

Response to commentators

Michael Tomasello

To cite this article: Michael Tomasello (2018) Response to commentators, *Philosophical Psychology*, 31:5, 817-829, DOI: [10.1080/09515089.2018.1486604](https://doi.org/10.1080/09515089.2018.1486604)

To link to this article: <https://doi.org/10.1080/09515089.2018.1486604>



© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 19 Aug 2018.



Submit your article to this journal [↗](#)



Article views: 90



View Crossmark data [↗](#)

Response to commentators

Michael Tomasello^{a,b}

^aDepartment of Psychology and Neuroscience, Duke University, Durham, North Carolina, USA; ^bMax Planck Institute for Evolutionary Anthropology, Leipzig, Germany

ARTICLE HISTORY Received 18 September 2017; Accepted 27 October 2017

KEYWORDS Cooperation; morality; social evolution


1. Introduction

I sincerely thank the commentators for their time and attention to my book, and for participating in the symposium at Marbach Castle, so beautifully organized by Neil Roughley and the Jacobs Foundation. Responding thoughtfully to each of the eight commentaries is, unfortunately, not possible in a limited amount of space. I have chosen to respond to what I consider to be the main points.

2. Empirical and theoretical issues

Boehm and van Schaik/Burkart both agree with the general approach: human morality has evolutionary roots, beginning at least with other primates, and to fully understand it we must ground our explanations in these evolutionary roots. But each of these authors takes issue with some of the empirical claims I make in the book, especially with regard to the difference between great ape and human cooperation and shared intentionality.

Boehm points especially to two group behaviors in wild chimpanzees. One is border patrols in which (mostly) male chimpanzees seemingly protect their territory by cruising around its boundaries and challenging or attacking those from neighboring groups who get too close. They do this in a manner that seems coordinated. Boehm cites the fact that “leadership” of the group seems to change flexibly, and when a potential intruder is found there is “cross-consultation” in that individuals “occasionally glance sideways at one another.” In his original account of this behavior, Boehm gives many rich details suggesting that there is a kind of “collective mind” at work. In a similar analysis of group hunting, he also gives a much

CONTACT Michael Tomasello  michael.tomasello@duke.edu  Department of Psychology and Neuroscience, Duke University, Durham, North Carolina, USA; Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

richer interpretation than I, or the chimpanzee field researchers other than Boesch (2005), would give – but basically without any new data or evidence to support this richer interpretation.

Methodologically, my own view is that rich natural observations are the first and most important data in attempting to investigate great ape (and all animal) behavior and cognition. But they are only a first step because, as is well known, they lend themselves to many different interpretations, some of which may be ruled out (and at least probabilistically ruled in) by experiments. Boehm notes, rightly, that most of the experimental studies I cite in the book – which paint a more individualistic picture of chimpanzees' behavior in group activities – are only between two individuals in dyads, and this may underestimate their skills of collective intentionality. But an exception is the experimental study of Schneider, Melis, and Tomasello (2012), in which small to medium-size groups of chimpanzees were presented with various collective action problems. We found that the major determinants of their social behavior, as in dyads, were dominance and the personal relationships between individuals – no evidence of a collective mind. In addition, Boehm also points out that in almost all of our studies food is involved, and this may inhibit cooperation relative to non-food contexts. This is true, and this should be taken as a challenge for future experimental research: to determine if perhaps the level of coordination and cooperation that Boehm suggests is actually at work in larger groups and in situations not involving food.

Theoretically, another source of disagreement is the criteria used for something like shared intentionality. Searle (1992) gives the following hypothetical example. Imagine people in a park where it begins to rain. Each of the individuals gathers her things and heads for the single shelter in the center of the park. This might on the surface look like collective intentionality because all of the individuals have the same individual goal: to get to the shelter. But their goals are not coordinated or shared in any way; each individual is driven by the same contingencies and so has the same individual goal. Now imagine a situation where all of the individuals in the park are actually part of a group who have agreed to meet in the shelter at precisely 12 o'clock (Searle's example is actually that they are part of a dance performance choreographed to meet at the shelter.) From an external perspective, the behavior is the same: they all pick up their things and move to the shelter at the same time. But in this case they have a shared goal and are moving in coordinated fashion to meet that shared goal.

