Biology & Philosophy (2023) 38:35
https://doi.org/10.1007/s10539-023-09918-w

Humans, the Norm-Breakers

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Introduction

What is it to be a better ape? This is the question Victor Kumar and Richmond Campbell ask in their book on the evolution of the moral mind, an ambitious story that starts with the common ancestor of the modern apes—humans, chimpanzees, bonobos, gorillas, and orangutans. Of all of us, it's the humans who remain in the running for being a better ape, because we're the ones who have all the necessary ingredients: the binding emotions of sympathy and loyalty which we share with our nonhuman cousins, but also the collaborative emotions of trust and respect and the reactive emotions of guilt and resentment. Importantly, only humans are thought to have norms, and to be biologically prepared to learn norms. For Kumar and Campbell, the co-evolution of emotions and norms is what set humans on this path so we can become a better ape.

The story they tell is artfully woven from major theories in psychology and anthropology, and those of us who have pre-existing opinions about these theories have points where we can quibble regarding the nature of the emotions–whether only humans imitate, what norms of fairness amount to, or whether any other species are generalists who can survive in a wide range of habitats. Rather than focusing on these, I want to turn to an exciting hypothesis Kumar and Campbell propose about the evolution and function of norms. While it is most common to think that norms helped our ancestors solve the collective action problems that emerged when larger groups of individuals started living together, Kumar and Campbell suggest a different, though complementary, function for norms. They propose that norms provide a more precise and flexible means for coordinating behavior in quickly changing societies. On their view, it isn't the size of community that is the most significant variable, but rather the speed at which culture evolves.

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Published online: 29 August 2023

That norms are a human universal is indubitable. Our contemporary human societies are rife with rules constraining our behaviors, governing aspects of our lives from birth to death, prescribing practices about what to wear, how to work, what to eat, when and how to sleep as well as rules about rare practices that are proscribed. However, Kumar and Campbell also presume that norms are human unique. Here I have more than a quibble, given the burgeoning empirical and theoretical literature on the question of animal normativity (Andrews 2020; Danón 2019; Fitzpatrick 2020; de Waal 2014; von Rohr et al. 2011; Rohr et al. 2015; Whiten et al. 2005; Westra et al., in prep).

Examples of potential social norms in animals come in many forms. For example, dominance hierarchies have been described as part of "convention-based societies" (Strauss and Holekamp 2019), suggesting to some that these societies are structured by norms (de Waal 2014; Nishida et al. 1995). In chimpanzees, attempted infanticide and mishandling infants result in protests by unrelated group members, and observations and experiments offer evidence of rules against infanticide (von Rohr et al. 2011; Rohr et al. 2015). Social play and play fighting have been interpreted in terms of the rules governing play, including rules about handicapping when playing with a weaker partner (Bekoff 2001; Flack et al. 2004). Conformity to local cultural traditions by immigrants who pay costs to conform to traditions of their new communities raise questions about the normative motivation for such conformity behavior (Luncz and Boesch 2014; van de Waal et al. 2013). Protests against inequity in rewards for tasks that were first identified in capuchin monkeys who refused to work when a cagemate received a higher reward for the same task also suggest the existence of norms in captive settings (Brosnan and de Waal 2003).

Given the strong possibility that norms are not human unique, in this commentary I will examine the extent to which Kumar and Campbell's story about the evolution of norms could be made consistent with this ongoing research program and how these considerations impact the claim that norms evolved to support a rapidly changing environment. There is one glaring aspect of the norm evolution story that is clearly incompatible with the existence of animal norms, namely the idea that norms are verbal rules that provide more precise information that can be discursively learned. In the book, though Kumar and Campbell want to downplay the importance of symbolic thought, they do identify norms with the capacity for language. I think that with a closer look at the major transition they describe in part two of the book, what they are identifying is the development of a new norm *capacity* that is tied to language, rather than the development of normative practices or social norms themselves.

By looking at what the differences might be between human and animal norms, and by considering the cognitive mechanisms required at specific points of their account, I think we can tweak Kumar and Campbell's story to be one about the evolution of the capacity to deliberately adopt and change norms, rather than answering the question about how norms came to be in human society. Given what we are learning about nonhuman animal social structures, there is reason to suspect that norms are evolutionarily ancient, and not a recent piece of social technology invented by *Homo sapiens*. The story Kumar and Campbell tell reinforces my suspicion.

Norms

The major transition that separates humans from the other existing apes, according to Kumar and Campbell, happens at the second stage of their story. In the book, the first stage is the emergence of norms, which they describe as "the shared rules that humans became addicted to" (63).

