Origins of Human Cooperation and Morality

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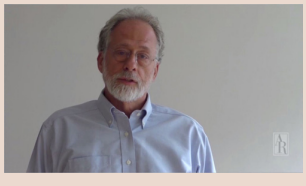

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Abstract

From an evolutionary perspective, morality is a form of cooperation. Cooperation requires individuals either to suppress their own self-interest or to equate it with that of others. We review recent research on the origins of human morality, both phylogenetic (research with apes) and ontogenetic (research with children). For both time frames we propose a two-step sequence: first a second-personal morality in which individuals are sympathetic or fair to particular others, and second an agent-neutral morality in which individuals follow and enforce group-wide social norms. Human morality arose evolutionarily as a set of skills and motives for cooperating with others, and the ontogeny of these skills and motives unfolds in part naturally and in part as a result of sociocultural contexts and interactions.

Contents

INTRODUCTION

After centuries of philosophical speculation about human morality, in the past half-century psychologists have begun to empirically investigate human moral behavior and judgment. In social psychology, researchers have sought to determine the factors that influence humans' prosocial behavior, cooperative interactions, and moral judgments. In the relatively new field of moral psychology, researchers have begun to probe the mechanisms of moral judgment more deeply, including cognitive and emotional factors as well as underlying neurophysiological processes.

During this same half-century, developmental psychologists have asked the question of origins: How do seemingly amoral human infants turn into actively moral children and adults? Recently, several novel lines of research have established that young children are much more moral—by at least some definitions—at a much younger age than previously thought. This research focuses on actual moral behavior as opposed to the more studied topic of moral judgment. In addition, recent comparative research has addressed the related question of the phylogenetic origins of human morality: How did presumably amoral prehumans turn into moral beings? Research with humans' closest living relatives, the great apes, has revealed both similarities and striking differences in how individuals interact with others socially, with particular regard to cooperation and something like moral behavior.

In this article, our goal is to review these new data from young children and great apes—primarily from the past decade or two—in an attempt to provide an up-to-date account of the question of the origins of human morality, both phylogenetic and ontogenetic. Without attempting a complete definition, in our evolutionary perspective, moral interactions are a subset of cooperative interactions. Arguably, the main function of morality is to regulate an individual's social interactions with others in the general direction of cooperation, given that all individuals are at least somewhat selfish. And so we may stipulate that at the very least moral actions must involve individuals either suppressing their own self-interest in favor of that of others (e.g., helping, sharing) or else equating their own self-interest with that of others (e.g., reciprocity, justice, equity, and norm following and enforcement).

We proceed as follows. We first look at great ape cooperation and contrast it with the cooperation of modern humans. In making this comparison we attempt to outline two steps in the evolution of human cooperation that together constitute something like the evolutionary emergence of human morality. We then look at cooperation in human children, again in two developmental steps that, together, constitute something like the ontogenetic emergence of human morality. In both cases, the first step in the sequence is mutualistic collaboration and prosocially motivated interactions with specific other individuals, and the second step is the more abstract, agent-neutral, norm-based morality of individuals who live in more large-scale cultural worlds full of impersonal and mutually known conventions, norms, and institutions.

EVOLUTIONARY ORIGINS OF HUMAN MORALITY

Humans are great apes, along with orangutans, gorillas, chimpanzees, and bonobos. The social life of the great apes is highly complex.

Individuals not only form relatively long-term social relationships with others, they also understand the social relationships among third parties, for example, who is dominant to whom and who is friends with whom in the social group. Moreover, they recognize that the actions of individuals are driven both by their goals and by their perception of the situation (a kind of perception-goal psychology; Call & Tomasello 2008). This means that great ape individuals make virtually all of their behavioral decisions in a complex social field comprising all the other individuals in the vicinity with their individual goals and perceptions, as well as the social relationships of those individuals both to the self and to one another.

Cooperation in Great Ape Societies

Nonhuman great ape social life is mainly about competition. Although there are differences among the four species, competitive disputes generally are resolved via one or another form of dominance (based, ultimately, on fighting ability). Most obvious is individual dominance, such as when an alpha male chimpanzee takes whatever food he wants while others take what is left. But great apes also cooperate with allies in order to compete with others over valued resources. This cooperating in order to compete requires individuals to simultaneously monitor two or more ongoing social relationships (and the social relationships among the third parties involved as well), requiring complex skills of social cognition. But despite some skills and tendencies of cooperation, which we now document, it is important to remember that among all species of nonhuman great apes, even the "peaceful" bonobos, the individuals who get what they want will almost always be the ones who bring the most force.

With this clear recognition of the dominance of dominance in the social lives of nonhuman great apes, we may now look more closely at their cooperation, especially that of chimpanzees because they have been by far the most studied. Proceeding with a bottom-up strategy, let us look at two sets of behaviors in nonhuman great apes that almost everyone would agree are morally relevant: (*a*) helping and sharing with others (sometimes based on reciprocity) and (*b*) collaborating with others for mutual benefit.

Helping, sharing, and reciprocity. A number of well-controlled experiments have demonstrated that chimpanzees will help both humans and other chimpanzees. First, Warneken & Tomasello (2006) found that three human-raised chimpanzees fetched out-of-reach objects for humans visibly trying to reach them. Warneken et al. (2007) found further that chimpanzees will also go to some effort to help humans, for example, climbing a few meters high to fetch something for them. In this same study, chimpanzees also helped conspecifics. Specifically, when one individual was trying to get through a door, subjects pulled open a latch for her—which they did not do if the first chimpanzee was not trying to get through the door. Moreover, Melis and colleagues (2011) found that chimpanzees will also release a hook to send food down a ramp to a desirous conspecific, if it is clear that they cannot get the food themselves and if the recipient actively signals his need. Finally, Yamamoto and colleagues (2009) observed chimpanzees giving tools to others that needed to rake in food for themselves, and more recently showed that chimpanzees demonstrate flexible "targeted" helping, i.e., giving the specific tool that the conspecific needs from an array of possible tools (Yamamoto et al. 2012).

Helping others reach their goals in these ways is fairly low cost, basically requiring only a few extra ergs of energy. Sharing food is another story, as it requires relinquishing a valued resource. Nevertheless, chimpanzees and other great apes do share food with others under some circumstances. First and most obviously, mothers share food with their offspring (although mostly they engage in passive sharing in which they allow the offspring to take food from them, and then mostly the shells, husks, and peelings; Ueno & Matsuzawa 2004). Second, if the food is not very highly valued and not easily monopolizable (e.g., a branch full of leaves),

then a group of apes may peaceably feed on it together, and occasionally there may be some more active sharing among friends (de Waal 1989). And third, if the food is very highly valued and somewhat monopolizable (e.g., meat), then typically subordinates and nonpossessors beg and harass dominants and possessors until they get some, again with some instances of more active sharing (Gilby 2006). But all of this food sharing is more active and reliable in situations involving some form of reciprocity.