There are various possible tests for such a shared goal, and we have used various such tests in dyads and found no evidence in chimpanzees. For example, when individuals get their individual goal prematurely, they forget about the partner (Greenberg, Hamann, Warneken, & Tomasello, 2010). It is also important that in many different studies we find that

chimpanzees who need to work together to get a reward communicate very little, if at all. And so my conclusion is that experimentalists should take Boehm's observations as a challenge to create more naturalistic group-level scenarios, ideally without food involved, and see if we can find more evidence in the direction of great ape shared intentionality. But I object strenuously to Boehm's characterization that, because I deny shared intentionality to apes, "we are left with an unexplained saltation and an instance of human exceptionalism" (p. 697). My story is one of Darwinian gradualism, but the shared intentionality part just starts with great ape individual intentionality and becomes shared only after humans began to go down their own evolutionary path. There is nothing of a priori exceptionalism in this account.

Van Schaik and Burkart point to some other phenomena that might suggest shared intentionality in chimpanzees. One phenomenon they point to is so-called community concern: "particular individuals engage in impartial interventions in conflicts that end up restoring peace in the group" (p. 713). The problem, once again, is that without experiments we cannot know what is going on. The individuals who intervene are almost always dominant males, and it is in such a male's self-interest that a situation not develop in which coalitions of individuals are fighting one another, because then one of those coalitions might turn on him. Van Schaik and Burkart also point to great ape prosocial behavior, but I cover that extensively in the book, including many well-controlled experiments, and cite that as a starting point for human cooperation and morality. They also point to great ape conformity, as the deference that individuals show to the group. But many studies have found that, although great apes learn from others, there is really nothing like normative conformity. For example, after they have discovered a solution to a problem on their own, young children will nevertheless follow a group and try out a different solution; in contrast, chimpanzees stick with their own individual learning, and ignore the group (Haun & Tomasello, 2014).

Van Schaik and Burkart provide an alternative account that has much to offer. I would like to point out three interesting proposals that deserve further thought and study. First, they advocate studying species that have certain convergent traits in common with humans (i.e., traits not shared by common descent, but rather shaped independently by ecological circumstances). They point especially to cooperative breeding as an important context for prosociality and cooperation. I agree that this component – which I mention in the book but do not develop (see Tomasello & Gonzalez-Cabrera, 2017) – very likely played a larger role than I have given it credit for, and so I welcome this modification. Second, they point out a seemingly trivial but perhaps important fact about the physical world that changes the contingencies for cooperators. When chimpanzees hunt

in groups for monkeys and other small mammals, the carcass is so small that a single individual could easily eat the whole thing if left in peace. This means that selfish motives are fairly prominent. If at some point humans began hunting in dyads for larger mammals, an individual could never eat the whole thing at once (and meat does not preserve without refrigeration or the like), and so why not share and make friends since the extra is just going to go to waste anyway? This detail, as it were, could actually play a very important role in making it easier for humans to cooperate in foraging. And finally, on a somewhat more theoretical level, van Schaik and Burkart express their belief that, based on all the data, the differences between great ape and human cooperation are less cognitive and more motivational. This is a difficult point because cognition and motivation must in some sense go together: natural selection cannot produce competencies without the motivation to express them, nor motivations with no underlying competence. Nevertheless, the point is well taken that in many experimental studies apes would seem to be prevented from cooperating in more sophisticated ways by their extremely high motivation for food and their tendency to settle disputes over food by dominance. It may be that if these constraints were somehow removed (see above on size of prey as one way of doing this), this would set in motion selection pressures that would lead to ever more cooperation.