These early normative humans lived together in cooperative groups, expressing not just prosocial sympathetic emotions, but also feelings of trust and respect. They made more complex tools that required time and expertise, such as Acheulean hand axes and string bags woven from cordage or other technologies based in organic materials that did not leave traces in the archeological record (Haslam et al. 2009). To accomplish such technological advancements, they had social structures in place to support cumulative cultural evolution. Individuals lived in larger groups, likely with a division of labor where some individuals made tools that others may have used, and the care and education of children was shared to a certain extent. Early human cultures had both social and physical technologies that children had to acquire, and as these became more complex, knowledgeable individuals needed to be more tolerant of the naïve individuals who had to learn these practices. In some cases, active teaching may have been required to acquire the precise movements that made the difference between, say, an effective hand axe and one that split after a few uses, or between a securely woven basket and one that unravelled when holding any weight.

Kumar and Campbell ask but do not answer the question of how social norms came into existence in the first place. They are open to what Jonathan Birch calls the skill hypothesis, namely that norms may not have originally emerged in moral contexts having to do with forbidding violence or promoting care for others, but instead in technological contexts having to do with standardizing the creation of complex tools that permitted division of labor and teaching (Birch 2021a, b). Another suggestion is that "[i]n cooperative tasks, intelligence and cognitively flexible humans might sometimes have codified a cooperative regularity into a norm" (72). This idea presumes that before there were norms there was something we could characterize as "cooperative regularities".

It's at this point I worry that there isn't much to distinguish a cooperative regularity from a norm. To illustrate their concept, Kumar and Campbell give us a hypothetical example of a cooperative regularity in which a group of hunters and foragers equally divides their gains between each family in the community. They suggest that this cooperative regularity may have become a norm when the group began to think of this cooperative regularity as 'the thing to do'. However, before thinking of a cooperative regularity as the thing *to do*, the group would have had to think of it as a thing they *do* do. Thinking "we equally divide our gains between each family in the community" is already strikingly normative before it gets evaluated as a thing that is good to do. I don't think that one can have a concept of "equal division" without norms, or the kind of cooperation needed for equal distribution of resources in a community. To see why we need to look a bit more closely at what norms are.

Kumar and Campbell describe norms as "culturally transmitted social rules that prescribe how you should and shouldn't behave toward others in our group. Norms rest on expectations that other people in the group will follow the norms too. Your

community also holds you responsible to social norms through sanction and punishment" (72). Their account highlights two elements associated with socially maintaining the behavioral pattern: an emotion element and a punishment element. The moral emotion of guilt helps to maintain one's own behavior through internalizing the norm, and the moral emotion of resentment helps to maintain others' behavior by communicating offence to norm violators. In addition, the risk of punishment, which they describe as "withholding material or social benefits, malicious gossip, and social ostracism" (73) further maintains normative behaviors in the society.

Given their description of norms, we might try to distinguish a cooperative regularity from a normative regularity by seeing it as a pattern of behavior that isn't associated with the proper emotional state, or that isn't supported by a threat of punishment by those who fail to follow the pattern. However, this move raises significant questions about how to characterize the emotional states, and whether punishment is needed for norm violations. Are there some behavioral regularities that we'd want to include as normative that fail to involve these other elements? Consider a society that forbids cannibalism. One individual in this group openly kills and eats another group member. Can we be confident that the cannibal would be punished, or might they immediately take charge of the community? Is the natural emotion resentment, or is it fear? Or consider a society that forbids open defecation. One individual in this group poops on the street. Do we punish this individual, and resent their violation? Or do we feel sympathy and attempt to help them? If it were a child, we would certainly not punish their norm violation, but would rather gently educate them—and we would offer positive reinforcement when they defecate in the proper places. These examples are meant to illustrate the idea that norm enforcement and phenomenology is multifaceted—and that a characterization of norms as requiring specific emotions or responses to violations will lead us to significantly underestimate the diversity of norm types.

In a recent article in this journal, Evan Westra and I argue that accounts of norms like the one endorsed by Kumar and Campbell overspecify the nature of social norms given current evidence (Westra and Andrews 2022). For one, there is no real consensus about the central psychological properties of social norms in the literature. In addition, a too-specific characterization of norms threatens to exclude some of the diverse normative practices seen across human cultures. For example, not all cultures punish even the most heinous norm violations, because the costs associated with punishing a murderer are much higher than the costs of rehabilitating them. Restorative justice practices are still common in today's small-scale societies, allowing the harmed to have their say and to be compensated while respecting long term relationships between the norm violator and the other community members (Braithwaite 2002; Wiessner and Pupu 2012). Furthermore, not all norm violations might be accompanied by emotions of the same sorts. When accounts of norms presume too much about the cognitive mechanisms and behavioral practices involved in normative practices, we risk missing norms that exist, and we also risk inventing significant evolutionary transitions that never happened.