Indeed, a variety of lines of evidence suggest that chimpanzees help and share most readily in the context of reciprocity. Thus, although there is no reciprocity in short-term grooming bouts, over time, individuals who have been groomed by one partner later groom that partner (as opposed to others) in return more often (Gomes et al. 2009). In an experimental setting, Melis and colleagues (2008) found that individuals tended to help those who had helped them previously (by opening a door for them, allowing access to food). Furthermore, de Waal & Luttrell (1988) found that captive chimpanzees support one another in fights reciprocally, and reciprocity can seemingly also involve different currencies. For example, the most active meat sharing in the wild occurs between individuals who are coalition partners and therefore reliably help one another in fights in other contexts (Muller & Mitani 2005). Further, male chimpanzees sometimes share food with reproductively cycling females, presumably in hopes of sex (Hockings et al. 2007).

On the negative side—sometimes called negative reciprocity or retaliation or revenge—if a chimpanzee in the wild attacks or steals food from another, he will often be attacked by that victim in return [what de Waal & Lutrell (1988) call a revenge system]. Importantly, the goal in these retaliations is not material reward for the retaliator. In an experimental setting, when one chimpanzee intentionally took the other's food, the victim overtly expressed anger and acted to trash the stolen food before the thief could eat it—even though this did not result in any food for the victim (Jensen et al. 2007). Importantly as well, victims did not do this if the other chimpanzee came into possession of the food accidentally (i.e., through the human experimenter's efforts). The goal here thus seems to be truly to punish the other.

There is no reason to believe that these acts of helping and sharing and retaliation are anything other than the genuine article. When costs are negligible and the recipient's need is clear, great apes help others. When costs are greater, as with food sharing, great ape altruism is most active and reliable in the context of something like reciprocity. But, as de Waal (2005) has argued, this is very likely not a "calculated reciprocity" in which individuals keep quantitative track of favors given and received. More likely it is a kind of "attitudinal reciprocity" in which individuals have more positive affect toward those who have helped them or shared with them in the past. If you help me in fights regularly, then I should invest in your well-being by, for example, helping you in fights, and maybe even sharing food with you. In general, if I depend on you for doing *X*, then I should do whatever I can to ensure that you are available and capable of doing *X*—and you should do the same for me. Attitudinal reciprocity (I feel more affiliative toward those on whom I depend) can generate reciprocal patterns of helping and sharing—and without the threat of defection. On the negative side, great apes get angry at and punish those who caused them distress. This presumably has the effect that the punished individual will be less likely to repeat his harmful actions in the future, which benefits the punisher directly.

Collaboration. Chimpanzees and other great apes collaborate with conspecifics in several different contexts. First, as in many mammalian species, individuals form alliances and support one another in fights (Harcourt & de Waal 1992). Whereas in many monkey species it is typically kin that support one another, among chimpanzees it is mostly nonkin (Langergraber et al. 2011). Again as in many mammalian species, great ape combatants often actively reconcile with one another after fights, presumably in an attempt to repair the long-term

relationship on which they both depend for various reasons (de Waal 1997).

Second, like many mammalian species, great apes engage in various forms of group defense. Most interestingly, small groups of male chimpanzees actively patrol their border, engaging agonistically with any individuals from neighboring groups that they encounter (Goodall 1986). Presumably, acts of group defense are a reflection of individuals' interdependence with one another as well, at the very least as a need to maintain a certain group size but more urgently in protecting and facilitating the lives of those on whom they depend for everything from sex to grooming.

Third, and especially important in the current context, is collaboration in the acquisition of food. Although all four great ape species forage for food almost exclusively individually—traveling in small social parties but then procuring food on their own—there is one major exception. In some but not all groups of chimpanzees, males hunt in small social parties for monkeys (although less frequently, bonobos hunt in small parties for monkeys as well; Surbeck & Hohmann 2008). In some cases the hunt resembles a kind of helter-skelter chase in which multiple individuals attempt to capture the monkey with little if any coordination. In the Taï Forest, however, the canopy is continuous and the monkeys are quite agile, so such uncoordinated chasing typically will not succeed. Here the chimpanzees must, in effect, surround a monkey in order to capture him, requiring individuals to in some sense coordinate with others (Boesch & Boesch 1989). Typically all participants get at least some meat, but many bystanders do too (Boesch 1994).

Note that although chimpanzees are interdependent with one another in the hunt itself—and indeed experiments have shown that chimpanzees understand when they need the other participants for success (Melis et al. 2006)—individuals do not depend on the group hunting of monkeys to survive. In fact, and perhaps surprisingly, chimpanzees hunt most often for monkeys not in the dry season when fruit and vegetation are more scarce, but rather in the rainy season when fruit and vegetation are much more abundant (Muller & Mitani 2005), presumably because spending energy in a monkey hunt for an uncertain return makes most sense when there are plenty of backup alternatives if the hunt fails. This absence of an overarching interdependent "attitude" is reflected in a further aspect of chimpanzee collaborative behavior: In experiments, although chimpanzees do coordinate their actions with a partner to achieve individual goals, they do not seem interested in achieving joint, social goals, and if their partner becomes passive and unengaged during a joint activity, they make no effort to reengage their partner in order to continue that activity (Warneken et al. 2006).

The degree to which chimpanzees in the wild may actively choose collaborative partners for monkey hunting—a key dimension of human collaborative foraging—is unclear. Melis et al. (2006) found that after a fairly small amount of experience with one another, captive chimpanzees know which individuals are good partners for them—in the sense of leading to collaborative success and the consumption of a good quantity of food—and they subsequently choose those partners in preference to others. They are almost certainly not attempting to actively punish bad partners by not choosing them, but the effect is that bad partners have fewer opportunities for collaboration. If indeed partner choice of this type happens in the wild—which is not clear, as hunting is mostly instigated opportunistically with little choice of partners—then poor collaborative partners would suffer the loss of some opportunities.

Chimpanzees and other great apes thus collaborate with conspecifics in various contexts for their mutual benefit. In coalitions and alliances and group defense, it is typically in the interest of all individuals to participate to defeat the opponent. As always, there are situations in which it might pay for individuals to lag and let others do the work, but normally there is a direct benefit for all participants, with more participants increasing the probability of success. In the case of group hunting, individuals clearly are responsive to the actions of others and know

that they need them for success; moreover, they seem to avoid bad partners, who suffer by not being chosen to participate in the collaboration, and typically everyone gets at least some meat at the end.

Great ape sociality and "morality." The individuals of many social species simply stay in proximity to one another, with little active social interaction beyond mating and/or fighting. Let us call this zero-order morality, as individuals are rarely if ever inhibiting or otherwise controlling their self-serving motivations in deference to others. Chimpanzees and other great apes—despite the importance of dominance in their everyday interactions—are much more social, and so in a sense more moral, than this.