Wilson has a very specific theoretical agenda. As he is one of the originators of the theory of multi-level selection, I cannot argue with his critique of my characterization of it. If he says I have mischaracterized it, then I am sure that I have. He corrects my mischaracterization by providing a “translation manual” for transforming what I said into multi-level selection theory, properly understood. But there is a fundamental difference of theoretical goals at work here that helps to explain our different perspectives. The main point is that I am a psychologist interested in proximate mechanisms. A central part of my theoretical approach to the evolution of human morality is that it is a set of proximate mechanisms (involving cognition, social motivation, and self-regulation), and the goal of our evolutionary analysis is to understand how these came into being. It is in this context that I made the statement, which Wilson criticizes, that “all of the action is at the individual level.” What I intended to say, and attempted to say, was that kin selection and group selection might very well be powerful evolutionary processes in producing more cooperative individuals, but the specific kind of proximate mechanisms that constitute human morality – everything from making commitments to feeling responsible or guilty, to having a normative sense of obligation, to holding others accountable to moral standards – most likely emerged from some of the conflicts that individuals feel as they are motivated both to cooperate with others and to pursue their own self-interest. I call this the

“cooperativization of competition,” and I do not think that other levels of analysis can account for these peculiar social adaptations.

As a developmental psychologist, Killen is more focused on the ontogenetic story. She provides a rich and interesting set of other data and perspectives to take into account in our characterization of how young children come to be moral beings. I agree with the vast majority of her points, although many of them are focused on children that are older than those crucial for my account (which are basically children from 1 to 5 years of age). However, I would like to consider further three theoretical dichotomies on which she focuses because they contribute to a deeper understanding of the process itself, as well as my own take on it. First, Killen goes to great lengths to separate cooperation and morality. It is clear that they are not the same thing, but she points out that in many cases they are at odds with one another: it is immoral, she claims, to cooperate with others in order to rob a bank. But this is taking a prescriptive view of things, and doing so from an external perspective. There is “honor among thieves,” and indeed the Mafia has its own moral code for in-group members. Wars are competitions between highly cooperative groups, and within these competing groups there are all kinds of prosocial behavior, loyalty, feelings of obligation and responsibility, and on and on, and in many cases the group believes it is pursuing a moral goal, for example, by wiping out the heathens or evil-doers. Regardless of how we judge such situations from an external perspective, the internal dynamics of cooperative groups typically have a moral dimension. And so my claim is simply that this is a likely source of human moral psychology – which, as we know, has a pronounced in-group out-group bias – regardless of how we judge the situation from an external perspective.

Second, Killen is concerned that my focus on interdependence – and, in particular, on conformity to group norms at the second step of my story – effaces the individual in her own autonomous decision-making. But that was not my intention, and indeed in one place – perhaps not prominent enough – I stress that, in the end, it always comes down to individual decision-making. In dyads, individuals might have temptations to cheat and they must decide whether to do that or to live up to their joint commitment to their collaborative partner. In groups, individuals have a strong tendency to conform to the group’s social norms, but, again, they can always defect, and moreover, the group’s social norms often conflict with one another or with other aspects of second-personal morality. Thus, many of the classic moral dilemmas take exactly the form of one’s obligation to an individual that conflicts with conformity to social norms (e.g., Heinz’s problem of whether to steal the drug to save his mother’s life). Social interdependence makes individual decision-making more

complicated, and there are many reasons to go along with the group, but in the end it is always still the individual who must decide.