Westra and I propose that an investigation into the nature of social norms can more fruitfully start by considering *normative regularities*: a socially maintained pattern of behavioral conformity within a community. We think that this construct

accommodates the key elements theorists agree on when it comes to social norms without specifying any controversial elements about the nature of cognitive capacities that supports such regularities. Behavioral conformity reflects that there is a pattern of behavior in place without making claims about what supports the pattern. Social maintenance reflects that the pattern is incentivised by other members of the community, and this is the key element that makes a mere pattern into a norm. For Kumar and Campbell, sanctions play this role. However, Westra and I emphasize the essential role of norm education and repair by focusing as much attention on positive reinforcement for correct behavior—a smile when someone helps you out, explicit praise, positive gossip, and successful achievement of a shared goal in a joint project.

Normative regularities describe the phenomenon of interest to norm theorists, picking out the sorts of behavioral patterns that have normative force behind them, and easily discriminating between mere statistical regularities (e.g., using an umbrella when it rains) and normative regularities (e.g., eating with your right hand in societies that socially maintain that pattern). With the construct of a normative regularity on the table, we can now return to Kumar and Campbell's cooperative regularity. As cooperative, it is something more than a mere statistical regularity, since it also permits successful coordination of behavior. This successful coordination is a form of social maintenance on our account. It positively reinforces the behavioral pattern. Specifically, it is the sort of social norm Matteo Colombo describes in terms of behavioral regularities that offer predictive benefits: group members enjoy a reduction in uncertainty about whatothers will do, thereby making it easier to decide how to act themselves (Colombo 2014). In a group where there is a food sharing pattern, my own failure to find food won't result in anxiety because I can expect to enjoy the food of my neighbor. The pattern offers a sense of safety. If the pattern is violated, and my neighbor does not offer me food, my prediction fails, and I enter a heightened state of negative affect, which will in turn impact my behavior, perhaps communicating displeasure or anger toward my neighbor, or lashing out at them either directly though physical violence, or indirectly though malicious gossip. With a violation of expectation comes surprise—a type of affect which can be either positively or negatively valanced. When a cooperative regularity is violated, the surprise would most likely have negative affect, if the resulting behavior is anti-social.

What emerges from this discussion is the strong suspicion that *a cooperative regularity just is a normative regularity*. And if that's so, then any story about the emergence of social norms would need to start before cooperative regularities and explain how those came about.

Normative nonhumans

If we add to the premise that cooperative regularities are normativity regularities some premises about great ape psychology and society, I think we gain confidence in the conclusion that apes are normative beings, for three reasons. First, contrary to Kumar and Campbell's claims in the book, there is good reason to suspect that great apes, alongside other animals, have cooperative regularities and shared intentions. Second, great apes socially learn cultural behaviors. And finally, despite claims to the

contrary, there is evidence of gene-culture co-evolution in nonhuman animals. Let's briefly look at each of these points, lingering a bit more deeply on the third, given the lack of current literature on this point.

Ape cooperation

Experimental and observational evidence supports the claim that great apes work together to achieve shared goals (Duguid and Melis 2020; Melis & Tomasello, 2019; Suchak et al. 2014), share (Fruth and Hohmann 2018; Nishida et al. 1992), help one another (Buttelmann et al., 2017; Greenberg et al. 2010), and have group-specific practices (van Leeuwen et al., 2021 2014; Luncz et al. 2018; Watts et al. 2006). Dennis Papadopolous and I have recently argued that these sorts of behaviors can be understood as cooperative activities grounded in shared intentions (Papadopolous & Andrews, 2022).

Starting with the observation that group activities are supported by folk psychological expectations of other group members' future behaviors, we propose that when group members enter into a joint project, such as a bout of grooming, they update their predictions of their partner, which in turn facilitates their ongoing behavior. We describe this as a sort of mindshaping (McGeer 2007; Zawidzki 2013) that supports coordinated activities by simultaneously modifying the minds and behaviors of the joint actors, which leads to *acting together*. The updating of expectations can be understood as the cognitive act of entering into a cooperative activity, even if the individuals themselves do not describe the joint activity as such. We describe this as shared intention involving joint commitments, given that individuals are able to predict partners' behavior via mindshaping, leading to mutually understood decisions to act together.