On the evolutionary level, it is viable that in some contexts, great apes control their self-serving motivations in deference to others because they are somehow compensated for the loss. Sometimes the act is immediately mutually beneficial, and sometimes there is later reciprocity, but these may be conceptualized as individuals investing in others on whom they are dependent or with whom they are interdependent. The social situations that generate these opportunities for reciprocally mutualistic actions derive from complex social lives in which many different activities—from group defense to foraging to intragroup conflicts over mating to grooming—are important if an individual is to survive and thrive in the group.

On the proximate level, the empirical evidence would seem to suggest that great ape individuals do have some proximate mechanisms that are genuinely moral, in the sense that the individual acts to benefit the other without any direct anticipation or planning for any kind of payback. In the case of helping, and to a lesser degree with more costly food sharing, the proximate mechanism may be some kind of sympathetic concern for those for whom one has a positive affect based on their helping and/or sharing in the past (attitudinal reciprocity).

Great apes collaborate for mutual benefit, and it is not clear to what degree they might control their own self-serving motivations in these collaborations. It would seem very little, except perhaps for sharing the food at the end of a group hunt (and then only to avoid fights). Certainly allies in a fight either within the group or against an external stranger do not attend to the needs of those allies. And since chimpanzees' group hunting of monkeys is not necessary for their survival, collaboration is not an obligatory part of their lives. In these collaborative interactions (to presage our comparison to humans), chimpanzees coordinate, but they show no commitment to their partner; they share food, but they have no sense of equality in doing so; they do their part, but they do not help their partner with its role in the collaboration; and they avoid bad partners, but they do not seem to resent them or punish them actively for being a bad partner alone—all of which means that individuals do not regulate their behavior in deference to the attitudes of their potential partners (there is no concern for self-reputation). One way to characterize chimpanzee collaboration is thus that individuals use their partner as a kind of social tool—which they know is necessary in the context—in order to get what they want. Neither partner is worried about what the other is getting out of it or how they are being judged as a partner by either their collaborator or any onlookers.

Overall, it is clear that great apes have genuine social relationships with others based on patterns of social interactions over time. A key pattern, perhaps *the* key pattern, is dominance: Disputes are settled by the dominant doing just what he wants to do, and the subordinate must simply defer. The morality of apes' social interactions—individuals inhibiting their immediate self-interest in favor of others—is governed mostly by their personal relationships; that is to say, individuals form prosocial relationships with others based on a kind of attitudinal reciprocity that develops as each individual helps those toward whom they have formed a positive attitude (precisely because they have helped them in the past). Individuals' actions thus reward those with whom they have a positive relationship and fail to reward, or even punish, those with whom they have a

negative relationship. Much human morality is based on this kind of attitudinal reciprocity as well, especially with family. It is just that humans have developed some other moral motivations and mechanisms in addition.

The Evolution of Human Cooperation and Morality

Even the smallest and seemingly simplest of human societies are cooperatively structured and organized in a way that the societies of other great apes are not. This can be clearly seen by looking at six key dimensions of social organization, with humans in each case doing things much more cooperatively than other apes (for a fuller account, see Tomasello 2011).

The cooperative organization of human societies.

Subsistence. All four species of nonhuman great apes forage basically individually. They may travel in small groups, but they procure and consume food on their own. The one exception to this pattern is the group hunting of chimpanzees, in which individuals surround a monkey and capture it in basically the same manner as social carnivores like lions and wolves. But even this is not really a collaborative activity in the human sense, as evidenced by the fact that the captor of the monkey only shares with others under duress (Gilby 2006), and no one shares more with those who participated in the hunt than with those who did not (Boesch 1994).

In contrast, humans procure the vast majority of their food through collaborative efforts of one type or another. Clear evidence is the fact that during their foraging, contemporary foragers help one another by doing such things as cutting a trail for others to follow; making a bridge for others to cross a river; carrying another's child; climbing a tree to flush a monkey for another hunter; calling the location of a resource for another to exploit while he himself continues searching for something else; carrying game shot by another hunter; climbing a tree to knock down fruit for others to gather; helping look for others' lost arrows; and helping repair others' broken arrows. Hill (2002) documents that the Ache foragers of South America spend from about 10% to 50% of their foraging time engaged in such altruistic activities—pretty much all of which would be unthinkable for nonhuman primates. At the end of their foraging, humans, unlike other apes, share the spoils of their collaboration fairly, even bringing it back to some central location to do so (Hill & Hurtado 1996).

Property. Great apes often respect the fact that another individual physically possesses some object or piece of food, and they do not start a fight for it (Kummer & Cords 1991). But the human institution of property is a cooperative regime through and through. Individuals may claim objects for themselves by virtue of mutually agreed-upon norms and institutions. For example, moviegoers may simply leave a sweater on their seat to claim at least temporary ownership. Not only do others mostly respect this signal, but if they do not respect it others will often intervene to enforce the absent individual's property rights. Similarly, in terms of food, Gurven (2004) documents how widespread the sharing and trading of food among humans in small-scale societies is. In assessing possible hypotheses to explain this pattern of widespread food sharing, Gurven concludes that it is probably multiply determined, and the big picture is not tit-for-tat reciprocity but rather "more complicated social arrangements, including those whereby important social support is provided only if one adheres to socially negotiated sharing norms" (p. 559). And of course in many small-scale societies a large role is played by a special kind of property exchange, the gift (Mauss 1954), which not only transfers property but also serves to establish and cement cooperative bonds as well as create obligations of reciprocation.

Childcare and prosocial behavior. In all four species of nonhuman great apes, mothers provide almost 100% of the childcare for their

child. In contrast, human mothers—both those in traditional societies and those in more modern industrialized societies—typically provide about 50% of the childcare for their child. Human fathers, grandparents, and other females all pitch in to help. Hrdy (2009) has in fact proposed that this so-called cooperative breeding may very well have been the instigating factor leading to humans' hypercooperativeness. In any case, humans do seem to sacrifice themselves for others—everything from donating blood to donating to charity to going to war for the group—in ways that other apes do not (Richerson & Boyd 2005; for experimental evidence, see Warneken & Tomasello 2006).

Communication and teaching. Great apes communicate basically to tell others what to do. In contrast, humans often communicate helpfully in order to inform others of things that are of interest to them, the recipients of the information (Tomasello 2008). Even in their very earliest nonverbal gestures, human infants use the pointing gesture to inform others of the location of objects they are seeking and to point out some interesting object to others only in order to share their excitement with another person (Liszkowski et al. 2004, 2006).

Deriving from this, human adults also inform young children of things they need to know, for their benefit. Although great ape juveniles learn much from the behavior of their parents and others, adults do not actively teach youngsters things in the way that humans do (Hoppit et al. 2008). Csibra & Gergely (2009) speculate that human teaching is absolutely critical to the human way of life, as children discern general principles of how things work and how one behaves in their society.