Third, Killen points out that our research with young children often emphasizes a natural motivation to behave prosocially and/or morally, downplaying the role of parents and other adults in the process. This is an accurate characterization, but it is age-dependent and it relies on a crucial distinction. The claim is confined mostly to infants and toddlers from one to three years of age. After three years of age, as many studies show, young children begin to learn the social norms of their group, and they become sensitive to adults invoking those norms. Children's "natural" prosociality from 1 to 3 years of age is the starting point, but it is soon overlaid by various forms of socialization. And that is the other point. Even in these infants and toddlers, it is not that they are not learning things. They are learning, for example, that helping others and sharing with them promotes a positive social relationship, whereas cheating and harming others undermines relationships. But although the content of this learning is social, the learning itself is individual. This contrasts with adult teaching and socialization in which the child simply conforms to what she is taught. It is such adult teaching and socialization that I believe is not of so much importance in the 1–3-year age period. Again, it will become important later, but infants' and toddlers' cooperation and morality come to them naturally in the sense that they have natural proclivities and they individually learn based on those.

3. Philosophical issues

All four philosophers focus on difficulties with my account of how human beings came to think and judge normatively. I will not pretend that my account is sufficient, much less perfect, but I continue to believe it is better than the alternatives.

Pettit reconstructs my account into 32 smaller steps. He highlights several of the steps at which normative concepts are introduced and argues that the story would be more or less the same without them. He believes the account is a good one for the evolution of human cooperation, but not for normative morality per se. He claims that the account is anachronistic in the sense that we modern humans are projecting back into early humans the way that we would do things, when in fact they could do them in a simpler (non-normative) fashion. It is noteworthy that Pettit is not of the view that no naturalistic account is possible for the birth the normative; indeed, he has his own account (Pettit, [in press](#)). It is just that he thinks that the elements generated by two-person collaborative activities – in my first step – are not up to the job.

Pettit offers an explicit (albeit brief) alternative account for the origin of normative and moral notions:

If the seniors in each period had to teach the juniors what was required of them, now in this area, now in that, they would plausibly have wanted their instructions to carry maximum weight. And they might well have given their instructions that weight by appeal to the sort of impersonal voice that Tomasello invokes. They might have presented their instructions to the young as directives on how they “ought” to treat others’, and on how ‘others “ought” to treat them’. And by doing this they might have given those instructions something approaching the impersonal, normative force associated with the moral ought. (p. 734)

But, as Piaget (1932, see final chapter) has argued at length, this will not work. The kind of authority that adults represent is power and control and, to quote Rousseau, “Force is a physical power, and I fail to see what moral effect it can have” (Rousseau 1762/1987, I,iii). To follow adult instructions is merely to conform, and to see them as instantiating an impersonal normativity, one must have the capacity to understand an impersonal normativity in the first place. Piaget also points out that when children follow adult instructions they are following guidelines or injunctions with respect to specific behaviors, whereas cooperation is a kind of open-ended commitment to act however one needs to act to respect and care for one’s partner. This can only come into existence when one individual interacts with another with whom she shares equal power, that is, with peers, not adults. Cooperation – and so morality – comes about when one works out how best to do things with someone of coequal status, where neither partner may force the issue.

Gilbert also thinks that the elements generated by two-person collaborative activities, cemented by joint commitments, are not up to the job. She believes that joint commitments are not moral at all, and this opinion – which I was aware of when writing the book – is to me baffling. She explicitly says that she will make reference to various kinds of moral notions, and that her understanding is “an understanding I take to be common” (p. 755). But I cannot imagine what that is if it does not include, as a central component, commitments. Nothing is more central to morality than the notion of harm. If I invite someone to rely on me in a joint enterprise and then jilt them, I have harmed them (and if I play my role well I have helped them). Although perhaps not as clear-cut, the notion of commitment would seem to imply some kind of responsibility to the other person to come through. This seems to be precisely because in the context of a joint commitment it is in the participants’ common ground understanding of things that, if either jilts the other, this will knowingly cause harm to that other and to their relationship, for neither of which the jilter is showing any concern whatsoever. Gilbert wants the normativity of joint commitments to be specific and internal to them, and if there are any

notions, such as “respect” and “ought,” they are non-moral versions of these concepts specific to and internal to joint commitments. Thus, although Gilbert is the inventor of this concept of joint commitment, her notion that it creates a kind of normativity that does not extend to morality is, as I say, simply baffling to me.