Ape culture

Experimental and observational studies support the existence of culture in many species of nonhuman animals (see Whiten 2021 for a review). Early examples of cultural practices in animals include the practice of potato washing in Japanese macaques, which spread from one individual to others in the troop (Kawai 1965), and the diversity of behavioral repertoires across populations of wild chimpanzees (Whiten et al. 1999). Culture in this context typically refers to socially inherited patterns of behavior and information that often vary between communities of animals of the same species that cannot be attributed to the environment or genetic differences (van Schaik et al., 2003; Laland and Janik 2006). This account of culture is psychologically neutral and pluralistic, and does not require specific psychological capacities like imitation, teaching, or perspective-taking. While early arguments about ape culture emphasized the need for active teaching or imitation, there is now general recognition that so-called "simple" social learning capacities like emulation, stimulus and local enhancement, affordance learning, and so on, are sufficient for the acquisition of complex, community-specific behavioral practices in humans and other animals (Zwirner and Thornton 2015; Heyes 2018).

Ape (and wolf) gene-culture co-evolution

As Kumar and Campbell note, there is currently not strong evidence of gene-culture co-evolution in other animals, which makes them wonder if dual inheritance may have been the lynchpin that led to the gulf between modern humans and the other animals. Here too I think that the claim of human uniqueness in terms of cultural evolution is premature, especially given that the focus on culture in animals has been in terms of behavioral differences that are not grounded in genetic differences (Schuppli and van Schaik 2019; Bebko and Andrews, ms).

Perhaps the strongest existing evidence of gene-culture co-evolution in other animals is found in wolves. In Canada, there are 6 distinct wolf sub-populations specialized for different habitats. Canadian wolf populations are genetically distinct, reflecting adaptations to their local environments expressed as differences in morphology, coloration, metabolism, vision and hearing (Muñoz-Fuentes et al. 2009; Schweizer et al. 2016). For example, tundra and arctic wolves have genes associated with fat storage, cold tolerance, and a higher prevalence of white coat color, properties which are important during winter months in the arctic. Evidence that there may be gene-culture evolution comes from marine-specialized wolves in British Columbia, whose genetics support their smaller size and misaligned teeth, thought to be adaptations to relying on small prey such as salmon and snails. Because consuming raw salmon is dangerous for wolves (risking fatal poisoning), some populations of marine wolves have traditions surrounding salmon consumption. These marine-specialized wolves eat only the head of the salmon, completely discarding its more nutritious body in order to minimize the greater disease risk that comes from eating the kidney and muscle tissue (Darimont et al. 2003). This practice of salmon eating is most likely a socially learned cultural tradition, because other wolf populations do not have such traditions-salmon poisoning disease was blamed for the disappearance of wolves from the state of Oregon (discussed in Darimont et al. 2003).

While the wolf case suggests that gene-culture co-evolution may also be present in other animals, our specific question here is whether it is found among the other apes. The methodological approaches to ape culture have made this question a difficult one to directly address (Schuppli and van Schaik 2019), but there is some preliminary evidence of dual inheritance interactions at work. Bebko and I have examined gene culture co-evolution in the context of orangutans, which are divided into two species (Bornean and Sumatran), and three Bornean subspecies. Orangutans are a highly cultural species, with infants learning behavioral traditions from their mothers during an extended infancy period. The importance of this early learning period is reflected in the failures conservationists have had in rehabilitating and releasing orphaned orangutan infants. Early re-release programs often placed individuals in unfamiliar territory where they lacked local cultural knowledge, and the result was high mortality and poor reproductive success, even with provisioning and medical care (Russon 2009). Like human explorers who died due to their lack of traditional knowledge about the lands they travelled, rehabilitant orangutans' chances of survival improved when they received locally relevant cultural knowledge consisting of survival training and contact with locally knowledgeable individuals (Custance et al. 2002; Grundmann 2006; Kelle et al. 2013; Russon 2009).

Orangutans demonstrate geographic variation in many traits, several of which could be a product of both genetic and cultural influences. These include diet, vocalizations, space use, activity budgets, parental investment, morphology, life history, inter-birth intervals, development, and social gregariousness (Wich et al. 2009). Bebko and I suggest that there may have been gene-culture interactions that played an important role in the divergence of orangutan populations and sub-populations in their evolutionary history.

While the science needed to draw secure conclusions about gene-culture co-evolution in orangutans or other great apes remains to be done, we think that orangutan foraging strategies are a promising candidate for dual inheritance interactions. During times of fruit scarcity, orangutans in different habitats adopt one of two foraging strategies: (1) "search-and-find" (when higher quality fallback foods like figs are available), or (2) "sit-and-wait" (when relying on lower quality fallback foods like bark) (Harrison et al. 2010; Kanamori et al. 2010; Knott 1998; Morrogh-Bernard et al. 2009). If these strategies are culturally learned, as we suspect they are, then the observation that jaw differences across orangutan subspecies associated with bark consumption (Taylor 2009) may be a result of cultural impacts on genetics. Such genetic changes that further increase specialization could lead to a gene-culture feedback loop resulting in other cultural changes. Orangutans specialized on abundant and uniformly-distributed bark resources would likely encounter fewer conspecifics compared to those relying on rarer and patchy fig resources, leading to decreased social contact. Indeed, subspecies specialized to bark are less gregarious than those specializing on figs, possibly because fig trees represent important meeting sites (Mitra Setia et al. 2009; Wich et al. 2006). Bebko and I think that we could examine whether this is an example of gene-culture co-evolution by determining whether these foraging specializations and differences in gregariousness are (a) socially learned, (b) representative of cultural traditions, and (c) reflective of relevant genetic differences.