Politics. Politics is about social power, and the lines of social power are relatively clear for all four great ape species, with dominance and physical strength (including greater numbers on one side) ruling the day. In contrast, human forager societies are notoriously egalitarian. Dominance plays a much less powerful role than in other great ape societies, as the group exercises a kind of cooperative power in making sure that no individual becomes too powerful (Boehm 1999). Indeed, in human small-scale societies the most powerful individuals often obtain and retain their power not by dominating resources directly in the manner of other great apes, but rather by demonstrating both their ability to control resources and their cooperative propensities by distributing resources generously to others (Mauss 1954).

In terms of enforcement, in human small-scale societies peace is kept not only by retaliation for harms done and reconciliation after fights, as in great apes, but also by third-party enforcement. That is, human observers punish perpetrators who victimize others, sometimes at a cost to themselves, whereas there is no solid evidence of such third-party punishment in other great apes (Fehr & Fischbacher 2003, 2004; Riedl et al. 2011). Third-party punishment may be thought of as a kind of cooperative enforcement of peace and well-being in the group and plays a critical role in the creation and maintenance of social norms in general.

Norms and institutions. In many ways, the most distinctive feature of human social organization is its normative structure. Human beings not only have statistical expectations about what others *will* do—which all apes have—they also have normative expectations about what others *should* do. These vary across different cultures and form a continuum from moral norms (typically concerning harm to others) to social conventions. Thus, we all know and expect that people in our society should dress sedately for a funeral, and so anyone who wears a red shirt cannot plead ignorance and thus may be thought of as flaunting our norm without regard for our group. We may reasonably respond to this flaunting with disapproval, gossip, and, in egregious cases, by social ostracism—which means that all of us must be ever vigilant about our reputations as norm followers (leading to various impression-management strategies; Goffman 1959). If the glue of primate societies is social relationships, the superglue of human societies is social norms.

The ultimate outcome of social norms in human groups is the creation of social institutions whose existence is constituted by the collective agreement of all group members that things should be done in a particular way. Institutions create both joint goals and individual social roles (for both persons and objects). Searle (1995) refers to the creation of these roles as the creation of status functions because as individual people and objects assume these roles, they acquire deontic powers. For example, in the process of trade, some objects (e.g., pieces of gold, special pieces of paper) have acquired in some societies the status of money and so play a special role in the trading process. And although nonhuman primates have some understanding of familial relatedness, humans assign special status to social roles such as "spouse" and "parent"—which everyone recognizes and which create certain entitlements and obligations. In the case of morality, the institutions of law and organized religion obviously interact in important ways with humans' natural proclivities for cooperation and norm following to produce an institutional dimension to much of human morality.

Summary. The ineluctable conclusion is thus that human social interaction and organization are fundamentally cooperative in ways that the social interaction and organization of other great apes simply are not.

Two evolutionary steps: the interdependence hypothesis. Tomasello and colleagues (2012) argue and present evidence that humans became ultracooperative in all of these many ways in two main evolutionary steps. They call their theory the interdependence hypothesis.

In a first step, something in the ecology changed, which forced humans to become collaborative foragers: Individuals had to be good collaborators or else starve. In collaborative interactions of this type, individuals developed new skills of joint intentionality and new forms of second-personal social engagement. Individuals became interdependent with one another, such that each individual had a direct interest in the well-being of others as partners. Thus, during a mutualistic collaboration, if my partner is having trouble, it is in my interest to help her, since performance of her role is vital to our joint success. Moreover, if I have some sense of the future, if one of my regular partners is having trouble at any time, I will help her so that I will have a good partner for tomorrow. Interdependence thus breeds helping. And the fact of partner choice helps to keep everyone cooperating and helps control cheating, as all individuals (who have the requisite cognitive abilities) know that others are judging them for their cooperativeness and that their survival depends on others choosing them as a partner. The result is that if I monopolize all the food at the end of the foraging instead of sharing it equitably, or if I slack off on my work during the foraging, others will simply exclude me the next time. This social selection of partners in interdependent contexts thus advantages good cooperators. The result was what one may call a joint morality, in which individuals helped others with whom they were interdependent, considered those others to be equally deserving of their share of the collaborative spoils, and felt answerable to others (as others were answerable to them) for being a good partner.

In a second step, as modern humans faced competition from other groups, they scaled up these new collaborative skills and motivations to group life in general. With a constant threat from other groups, group life in general became one big interdependent collaboration for maintaining group survival, in which each individual had to play his or her role. In these larger cultural groups—typically with a tribal structure comprising smaller bands—many interactions were not based on personal histories of individuals with one another but rather on group membership alone. It was thus crucial for each individual to do things the way that "we" as a group do them, that is, to actively conform to the ways of the group in order to coordinate with others and display one's group membership. This kind of group-mindedness, underlain by skills of collective intentionality, engendered truly impersonal, agent-neutral, objective social norms.

Humans not only assiduously follow such norms themselves, but they also enforce them in an impersonal manner on all in the group, including even on themselves through feelings of guilt and shame. The result was what one may call a collective morality, in which individuals regulated their actions via the morally legitimate expectations of others and the group—morally legitimate by their own assessment—engendering what some have called normative self-governance (Korsgaard 1996).

An argument could be made that contemporary humans are less cooperative than were their forebears at either of these two previous periods. But contemporary humans are in the process of adapting their cooperative skills and motivations to novel conditions, namely, the mixing together of people from different ethnic groups into modern cities, along with the emergence of important institutions such as law and organized religion. Our assumption is that the two key steps in the evolution of human cooperation, and thus morality, took place before the advent of agriculture and cities, and law and organized religion, as humans first became obligate collaborative foragers and second created cultural groups that competed with one another.

ONTOGENETIC ORIGINS OF HUMAN MORALITY

The classic theoretical perspectives on the ontogeny of human cooperation and morality were laid out centuries ago by Hobbes and Rousseau. Hobbes believed that humans were naturally selfish and that society, including the force of a central government, was necessary for people to become cooperative. Rousseau, on the other hand, believed that humans were more naturally cooperative and that as they entered society as children, they were corrupted.

The reality of course is that young children are both selfish and cooperative. The interesting question here is how they become moral beings that have concerns for the well-being of others in the group and at the same time look out for their own individual interests. The difference between ontogeny and phylogeny in this context is that young children are born into a cultural world already full of all kinds of moral norms and institutions. In Piaget's (1997/1932) classic account, children's earliest premorality is basically respect for and conformity to the norms and rules of adults, based on a respect for authority. They only later come to understand how these norms and rules essentially work as agreements among peers of equal status in a community.