Perhaps part of the problem is that she starts her account in this commentary with an individual commitment, for example, to do something tomorrow. But commitment is fundamentally a social notion, I would argue: one prototypically makes commitments to others. Making a commitment to oneself derives from the social act, as, in Meadian fashion, “I” make a commitment to “me,” a division that derives from individuals monitoring the reactions of others to themselves. And so, like Pettit, Gilbert believes that I have added in moral notions where there is no need for them. But the fact that one could give an account of the evolution of human cooperation without adding in these moral notions does not mean that in actual human evolution they were not added in. And if they were not part and parcel of early collaborative activities structured by joint commitments, where did they come from? Gilbert does not offer an explicit alternative account – it is not her intent to explain the origin of moral notions – but in a telling explication she essentially takes the opposite view from Pettit on power-based authority:

It should perhaps be emphasized that the standing or authority to demand or rebuke someone for non-conformity to a joint commitment is not a moral matter. In particular, it is not a matter of *moral* authority. That is something different, something like ‘authority that should, morally speaking, be granted to someone’, an instance of which is, perhaps, the authority of parents with respect to their young children. (p. 763)

In this way, she again emphasizes that joint commitments are not based on moral authority. And for Gilbert it would seem that we must simply leave open the question of where moral notions – or moralized versions of respect and commitment – came from.

Darwall’s view would seem to be most congenial to my own, as he views second-personal interactions – at least those of modern humans who make joint commitments to one another – as fundamentally moral. Indeed, I took from him the idea that joint commitments can only be made by individuals who have a certain standing with respect to one another, mutually recognized. This enables them to make themselves responsible for the fate of the other in a joint enterprise and to uphold their side of a commitment precisely because they respect their partner, where respecting their partner includes the belief that he is capable of self-correcting if need be.

Darwall's issue is that he does not believe that the dyadic interactions characteristic of the first step of my story are sufficient. We agree, I think, that for individuals to feel any kind of normative pressure to live up to their joint commitments, there needs to be something more than two individuals bargaining with one another. I made the Rousseauian move to claim that the "we" constituted by our joint commitment was that something more. Darwall believes that is just too thin; individuals can dissolve it whenever they want to, and a disagreement about the content of the joint commitment has no external adjudicator. After the discussions of the symposium, I have come more and more to agree with him about this. But he believes that even in these early joint commitments between second-personal agents, if they are to be moral then they must have a "universalizing tendency" within them (p. 804). I believe this is going too far. One can get the needed larger social context in a simpler way. This does not get us to a full human morality – I am quite clear about that in the book – because a full human morality does indeed require a universal perspective. It is just that, in my account, that only comes with the second step in which individuals see things "objectively," such that they can say to themselves that this is the way that anyone who would be one of us (any rational being) must act.

So the earlier first step is not the full endpoint. It does not need fully universalizing tendencies, but only partially universalizing tendencies. And I would invoke two interrelated processes, one of which I invoke in the book but do not emphasize sufficiently. They both derive from the fact that the dyadic collaborations on which I focus occur between individuals in a larger pool of collaborators in a loosely structured social group. And so, one generalizing (if not universalizing) tendency is to more or less equate collaborative partners; what one has learned about how to treat previous partners one can generalize to others. So what I tended to conceptualize as each dyadic interaction on its own actually should be thought of as one instance of a class of kinds of social interactions in which early humans knew they could engage. But more important is perhaps the idea that individuals did have some notion of how others in the potential pool of collaborators were viewing, or would view, certain kinds of actions within a collaboration. If there was a dispute between partners, they both knew how the pool of potential partners in general would view the situation, who they would side with. In fact, they would side with the one who was keeping the joint commitment and not with the cheater, and so the joint commitment had the added support of all of the potential collaborators. Again, this would not constitute what we today would think of as a fully moral kind of objectivity and normativity, but it is not supposed to. It is supposed to be an interim step that has the seeds of a fully human morality; but seeds are not plants.