Stage two nonhuman animals

While Kumar and Campbell claim that humans deviate from the other species in stage two of moral evolution, the current evidence raises questions about whether we can locate a significant difference at this point. If nonhuman animals have cooperative regularities– normative regularities–that are socially learned and which impact evolutionary fitness, these features would not help us understand how human morality deviates from animal normativity. We are still at a point in our understanding of animal sociology and psychology where we have many open questions, but also a driving need to attend to those questions in order to better understand the very questions Kumar and Campbell are interested in.

To successfully examine whether apes have a disposition to learn norms—a descriptive to prescriptive bias—we would have to design careful experiments that reflect a deep knowledge of what is salient to our subjects. Finding that chimpanzees do not help a human, or that a chimpanzee stops working on a project when a human partner stops working, shouldn't be taken as compelling evidence that apes are not naturally cooperative or that they lack shared intentions, for example. Humans are authority figures to captive chimpanzees, as teachers are to human children—and

experiments on shared intentionality do not pair children with authority figures in order to test for cooperation or shared intentions. A failure to punish uncooperative partners, likewise, shouldn't be taken as evidence that there is no cooperation in a society, any more than my failure to punish a selfish captain of industry would be. The challenges of understanding social structures across human cultures are dwarfed by the challenges of understanding them across species.

Given the evidence in favor of apes having the elements of norm psychology that Kumar and Campbell emphasize, their framework results in increased confidence regarding animal normativity. A benefit of accepting this conclusion is that it would allow for an empirical test of their theory that the development of norms led to a genetic adaptation to learn norms; if we have reason to think other species are also normative beings, we can test their hypothesis by examining whether other normative animals are prepared to learn norms as well.

From norm conservatism to norm change

Let's finally revisit the exciting suggestion Kumar and Campbell have about the function of norms, namely that social norms emerged and were preserved to help our ancestors deal with quickly changing cultural worlds in a way that slow biological evolutionary processes could not handle. Norms enhanced fitness, they suggest, for two reasons. First, norms are thought to support more flexible behavioral responses to novel challenges, such as a new predator who requires different handling. Second, norms are thought to encode and transmit more precise information, such as which plants are edible or poisonous, which animals are friends or foes, and how to make complex tools. These are the very examples they provide as cases where norms would be particularly useful. The examples raise a couple of worries, however, leading me to reject the idea that having norms supports adjusting to a quickly changing environment.

A prima facie worry comes from the sort of benefits Kumar and Campbell describe in the examples. In all the cases, these are epistemic benefits offering information useful for each individual. How to avoid a predator, what to safely eat, who to safely affiliate with, and how to make useful tools is information that doesn't seem to require the social maintenance element of preserving the behavioral pattern. If this information is individually useful to have, is there any additional work for norms to do? Cognitive capacities help individuals deal with quickly changing worlds because cognition supports behavioral flexibility. Cognition is sometimes identified in a species because we can observe behavioral flexibility and sophisticated learning techniques. Norms—particularly moral norms—are often thought to constrain behavior in such a way that we do not just act in our own self-interest, but for the benefit of others.

Another worry arises from our discussion in Sect. 2 about the difficulty in distinguishing cooperative regularities from normative regularities. We saw that norms make the environment more predictable, and make our behavioral predictions less cognitively taxing. That is, norms are intrinsically conservative. They work very well to reduce the search space when we have to predict what others will do, but in

novel situations and with changing attitudes, they can be more of a hindrance than an advantage. For this reason, it's surprising to suggest that having rules about how to behave would *help* deal with changes. Instead, to deal with a changing environment we need a way to *break* the rules without breaking the society. We need a way to manage norm violators that doesn't result in punishment, and a way to embrace innovators so we can learn from them and enjoy the benefits of cumulative cultural evolution.