Our contention here is that young children before about 3 years of age may not really understand social norms as such. Instead, they may be responding only to adult imperatives and not to the force of any agreements among members of their group. And so our ontogenetic account parallels our phylogenetic account. In their first step toward human morality, young children collaborate with and act prosocially toward other specific individuals. In their second step, they begin to participate in the social norms and institutions of their culture. These two steps—an initial second-personal morality followed by a more norm-based morality—take infants into a full-fledged human morality.

Toddlers' Second-Personal Morality

Human infants begin forming social relationships with others during the first year of life. They also presumably have some sense of their dependence on, if not interdependence with, other people. Although young children are of course selfish in many situations, in many other situations they subordinate their self-interests in order to do such things as collaborate with others, sympathize with and help others, and share resources with others. They also evaluate others in terms of such cooperative behaviors and begin to help and share with others more selectively as a result.

Collaboration and commitment. Young children are surprisingly skilled collaborative and cooperative partners. Already early in the second year of life, toddlers can take turns to achieve social coordination with others (e.g.,

Eckerman et al. 1989, Eckerman & Didow 1989). More relevant for our purposes, young children are motivated to participate jointly in joint activities: When a cooperative activity breaks down (such as when the partner suddenly stops participating), 18-month-olds and 2-year-olds, and to some degree even 14-month-olds, actively try to re-engage the partner in order to continue the joint activity rather than attempt to continue the activity by themselves (Warneken et al. 2006, Warneken & Tomasello 2007). Strikingly, this is true even when the partner is not needed for the child to complete the activity (Warneken et al. 2012).

Thus, children do not view their collaborative partner as a social tool to achieve their own goal but rather in a truly collaborative light. This is in contrast to chimpanzees, which do not show this motivation for jointness in their collaborative behavior, as discussed above (Warneken et al. 2006). Indeed, when given a free choice of how to obtain food, chimpanzees choose a solo option over a collaborative one, whereas 3-year-old children more often choose the collaborative option (Rekers et al. 2011). These findings together point to a fundamental human drive to collaborate with others to achieve joint and shared goals.

Furthermore, once people have formed a joint goal, they feel committed to it: They know that opting out will harm or disappoint the others, and they act in ways that prevent this. Recent work has revealed that even toddlers show an understanding of such commitments. For instance, when working jointly with a partner on a task that should result in both actors receiving a reward, 3.5-year-olds continue to work until the partner has received his reward even if they have already received their own reward earlier in the process (Hamann et al. 2012). Moreover, when 3-year-olds need to break away from a joint commitment with a partner, they do not simply walk away but "take leave" from the other as a way of acknowledging and asking to be excused for breaking the commitment (Gräfenhain et al. 2009).

Thus, even very young children are social, collaborative, and cooperative beings who view their collaborative and cooperative efforts as inherently joint. Such jointness makes children interdependent; they need the other to achieve their (social) goals, and they know that the other needs them. They thus experience collaboration and cooperation as committed activities. Certainly by 3 years of age, children feel responsible for their joint commitments and either make an effort to honor them or "apologize" for breaking them. From early on, then, children show strong signs of interdependence.

Sympathy and helping. Young children and even infants demonstrate remarkable prosocial tendencies. By 14 to 18 months of age, they readily engage in instrumental helping such as picking up an object that an adult has accidentally dropped or opening a cabinet door when an adult cannot do so because his hands are full. They do not do these things in control situations that are similar but in which the adult does not need help; for instance, they do not pick up an object the adult has thrown down intentionally or open a door he approaches with no intention of opening it (Warneken & Tomasello 2006, 2007). Toddlers even help others at some cost to themselves (Svetlova et al. 2010). Importantly, infants' helping is not limited to completing others' action goals. Thus, when 12-month-old infants see an adult searching for an object that they know the location of, they point to direct the adult's attention to it (Liszkowski et al. 2006, 2008). Given that infants themselves do not gain anything by providing this information, their informative pointing may be considered a prosocial act.

A common belief is that young children become prosocial as a result of encouragement and rewards from adults. However, in a recent study, when 20-month-old children were materially rewarded for their helpful behavior, their helpfulness actually decreased over time once the reward was taken away; children who were not rewarded at all or received only verbal praise maintained a high level of helpfulness throughout (Warneken & Tomasello 2008). Following the logic of overjustification, this finding suggests that young children's motivation to

help is intrinsic and not dependent on concrete extrinsic rewards, and indeed it is undermined by such rewards (Lepper et al. 1973). Reinforcing this finding, Hepach and colleagues (2012b) found, using a physiological measure of children's arousal, that 2-year-olds are not motivated primarily by a need to help a person themselves (and thus to benefit themselves via reciprocity or an improved reputation) but rather by a need just to see the person helped.

During this same early period, young children also begin to provide comfort and assistance to those in emotional distress, such as a person who is in pain after bumping her knee or is upset about her broken teddy bear (e.g., Bischof-Köhler 1991, Eisenberg & Fabes 1998, Zahn-Waxler et al. 1992). The concern children show for a distressed individual correlates with and is thought to motivate their prosocial acts toward that individual (Eisenberg & Miller 1987). Strikingly, young children's concern is not an automatic response to distress cues but rather a flexible and sophisticated response. This has recently been shown in two ways. First, 1.5- and 2-year-old children show concern and subsequent prosocial behavior toward a victim of harm even if the victim expresses no overt distress cues while being harmed (Vaish et al. 2009). Second, 3-year-old children show reduced concern and prosocial behavior toward a crybaby, i.e., a person who is considerably distressed after being very mildly inconvenienced, than toward a person who is similarly distressed after being more seriously harmed (Hepach et al. 2012a; see also Leslie et al. 2006). Thus, children's sympathetic responses take into account not only the presence or absence of distress cues from a person but also the contextual cues surrounding the distress. From early in ontogeny, then, sympathy is a multidetermined and thus reliable response (see Hoffman 2000, Vaish & Warneken 2012).

Around the same time that young children demonstrate these remarkable prosocial behaviors themselves, they also show a preference for prosocial over antisocial others. Indeed, even early in the very first year, infants distinguish prosocial from antisocial characters and prefer to touch prosocial characters (Hamlin & Wynn 2011, Hamlin et al. 2007, Kuhlmeier et al. 2003). These preferences soon become evident in children's prosocial behaviors. By age 2 years, for instance, toddlers help those who were helpful to them in previous interactions more than those who were not helpful, demonstrating direct reciprocity (Dunfield & Kuhlmeier 2010). Just a year later, children also demonstrate indirect reciprocity: For instance, 3- to 4-year-old children reduce their prosocial behavior toward an individual who caused or intended to cause harm to another individual (Kenward & Dahl 2011, Vaish et al. 2010). Through such selective helping, young children demonstrate their recognition of and preference to interact and cooperate with those who are prosocial and their avoidance of those who are harmful or noncooperative, both toward them and toward others.