And so I agree with Darwall that the first step in my account is not a fully human morality. In my enthusiasm to characterize this first step as containing all of the essentials of human morality, I may have exaggerated its moral character. I do not think it took place in the context of a fully universalizing tendency, and so it was not a fully human morality. But it had at least some generalizing tendencies – implicit reference to others in the pool of collaborators – that provided the external reference point needed for participants in a collaborative activity to give socially normative forces their due.

Roughley focuses on more or less the same issue but offers a different solution. “In order to develop standards that have sufficient stability and allow reliable intersubjective monitoring, it seems to me that something beyond the interaction of two agents is required ... [specifically] a third agent” (p. 746). Adopting the general approach of Adam Smith, Roughley claims, like Darwall, that to get to the kind of “impartial spectator” required for a fully impartial set of standards, a dyad is not enough. Unlike Darwall, he does not posit an individual universalizing tendency, but rather an additional social context. But in his account, in the ideal case it is an actual onlooker whose perspective the individual can take and with whom the individual can empathize and identify. So even while the individual is a participant in a collaborating dyad, she is monitoring the perspective and emotions of a more-or-less disinterested third-party. This social configuration also helps to explain the power of the feeling of guilt to override the individual’s more self-interested motives, which otherwise would hold sway. Roughley’s account bears some resemblance to the amended version of my account given above, in which I invoked the pool of potential collaborators and the individual’s taking of their perspective as support, or lack of support, for any actions taken by either of the participants in the collaboration. Roughley’s account is much more immediate and relies less on individuals imagining how non-present others might react. And so, in his account one can imagine small groups of individuals foraging collaboratively, with multiple possibilities for dyadic interactions with onlookers nearby. In this account the importance of the dyad begins to fade, and this may be a good thing. But I worry that the importance of the direct face-to-face nature of second-personal reactive attitudes, such as resentment, might get lost in the shuffle.

Nevertheless, the general point from the critiques of Darwall and Roughley is clear: a dyad, no matter the kind of interaction the partners have, does not have within it, by itself, sufficient resources to get to impartial standards with normative force that individuals respect as legitimate and more powerful than their own individual self-serving motives. We have on offer three different solutions to this problem, and perhaps the answer is in some combination of them all. (Indeed, Roughley supplements

his account with individuals who are linguistic, which ramps up individuals' universalizing tendencies through adherence to these linguistic conventions.)

A related issue addressed by Roughley is as follows. For me, the notion of deservingness derives from a kind of confluence of two things: (i) a sense of self-other equivalence, deriving from the relationship between partners in a collaboration and (ii) the exclusion of individuals who are not deserving, namely, nonparticipants in the collaboration (free riders). The second element is necessary, as the notion of deservingness requires a contrast with non-deservingness. Roughley believes that this inclusion of exclusion, as it were, is a limitation in the early steps toward a human morality that must be overcome. But one of the insights of the book, in my opinion, is that this early exclusion of nonparticipants in the collaboration (free riders) scales up, in the second step, to culture, to the kind of in-group/out-group psychology that we know to be characteristic of modern human morality. So I do not believe that in our natural history of human morality this exclusionary process is something to be overcome, but rather it is a core feature that helps to explain why modern human morality is the way that it is. It may be that human morality in the contemporary world of multicultural civil societies is on its way to something less exclusionary, but current events suggest that this is still not a widespread feature.