The usual story about cultural learning stresses the high-fidelity transfer of information across individuals, and especially across generations. This reflects the conservative nature of social learning. But there is also a creative aspect to social learning and culture that has to do with a tolerance for novelty. The first individual who put meat into a fire could have been punished for violating a norm about how to handle one of the most valuable resources in a community. I've proposed that accepting norm violators and innovators more generally requires having the special cognitive skill of explaining behaviors in terms of reasons for acting—an important role for theory of mind (Andrews 2012). Innovators can be the first to demonstrate useful information to group members, such as attaching a stone tool to a branch with cordage, eating the new fruit in the area, or befriending an individual from an enemy group. These innovators are breaking from the norm, they are potentially violating norms, and yet they are the driving force of cumulative cultural change and of moral improvement. Norm breakers are the ones who challenge traditional gender roles and xenophobia, and the ones who enthusiastically adopt new social technologies. To understand how human morality evolved, we need to understand how conservative normative communities tolerated and even embraced those who suggest new ways of doing things.

While supporting the existence of social norms in other species, the emerging literature on animal social norms doesn't offer any evidence that other species have norms *about* norms. Humans do have such meta-norms. The practice of offering explanations and justifications for our norm violations to excuse our behavior, and the practice of listening to explanations and excusing some norm violations, are the kinds of norms about norms that are central to most human cultural and moral practices (though there appear to be strict liability human societies as well, where offering reasons for violating norms is not observed (Curtin et al. 2020).

These observations about norm conservatism lead me to be skeptical of Kumar and Campbell's claim that norms emerged to deal with the swiftly changing practices of cultural animals. However, while norms themselves are conservative, societies can create norms that will help to support effective norm change. This brings me back to the role of language in the story of the evolution of morality. The technology of language makes it easier to bring norms into focus in a community, to mention them rather than merely use them.

According to the alternative view I'm offering, it isn't the development of language *or* the development of norms that was key to the development of the modern moral human, rather ancestral humans created a new *practice* that required both pieces of cultural technology, making norms the topic of conversation and thought for the first time. For apes who have social norms *and* language, a cultural innovation would be to use language to bring the existing norms into the community as objects of attention, discussion, and debate. This capacity to intentionally introduce

new norms, to critique and change existing ones, and to create norms specifically *for* the introduction of new norms, are all pieces of social technology that would have radically changed the ways in which humans organized themselves.

Having enforceable social norms may have offered our ancestors a powerful tool for supporting group cooperation, but having social norms doesn't on its own permit fast norm change. Social norms are a conservative force by their very nature, and changing them can be difficult. This suggests that the transition point of interest for Kumar and Campbell should be the development of norm change capacity rather than the development of social norms themselves.

Other animals may well have social norms, moral emotions, metacognitive capacities, and sophisticated communication systems. They also may well have biologically adapted to fit their cultural niches. But what we don't see other animals doing is putting these capacities together in a way that brings their norms into the light. We don't always notice what is in front of us. But when we do, the effect is often striking. Seeing the norms we follow, being able to evaluate them, and sometimes choosing to violate them would have been transformative for our ancestors, and is still what can help us to become better apes.

References

Andrews K (2012) Do apes read minds: toward a New Folk psychology. MIT Press, Cambridge, MA

Andrews K (2020) Naïve Normativity: the Social Foundation of Moral Cognition. J Am Philos Assoc 6:36–56

Bebko A, Andrews K MS. Gene culture co-evolution in nonhuman animals?

Bekoff M (2001) Social play behaviour. Cooperation, fairness, trust, and the evolution of morality. J Conscious Stud 8(2):81–90

Birch J (2021a) Toolmaking and the origin of normative cognition. Biol Philos 36(1):1–26. https://doi.org/10.1007/s10539-020-09777-9

Birch J (2021b) The skillful origins of human normative cognition. Analyse & Kritik

Braithwaite J (2002) Restorative justice and responsive regulation. Oxford University Press, New York

Brosnan SF, De Waal FBM (2003) Monkeys reject unequal pay. Nature 425:297–299

Buttelman D, Buttelmann F, Carpenter M, Call J, Tomasello M (2017) Great apes distinguish true from false beliefs in an interactive helping task. PLoS ONE 12(4):e0173793. https://doi.org/10.1371/journal.pone.0173793

Colombo M (2014) Two neurocomputational building blocks of social norm compliance. Biol Philos 29:71–88

Curtin CM, Barrett HC, Bolyanatz A, Crittenden AN, Fessler DMT, Fitzpatrick S, Gurven M, Kanovsky M, Kushnick G, Laurence S, Pisor A, Scelza B, Stich S, von Rueden C, Henrich J (2020) Kinship intensity and the use of mental states in moral judgment across societies. Evol Hum Behav 41(5):415–429

Custance DM, Whiten A, Fredman T (2002) Social learning and primate reintroduction. Int J Primatol 23(3):479–499