Moreover, and in line with our evolutionary analysis, there is evidence that children help an individual more in a collaborative context than a noncollaborative context. In a recent study, Hamann et al. (2012) showed that 3.5-year-olds are more likely to help a peer attain a reward when they previously attained a reward by participating in a collaborative task with the peer than when they previously attained a reward without participating in a collaborative task. On the other hand, although chimpanzees do show some prosocial behaviors toward humans and conspecifics (e.g., Melis et al. 2011, Warneken & Tomasello 2006), this behavior is not affected by whether the context is a collaborative or a noncollaborative one (Greenberg et al. 2010). This is consistent with the idea that human prosocial behavior evolved in interdependent, collaborative contexts.

Together, these findings on infants' and toddlers' instrumental helping, informative pointing, concern, comforting, and selective helping of harmed and/or cooperative others demonstrate that from early on, children are tuned to others' needs and emotional states and are motivated to act prosocially toward them. Moreover, the research shows that children's early prosociality is the real thing in that it is

intrinsically motivated, based in concern for others, grounded in an interpretation of the situation, flexible depending on interactions and evaluations of others, and facilitated by collaboration.

Equality and sharing. Young children's prosocial proclivities are apparent not only in their helping and sympathizing but also in their sharing behaviors. Naturalistic observations suggest that as early as 8 months of age, infants may show or give toys to parents, other infants, siblings, and strangers, even when resources are low (e.g., Hay 1979, Rheingold et al. 1976). With development, sharing becomes increasingly selective: Even 12-month-old infants make some distinctions between recipients of their prosocial actions, being more likely to share objects with their peers and with their own mothers than with the peers' mothers (Young & Lewis 1979).

Some experimental work on early sharing suggests, however, that toddlers are not so willing to share. For instance, spontaneous sharing of food was not found among 18- or 25-month-old children in an experimental setting (Brownell et al. 2009). Furthermore, 3- to 4-year-olds are generally found to be selfish in their distributions, whereas at 5 to 6 years of age, children show a greater sense of equality and fairness (Fehr et al. 2008, Lane & Coon 1972, Rochat et al. 2009). However, these experimental studies involved windfall situations in which a child is given some resources by a third party without having to work for them and must relinquish some resources to demonstrate fairness. Such situations are removed from the evolutionary mechanisms that we believe likely shape these phenomena in early ontogeny. Our hypothesis is that from early in ontogeny, children's sharing and fairness-related behaviors should reflect the effects of the collaborative foraging context of early humans, in which one shares the spoils equally among those who took part in the collaborative effort. We thus argue that prior work has underestimated children's sensitivity to equality because it has not provided the relevant context.

Accordingly, recent work shows that 3-year-old children who have obtained rewards by working collaboratively with each other divide up their spoils equitably rather than monopolizing them, even when the resources could easily be monopolized (Warneken et al. 2011). This is in stark contrast to chimpanzees, whose strong tendency to compete over the spoils of collaborative efforts severely limits their collaboration (Melis et al. 2006). Most strikingly, 3-year-old children are also more likely to divide up their rewards equally if they obtained the rewards by working collaboratively than by working individually or receiving a windfall (Hamann et al. 2011).

Young children not only distribute resources equally themselves but also distinguish equal from unequal distributions and prefer equal distributors and distributions. For instance, Schmidt & Sommerville (2011) showed that 15-month-old infants expect resources to be distributed equally among recipients. Geraci & Surian (2011) further showed that when 16-month-olds see one distributor being fair toward a recipient (by distributing resources equally between the recipient and a second individual) and another distributor being unfair toward the same recipient, they expect the recipient to approach the equal distributor, and in a manual choice task, they themselves show a preference for the equal distributor. These preferences also play out in the distribution behavior of somewhat older children: 3.5-year-olds distribute more resources to individuals who have previously shared with others than to individuals who have not shared (Olson & Spelke 2008), although to our knowledge, whether children would give more resources to equal than to unequal distributors remains an unexplored question.

Over the course of development, children's resource distribution moves beyond only equality and becomes more sensitive to reciprocity norms, relationships, and the behaviors of others. Thus, around 3 years of age, children's sharing of toys with a peer increases if that peer had previously shared toys with them, suggesting a sensitivity to direct reciprocity by this age

(Levitt et al. 1985). Moreover, 3-year-olds display negative emotional responses to distributions in which they receive less, and indeed, even occasionally when they receive more than another child (LoBue et al. 2011). By about 4 years of age, children share (even at a cost to themselves) with their friends more than with nonfriends or strangers (Birch & Billman 1986, Moore 2009), and by 8 years of age, children share more with their in-group than their outgroup members (Fehr et al. 2008).

A full-blown concept of fairness, i.e., an understanding of distributive justice or the proper way to divide up resources among people taking into account multiple factors (Nisan 1984), begins to emerge only in the school years. In the traditional work on the development of fairness, children are presented with hypothetical fair or unfair scenarios and are interviewed about their responses to the scenarios. This work has revealed a developmental trend such that young children progress from considering largely irrelevant characteristics of recipients such as desire, age, or height, to a preference for equal division of resources at about 5 or 6 years of age, to a preference for reward in proportion to the input (i.e., equity) among children older than 6 years of age (e.g., Damon 1975, Hook & Cook 1979). Eventually, children move beyond the equity rule to integrate both need and merit information (see Damon 1977). By 8 years of age, children can vary their allocation decisions appropriately depending on context. For instance, they rely on the principle of equity in a reward-for-work context, of equality in a voting context, and of need in a charity context (Sigelman & Waitzman 1991; see also Enright et al. 1984).

Interestingly, however, a recent study showed that the context of collaboration facilitates even young children's understanding of equity (Ng et al. 2011). In this study, children were presented with scenarios in which one giver gave an equal proportion of his resources to himself and a receiver, whereas another giver gave himself a greater proportion than the receiver. The scenarios differed in whether the givers had obtained the resources by working collaboratively with the receiver or by working individually. Even 3-year-olds judged the fair giver—the one who gave an equal proportion—to be nicer than the unfair giver, but only in the collaborative context; children did not distinguish the proportional distributions in the individual context. Thus, in a collaborative context, which we argue is highly relevant for resource distribution, even preschoolers demonstrate sophisticated intuitions about proportional distribution, which is central to the full-fledged concept of fairness.

In sum, recent work has provided evidence for a surprisingly early ontogenetic emergence of sharing and the foundations of fairness, at least in the sense of equality. Toddlers, and to some degree even infants, show a sense of equality in resource distributions, in particular when examined in collaboration situations. Moreover, when faced with the choice of interacting with or distributing resources to others, even very young children show a preference for individuals who distribute to others equally. In collaborative situations, they also show sensitivity to a critical aspect of fairness—equity. Thus, sharing and some foundational aspects of fairness appear early in moral development, especially in early collaborative and cooperative contexts. They are an important aspect of toddlers' second-personal morality and are, we argue, the seeds of the full-fledged norm-based sense of fairness that emerges later in development.