One aspect of my account that got no attention from commentators is one I would emphasize here because all four philosophers criticize my account of the origin of normative attitudes and notions. My remit was to explain uniquely human moral psychology, not the psychology of great apes as evolutionary ancestors, as this was assumed as starting point. And so, my explanation for the origin of normative force began first of all with something we share with other great apes, something like instrumental pressure or rational pressure: if one has goal X, and knows that doing Y will achieve it, then there is rational pressure to do Y. This supplies psychological force for action. But, obviously, moral (socially normative) considerations add something to the process. I argue in several places for what I call "cooperative rationality." In a situation of obligate cooperation – where individuals are totally dependent on one another for their existence – it makes sense to act in ways that may not make sense in situations that are more of a free-for-all among individuals. For example, at the first step of the story, it makes sense to help potential partners on whom one depends. It makes sense to share fairly with collaborative partners when one sees them as equally deserving second-personal agents and, moreover, when one is depending on them and others to choose one as a collaborative partner in the future. It makes sense to live up to one's commitments made within an interdependent "we." And so, the rational pressure characteristic of individual decision-making gets transformed into rational pressure in

the context of a cooperative social arrangement in which it is essential to keep one's cooperative identity intact. Normative pressure is the pressure to continue being who one is in the cooperative group and to make sure that others, considered as equally deserving individuals, do so as well. We all act like this because it makes sense for all of us. Then, at the second step of the story, the universalizing tendency kicks in and the individual understands that "anyone who would be one of us" must conform to our normative standards to keep his cooperative identity.

4. Conclusion

Participation in the symposium, and reading and responding to these commentaries, has been both a humbling and a heartening experience. It has been humbling because, even though I knew that a speculative history would be easily criticizable, the criticisms have touched on some key points that surely need further work, especially the origins of normative notions and attitudes. Nevertheless, I have been heartened because, as we all know, an account has to have some validity and value in order to be worth criticizing, especially by colleagues as eminent as those represented here. Although no one individual, myself included, may have the complete answer, if we put our heads together in shared intentionality we may yet get there. And it seems that a speculative history in the tradition of Rousseau and Hobbes that is consistent with, but by no means determined by, the historical facts as we know them, provides a useful vehicle for analyzing and ordering the key concepts at work in valid and productive ways.

Again, I am very grateful to the commentators, and especially to Neil Roughley and the Jacobs Foundation, for bringing us all together and setting the context for what hopefully will be further progress on this most fundamental question of what it is to be human.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Michael Tomasello is a Professor of Psychology and Neuroscience at Duke University, Durham, North Carolina and emeritus Co-Director of the Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany. His research interests focus on processes of social cognition, social learning, and communication/language in human children and great apes. His recent books include *Origins of Human Communication* (MIT Press, 2008), *Why We Cooperate* (MIT Press, 2009), *A Natural History of Human Thinking* (Harvard

University Press, 2014), and *A Natural History of Human Morality* (Harvard University Press, 2016).

References

- Boesch, C. (2005). Joint cooperative hunting among wild chimpanzees: Taking natural observations seriously. *Behavioral and Brain Sciences*, 28, 692–693.
- Greenberg, J. R., Hamann, K., Warneken, F., & Tomasello, M. (2010). Chimpanzee helping in collaborative and noncollaborative contexts. *Animal Behaviour*, 80(5), 873–880.
- Haun, D., & Tomasello, M. (2014). Children conform to the behavior of peers; Great apes stick with what they know. *Psychological Science*, 25, 2160–2167.
- Pettit, P. (in press). *The birth of ethics*. New York: Oxford University Press.
- Piaget, J. (1932). *The moral judgement of the child* (M. Gabain, trans). New York: Free Press.
- Rousseau, J. J. (1987). On the social contract. In *The basic political writings* (D. A. Cress, trans) (pp. 141–227). Indianapolis: Hackett.
- Schneider, A., Melis, A., & Tomasello, M. (2012). How chimpanzees solve collective action problems. *Proceedings of the Royal Society, B*, 279, 4946–4954.
- Searle, J. (1992). Collective intentions and action. In R. R. Cohen, J. Morgan, & M. E. Pollack (Eds.), *Intentions and action* (pp. 401–413). Cambridge, MA: MIT Press.
- Tomasello, M., & Gonzalez-Cabrera, I. (2017). The role of ontogeny in the evolution of human cooperation. *Human Nature*, 28, 274–288.