Danón L (2019) Animal normativity. Phenomenol Mind 17:176–187

Darimont CT, Reimchen TE, Paquet PC (2003) Foraging behaviour by gray wolves on salmon streams in coastal british Columbia. Can J Zool 81(2):349–353. https://doi.org/10.1139/z02-246

de Waal FBM (2014) Natural normativity: the 'is' and 'ought' of animal behavior. Behaviour 151:185–204

Duguid S, Melis AP (2020) How animals collaborate: underlying proximate mechanisms. Wiley Interdisciplinary Reviews: Cognitive Science, 11(5), e1529

Fitzpatrick S (2020) Chimpanzee normativity: evidence and objections. Biology & Philosophy, *35*(45)

Flack JC, Jeannotte LA, De Waal FBM (2004) Play signaling and the perception of social rules by juvenile chimpanzees (Pan troglodytes). J Comp Psychol 118(2):149–159

Fruth B, Hohmann G (2018) Food sharing across borders: first observation of intercommunity meat sharing by bonobos at LuiKotale, DRC. Hum Nat 29(2):91–103
Greenberg J, Hamann K, Warneken F, Tomasello M (2010) Chimpanzee helping in collaborative and non-collaborative contexts. Anim Behav 80(5):873–880
Grundmann E (2006) Back to the wild: will reintroduction and rehabilitation help the long-term conservation of orang-utans in Indonesia? Social Sci Inform 45(2):265–284
Harrison ME, Morrogh-Bernard HC, Chivers DJ (2010) Orangutan energetics and the influence of fruit availability in the nonmasting peat-swamp forest of Sabangau, Indonesian Borneo. Int J Primatol 31(4):585–607
Haslam M, Hernandez-Aguilar R, Ling V, Carvalho S, de la Torre I, DeStefano A, Du A, Hardy B, Harris J, Marchant L, Matsuzawa T, McGrew W, Mercader J, Mora R, Petraglia M, Roche H, Visalberghi E, Warren R (2009) Primate archaeology. Nature 460(7253):339–344
Heyes C (2018) Cognitive gadgets: the Cultural evolution of thinking. Harvard University Press, Boston, MA
Kanamori T, Kuze N, Bernard H, Malim TP, Kohshima S (2010) Feeding ecology of bornean orangutans (Pongo pygmaeus morio) in Danum Valley, Sabah, Malaysia: a 3-year record including two mast fruitings. Am J Primatol 72(9):820–840
Kawai M (1965) Newly-acquired pre-cultural behavior of the natural troop of Japanese monkeys on Koshima islet. Primates 6, 1–30 (1965)
Kelle D, Fechter D, Singer A, Pratje P, Storch I (2013) Determining sensitive parameters for the Population viability of Reintroduced Sumatran Orangutans (Pongo abelii). Int J Primatol 34(2):423–442
Knott CD (1998) Changes in orangutan caloric intake, energy balance, and ketones in response to fluctuating fruit availability. Int J Primatol 19(6):1061–1079
Laland KN, Janik VM (2006) The animal cultures debate. Trends Ecol Evol 21(10):542–547
Luncz LV, Boesch C (2014) Tradition over trend: neighboring chimpanzee communities maintain differences in cultural behavior despite frequent immigration of adult females. Am J Primatol 76:649–657
Luncz L, Sirianni G, Mundry R, Boesch C (2018) Costly culture: differences in nut-cracking efficiency between wild chimpanzee groups. Anim Behav 137:63–73
McGeer V (2007) The regulative dimension of folk psychology. In: Hutto DD, Ratcliffe M (eds) Folk psychology re-assessed. Springer, pp 137–156
Melis A,M. Tomasello (2019) Chimpanzees (Pan troglodytes) coordinate by communicating in a collaborative problem-solving task. Proc R Soc B 286:20190408
Mitra Setia T, Delgado RA, Atmoko SSU, Singleton I, van Schaik CP (2009) Social organization and male–female relationships. In: Wich SA, Utami Atmoko SS, Mitra Setia T, van Schaik CP (eds) Orangutans: Geographic variation in behavioral Ecology and Conservation. Oxford University Press, Oxford, U.K., pp 245–254
Morrogh-Bernard HC, Husson SJ, Knott CD, Wich SA, van Schaik CP, van Noordwijk MA et al (2009) Orangutan activity budgets and diet. In: Wich SA, Utami Atmoko SS, Mitra Setia T, van Schaik CP (eds) Orangutans: Geographic variation in behavioural Ecology and Conservation. Oxford University Press, Oxford, U.K., pp 119–134
Muñoz-Fuentes V, Darimont CT, Wayne RK, Paquet PC, Leonard JA (2009) Ecological factors drive differentiation in wolves from British Columbia. J Biogeogr 36(8):1516–1531
Nishida T, Hasegawa T, Hayaki H, Takahata Y, Uehara S (1992) Meat sharing as a coalition strategy by an alpha male chimpanzee. Top Primatol 1:159–174
Nishida T, Hosakam K, Nakamura M, Hamai M (1995) A within-group gang attack on a young adult male chimpanzee: ostracism of an ill-mannered member? Primates. 36:207–211
Papadopoulos D, Andrews K (2022) How social maintenance supports Shared Agency in humans and other animals. HUMANA MENTE Journal of Philosophical Studies 15(42):205–223
Russon AE (2009) Orangutan rehabilitation and reintroduction: successes, failures, and role in conservation. In: Wich SA, Utami Atmoko SS, Mitra Setia T, van Schaik CP (eds) Orangutans: Geographic variation in behavioral Ecology and Conservation. Oxford University Press, Oxford, U.K, pp 327–350
Schuppli C, van Schaik CP (2019) "Animal cultures: how we've only seen the tip of the Iceberg." Evolutionary Hum Sci, vol. 1
Schweizer RM, VonHoldt BM, Harrigan R, Knowles JC, Musiani M, Coltman D et al (2016) Genetic subdivision and candidate genes under selection in north american grey wolves. Mol Ecol 25(1):380–402. https://doi.org/10.1111/mec.13364