Summary. Evidence is mounting for a remarkably rich and multifaceted morality, in the sense of prosociality, very early in human ontogeny. Toddlers and even infants readily engage in collaborative activities with others and recognize the jointness, or interdependence, therein. They also help others in a variety of ways, even when it does not benefit them to do so, and they show a sense of equality in dividing up resources in some situations. Importantly, toddlers help others more and are more likely to share equally with them when they are collaborating with them, providing support for our hypothesis that it was within the context of

collaboration or interdependence that prosocial behavior likely emerged. Toddlers also evaluate others in terms of their prosocial and cooperative behaviors and withdraw their helping and sharing from noncooperative individuals.

Still, all of these behaviors and evaluations are, we argue, based less in a normative, agent-neutral understanding of morality that applies to everyone equally and more in a second-personal morality based on personal relationships and social emotions (Darwall 2006). Thus, toddlers view others primarily from their own individual standpoint based on their own evaluation of whether the others' behavior is deserving of sympathy or blame. This is the first stage of morality, but it is not a fully adult-like morality; the critical second stage of norm-based, agent-neutral morality is still to come.

Preschoolers' Norm-Based Morality

Toddlers certainly respond when adults enforce norms, for example, when adults tell them things such as, "We don't hit other children." They thus seem to follow all kinds of social norms. It is not clear, though, whether they are responding to the norm per se. They could equally be responding simply to the adult's individual imperative utterance that they do or do not do something at that moment. But responding to the norm itself means responding to something more general and timeless than that.

In adult society, social norms are mutual expectations, indeed mutual agreements or commitments, about the way that individuals ought to behave in certain situations. Norms go beyond the particular—they are general and agent neutral—in at least three ways. First, social norms articulate an objective standard of behavior that is mutually known by all in the group: In situations like this, one ought to behave like that—and we all, including you, know this. Second, the force of the norm is not individual opinion but rather group opinion (or perhaps some other larger entity such as the group's gods), based ultimately in an agreement or commitment into which each individual enters. It is not just that I don't like you doing that, but rather that it is wrong, and we (including you) have agreed that we don't behave like that. Third, the norm applies to everyone in the group (or perhaps subgroup) equally, including the self. "One" does not behave like that in this group, and that applies to me as well. Social norms are thus mutually known group expectations and commitments, with respect to group-known standards, which all group members are expected to respect.

Until there is more research, we may remain agnostic about precisely how toddlers understand social norms as adults enforce them, and in particular whether they understand their generality and agent neutrality. However, starting at approximately 3 years of age, children begin enforcing social norms on others, and the way they do this provides strong evidence that they have begun to understand social norms as something that goes beyond individuals and, importantly, beyond themselves.

Enforcement of social norms. As documented above, toddlers socially evaluate other persons in selectively helping and sharing with them depending on, essentially, whether they view them as nice or mean. In addition, toddlers are building up knowledge of what the norm is, statistically speaking, in many situations. They thus learn and apply words such as broken, dirty, and bad to situations that violate standards and are thus not "normal" (Kagan 1981). But beyond avoiding mean people and noticing statistical irregularities, children approximately 3 years of age also begin to actively intervene in situations—either physically or in acts of verbal protest—to try to set right deviations and violations of the norm. Crucially, they do this from a third-party stance, when they themselves are not directly involved or affected by the norm violation, and they often do this with normative language, using generic terms that explicitly mark the generality and agent neutrality of the judgment.

For example, in a recent study (Vaish et al. 2011b) children and two puppets each created a drawing or a sculpture, after which one puppet

(the recipient) left the room. When the remaining puppet (the actor) then began to destroy the recipient's creation, 3-year-olds protested verbally against the actor's actions. Impressively, approximately one-quarter of the children protested using normative language such as "You can't do that," versus, for instance, imperatives or desire-dependent language such as "I don't want you to do that" (Searle 2001). Pilot work with 2-year-olds showed almost no protest in such situations. Rossano et al. (2011) found something very similar: 3-year-olds protested, again sometimes normatively, when one puppet threatened to take home or throw away another puppet's possession, whereas 2-year-olds only protested in an agent-specific manner (when the actor acted on the children's possessions and thus directly caused harm to them) but not in an agent-neutral manner. In both of these studies, 3-year-olds went beyond objecting to harm done to them and applied the moral norm against causing harm in an agent-neutral way: on behalf of someone else, as a disinterested enforcer, with the judgment marked as applying generally to all in the group.

Beyond protesting verbally, children demonstrate several other enforcement-like behaviors during third-party moral transgressions. For instance, 3-year-olds who witness an actor destroying an absent recipient's artwork later tattle to the recipient about the actor's actions, perhaps as a way to have the transgressor punished (Vaish et al. 2011b). Children of this age also carry out restorative justice by returning to a victim what a thief had stolen (Riedl et al. 2011). They thus intervene and respond to third-party moral transgressions in multiple ways that provide converging evidence for their emerging agent-neutral morality.

Interestingly, and perhaps even more tellingly, 3-year-old children also intervene and protest when someone violates a conventional norm, in which there is no harm involved. Thus, Rakoczy and colleagues (2008) had children watch as a puppet announced that he would now "dax," but he then performed a different action than the one the child had previously seen an adult doing and calling "daxing." Most children objected in some way, even though the game was a solitary activity so that playing it incorrectly did not harm, or even inconvenience, anyone. Again, as with moral norms, children often used normative, generic language such as "No, it does not go like that!" Two-year-olds protested to some extent in this study, but almost always imperatively rather than normatively. Importantly, children were not just objecting to the fact that the puppet did not perform the action he said he would, as a subsequent study obtained the same results with a nonverbal indication of the game context: A particular action was acceptable when carried out in a particular location that marked the appropriate context for the action, but not when it was carried out in a different location that marked a different, inappropriate context for the action (Wyman et al. 2009).

Three-year-olds' emerging understanding of social norms as agreements among people is especially clear in studies involving joint pretense. In studies by Rakoczy (2008) and Wyman et al. (2009), 3-year-old children again objected—in much the same way as in the other studies of moral norms and game rules—when a puppet used a wooden block as a pretend sandwich if the child and an adult had previously designated that block as pretend soap ("No, one can't eat that. It's soap!"). When the same block was later designated as a sandwich in a different game, then children objected if it was used as soap. This flexible behavior clearly demonstrates that young children can, at least in pretense contexts, understand that the norms constituting the game are, in a sense, agreements that can be changed.

