and bioanthropologists will likely find the coverage of evolution and ontogeny sorely lacking in terms of both biological detail and citation to any major researchers. It is impossible for me to understand how Tomasello hopes to integrate biology and evolution into a theory of human ontogeny without referencing anything or anyone related to the relevant research. A few 20th century researchers of biological-evolutionary human ontogeny are: D’arcy Thompson, Julian Huxley,

Adolph Schultz, Wilton Marion Krogman, Franz Boas, James M. Tanner, Elizabeth S. Watts, and James A. Gavan. Contemporary biocultural researchers missing from the Tomasello review are B. Holly Smith, Christopher Dean, Tanya M. Smith, Debra R. Bolter, Luis Rios, Steven R. Leigh, Melvin Konner, and Anne Pusey. Several colleagues and I review in greater detail the scholarship on the human pattern of physical growth, life history biology, and their place in human biocultural evolution (Bogin et al. 2018). That review includes my own work on these topics spanning the past 33 years and presented in the three editions of my book *Patterns of Human Growth* (Bogin, 1988, 1999, 2021). A few passages in Tomasello's book have discussion that seems to be based on my publications and those of others listed here, but no citation is given to any researcher, leaving the naïve reader to assume that these ideas originate with Tomasello. Two anthropologists given some credit for contributions to the evolutionary ontogeny of human social relationships are Sarah Hrdy and Kristen Hawkes. Minor citations are provided to Kim Hill, A. Magdalena Hurtado, and Michael Gurven.

Chapters 3 through 10 present Tomasello's discussion of his eight uniquely human cognitive and social capacities. These are: 1) social cognition, 2) communication, 3) cultural learning, 4) cooperative thinking, 5) collaboration, 6) prosociality, 7) social norms, and 8) moral identity. Each chapter tells the reader what humans got from apes, that is, what the chimpanzee or bonobo can do, and then what seems to be unique about humans. Tomasello states that the apes have some of the rudiments for these capacities, which are biologically in-built. Readers are never told what it is about ape biology that allows for any of the eight cognitive and social capacities. Tomasello avoids biology by writing, "Each of these pathways has its foundations in great ape functioning, so we do not need to explain the existence of these functional domains; we only need to explain their transformation from a great ape form into a uniquely human form" (p. 306). Even if readers accept the non-human ape foundations, Tomasello does not provide any material-biological basis for the human transformation. Presumably, the human brain plays some part, but no discussion or reference to the anatomy or physiology of the brain, or nervous system, or endocrine system, or genome, or any basic biology is provided. Rather, Tomasello emphasizes many times that the non-human ape condition provides the "biological preparedness" for the eight unique human cognitive and social capacities which together give people *shared intentionality*. According to Tomasello, shared intentionality is the basis of all special human abilities in social, cognitive, and cultural behavior.

Tomasello and colleagues have published many, many articles, chapters, and previous books on shared intentionality. Based on those previous works (especially Tomasello et al., 2005) I understand shared intentionality to be the ability to impute or attribute mental states to self and to others. Especially important is the ability to infer the intentions of others and the disposition to align these intentions with one's own physical and emotional states. There is no doubt that human shared intentionality is a critically important ability. Nor is there doubt that humans are better at this than any other primate, perhaps any other animal species. But the idea of shared intentionality did not arise spontaneously from the research conducted at Tomasello's lab. Intellectual roots extend back more a century and includes the late

20th century experimental research with non-human apes leading to the demonstration of “theory of mind”, which has conceptual overlap with shared intentionality (Povinelli & Preuss 1995). Psychoanalysis treatment traditions use the terms *intersubjectivity* or *intersubjective awareness*, which are very close in meaning, even identical, to ‘shared intentionality.’ The origin of intersubjectivity in psychoanalysis is credited to Heinz Kohut (1913 – 1981) and the terms themselves were first used by Atwood and Stolorow (1984).

Tomasello’s new book excels at explaining how human shared intentionality develops in terms of social and cognitive behavior between birth and age 7 years. The book jacket summarizes this: “The first step occurs around nine months, with the emergence of joint intentionality, exercised mostly with caregiving adults. The second step occurs around three years, with the emergence of collective intentionality involving both authoritative adults, who convey cultural knowledge, and coequal peers, who elicit collaboration and communication. Finally, by age six or seven, children become responsible for self-regulating their beliefs and actions so that they comport with cultural norms.” There are clear and very useful illustrations of these steps and of the ape-human differences in almost every chapter.

Did Tomasello find the essence of human ‘uniqueness’? Every species, of course, is unique – that is the nature of a species. Every person is a unique product of biological, cultural, and personal history. Every snowflake is unique.

I am a member of the UCSD/Salk Center for Academic Research and Training in Anthropogeny (<https://carta.anthropogeny.org/>). CARTA’s primary goal is to explore and explain the origins of the human phenomenon. We eschew the word unique because to date every proposed human unique feature, ability, or capacity can be found to some extent in one or more species of animals. I still cling to some features of human symbolic language as ‘very special’ if not unique, such as displacement and infinite productivity, but I remain agnostic about shared intentionality. More observation and experimentation with more species are needed. More and better fieldwork with human foragers and horticultural societies are also required. Better analytical methods, especially mixed methods approaches, are required (Weisner, 2018). That new research may never be performed, for ethical reasons related to maintaining chimpanzees, bonobos, and other primates in captivity, and because so few non-Westernized, traditional forager and horticultural societies remain.

As a one-stop resource to summarize the past 30 years of research by Tomasello and colleagues the book *Becoming Human: A Theory of Ontogeny* is valuable. Tomasello plants the seeds of his research and this new book in the garden of scientific inquiry called evolutionary psychology. This is a relatively young discipline and its garden needs time to bear mature fruit. To quote again from the book jacket the book hopes to show how, “...biology creates the conditions under which culture does its work.” I did not find any meaningful biology, especially biological anthropology and evolutionary biology, in this book. Tomasello’s ideas on human ontogeny, and evolutionary psychology in general, have a lot of growth, development, and maturation to complete.

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REFERENCES

Atwood, G. and Stolorow, R. (1984) *Structures of Subjectivity: Explorations in Psychoanalytic Phenomenology*. Hillsdale, NJ: The Analytic Press.

Bogin, B. Varea, C., Hermanussen, M., & Scheffler, C. (2018). Human life course biology: A centennial perspective of scholarship on the human pattern of physical growth and its place in human biocultural evolution. *American Journal of Physical Anthropology*, 165(4), pp. 834–854. doi: 10.1002/ajpa.23357.

McLeod, S. A. (2018, August 05). *Lev Vygotsky*. Simply Psychology. <https://www.simplypsychology.org/vygotsky.html>

Povinelli, D. J., & Preuss, T. M. (1995). Theory of mind: Evolutionary history of a cognitive specialization. *Trends in Neurosciences*, 18(9), 418–424.

Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *The Behavioral and Brain Sciences*, 28(5), 675–691; discussion 691–735.

Weisner, T. S. (2018) 'Culture, Context, and the Integration of Qualitative and Quantitative Methods in the Study of Human Development', in Gelfand, M. J., Chiu, C., and Hong, Y. (eds) *Handbook of Advances in Culture and Psychology, Volume 7*. Oxford: Oxford University Press, pp. 153–215. doi: 10.1093/oso/9780190879228.003.0004.