Strauss ED, Holekamp KE (2019) Social alliances improve rank and fitness in convention-based societies. Proc Natl Acad Sci 116(18):8919–8924
Suchak M, Eppley TM, Campbell MW, de Waal FB (2014) Ape duos and trios: spontaneous cooperation with free partner choice in chimpanzees. PeerJ 2:e417
Taylor AB (2009) The functional significance of variation in jaw form in orangutans: the african apes as an ecogeographic model. In: Wich SA, Utami Atmoko SS, Mitra Setia T, van Schaik CP (eds) Orangutans: Geographic variation in behavioral Ecology and Conservation. Oxford University Press, Oxford, U.K., pp 15–31
van de Waal E, Borgeaud C, Whiten A (2013) Potent social learning and conformity shape a wild primate's foraging decisions, vol 340. Science (New York, pp 483–485. 6131
van Leeuwen E, Cronin K, Haun D (2014) A Group-Specific arbitrary tradition in chimpanzees (Pan troglodytes). Anim Cogn 17:1421–1425
von Rohr CR, Burkart J, Schaik C (2011) Evolutionary precursors of social norms in chimpanzees: a new approach. Biology & Philosophy 26:1–30
von Rohr CR, van Schaik CP, Kissling A, Burkart JM (2015) Chimpanzees' bystander reactions to Infanticide. Hum Nat 26(2):143–160
Watts DP, Muller M, Amsler S, Mbabazi G, Mitani JC (2006) Lethal intergroup agression by chimpanzees in Kibale National Park, Uganda. Am J Primatol 68:161–180
Westra E, Andrews K (2022) A pluralistic Framework for the psychology of norms. Biol Philos 37(5):1–30
Westra E, Andrews K, Brosnan S, Fitzpatrick S, Gruber T, Hopper L, Kelly D, Krupenye C, Luncz L, Theriault J (In preparation). *How to tell if animals have social norms*
Whiten A (2021) The burgeoning reach of animal culture. Science 372(6537):eabe6514
Whiten A, Goodall J, McGrew WC, Nishida T, Reynolds V, Sugiyama Y, Tutin CEG, Wrangham RW, Boesch C (1999) Cultures in chimpanzees. Nature 399(6737):682–685
Whiten A, Horner V, de Waal FBM (2005) Conformity to cultural norms of tool use in chimpanzees. Nature, *437*(7059), Article 7059.
Wich SA, Utami-Atmoko SS, Setia M, Djoyosudharmo T, S., Geurts ML (2006) Dietary and energetic responses of Pongo abelii to fruit availability fluctuations. Int J Primatol 27(6):1535–1550
Wich SA, Utami-Atmoko SS, Setia M, T., van Schaik CP (2009) *Orangutans: Geographic Variation in Behavioural Ecology and Conservation*. (S. A. Wich, S. S. Utami Atmoko, T. Mitra Setia, & C. P. van Schaik, Eds.)*Orangutans: Geographic Variation in Behavioural Ecology and Conservation*. Oxford, U.K.: Oxford University Press
Wiessner P, Pupu N (2012) Toward peace: indigenous institutions and foreign arms in a Papua New Guinea Society. Science 337:1651–1654
Zawidzki TW (2013) Mindshaping: a New Framework for understanding human Social Cognition. A Bradford Book
Zwirner E, Thornton A (2015) *Cognitive requirements of cumulative culture: Teaching is useful but not essential | Scientific Reports*. Retrieved November 4, 2022, from https://www.nature.com/articles/srep16781