Finally, even further evidence for young children's understanding of the basic workings of social norms is provided by their selective enforcement of different types of social norms depending on group membership. Thus, children not only distinguish moral from conventional norms on multiple levels (see, e.g., Turiel 2006), but they also enforce the two distinctly. In particular, when 3-year-old

children see a moral norm being broken by an in-group member and an out-group member (as determined by their accents), they protest equivalently. But when they see a conventional norm being broken by these same agents, they protest more against an in-group member than an out-group member (Schmidt et al. 2011). In this way as well, then, 3-year-olds have a sense of the conventional nature of conventional norms, that is, that these norms have been decided on by, and thus apply only to, one's own group but that members of other groups may not be aware of or need not follow the same conventions. The same is not true of moral norms involving harm, toward which they take a more universalist approach.

Together, these recent findings suggest that, at least by 3 years of age, children do not view social norms solely in terms of authority, as Piaget assumed. Rather, they recognize them as general, agent-neutral, mutual expectations that represent some kind of implicit agreement of how we ought to behave—with the "we" conceptualized differently in the case of moral versus conventional norms. Because children's emerging understanding of social norms involves such things as agent neutrality, generic language, and reference to the group, it may be seen as reflecting their emerging skills and motivations for collective intentionality (Tomasello et al. 2012).

Reputation, guilt, and shame. In their everyday worlds, young children are less often judging and enforcing norms on others, and more often being judged and having norms enforced on them. Once more, the degree to which toddlers do or do not understand this fact is not totally clear, but children certainly seem to know that their behavior is being normatively assessed, and they sometimes alter their behavior accordingly (self-presentational behavior). Moreover, when they transgress, they may even judge and punish themselves via internalized social norms in acts of guilt and shame.

Research using verbal tasks has suggested that it is only around 8 years of age that children start to engage in self-presentational behavior (e.g., Banerjee 2002). However, two recent studies have found evidence of such behaviors even in preschoolers. In one recent study by Piazza and colleagues (2011), 5- to 6-year-olds were faced with a challenging rule-based task while they were either "watched by an invisible person," watched by an adult, or were unobserved. Children cheated significantly less on the task when they were observed, either by the invisible person or by the adult, than when they were unobserved. Engelmann et al. (2012) found similar results with peer observers and extended the findings to a prosocial condition. Specifically, they found that children stole less from an imaginary child recipient, and tended to help that recipient more, if a peer was observing them. Relatedly, in a different experimental paradigm, Haun & Tomasello (2012) found that 4-year-olds conformed to their peers' perceptual judgments (even when they knew better themselves) if they had to express their judgment publicly, in front of the peers, but not if they expressed it alone. Thus, not only do young children judge and form reputations about others' behavior, but they also know that they are being judged and actively try to manage those judgments.

Children in these studies anticipate being judged and then behave so as to increase positive and decrease negative evaluations of themselves. They manage to avoid having norms applied to them by, in effect, preemptively applying the norms to themselves. But when children do transgress, even if no one sees them and so no one applies the norm, they still quite often apply the norm to themselves through guilt or shame. Thus, if they break a toy that belongs to someone else, many preschoolers show signs of feeling guilty or ashamed (e.g., Barrett et al. 1993, Kochanska et al. 2002, Zahn-Waxler & Kochanska 1990). These feelings may be seen as a kind of self-punishment that function to prevent individuals from repeating the transgression, lessening the chances of actual punishment from others in the future. Under special conditions individuals may also reward themselves by feeling pride at having lived up to a social norm when they

could have gotten away with ignoring it (e.g., they helped others at great cost to themselves), and this self-praise presumably leads to more norm following in the future (Tangney et al. 2007).

Guilt, shame, and pride are thus internalized versions of the kind of moral judgments that humans mete out to others who violate or follow social norms. These norm-related, self-conscious emotions thus demonstrate with special clarity that the judgment being made is not my personal feeling about things, but rather the group's. I am sanctioning myself or praising myself on behalf of the group, as it were. I pushed the child off the swing because I wanted to play on the swing, and I still like playing on it, but I also feel guilty about harming the other child. As a particularly strong demonstration of group-mindedness, school-age children even show collective guilt, shame, and pride; that is, they feel guilt, shame, or pride if a member of the group with which they identify does something blameworthy or praiseworthy, as if they themselves had transgressed (Bennett & Sani 2008).

Interestingly and importantly, another function of social emotions such as guilt and shame comes from their display for others. For instance, displaying guilt to others serves important appeasement functions, showing others that I am already suffering, which I hope will evoke concern and forgiveness from the victim and from bystanders, thus reducing the likelihood of punishment (Keltner & Anderson 2000). Guilt displays also indicate that the transgressor did not mean to cause harm and, more generally, that he is not the kind of person that means harm. They signal that he intends to make amends and to behave more appropriately in the future and that he is aware of and committed to the norms of the group (Castelfranchi & Poggi 1990). A remorseful transgressor should thus be seen as self-policing, dependable, and cooperative, eliciting forgiveness, affiliation, and cooperation from the victim and other group members (Darby & Schlenker 1982, 1989; Goffman 1967).

Indeed, there is evidence that 6-year-old children blame apologetic actors less, punish them less, forgive them more, and like them better than unapologetic actors (Darby & Schlenker 1982, 1989). Children 4 to 5 years of age also regard situations in which an actor apologizes as better and more just than ones in which the actor is unapologetic (Irwin & Moore 1971, Wellman et al. 1979). Even in the absence of explicit apologies, 5-year-olds show a preference for transgressors who display guilt, and they prefer to distribute more resources to guilt-displaying transgressors than to unremorseful ones (Vaish et al. 2011a). Thus, preschoolers are tuned in to the social functions that displaying an emotion such as guilt serves.

Interestingly, not only do preschoolers prefer those who follow norms, but they also prefer those who enforce them. In a recent study (Vaish et al. 2012), 4.5- to 6-year-old children watched videos of an observer responding to a transgression she witnessed by either enforcing the norm that the transgressor had broken (e.g., she said in a mildly angry tone, "Hey, you've broken [the victim's] doll! You shouldn't do that. It's not good") or by not enforcing the violated norm (e.g., she said in a neutral tone, "Oh, you've broken [the victim's] ball. Oh well, it doesn't matter"). Children judged that the enforcer had done the right thing, they evaluated the nonenforcer as less good, and they preferred the enforcer. This was despite the fact that the enforcer was actually more negative and unpleasant in her behavior (since she showed some anger) than was the nonenforcer.

We may thus see a continuous line from toddlers' social evaluations of others as either helpful or harmful individuals to their enforcement of social norms. From very early on, they are judging others and even being selective about the target of their own cooperative behaviors based on those judgments (see previous section). But it is only during later preschool years that children understand this process of judgment such that they know they are being judged and so can do things to manage those judgments (impression management or self-presentational behaviors). One hypothesis is that this is made

possible by some kind of second-order mental reasoning of the form, "I am thinking about what you are thinking about me" (Banerjee 2002). Perhaps such second-order reasoning is also involved as they judge the judgers and find good those who find moral transgressions bad.

Summary. During the later preschool years, then, children become truly moral agents—though of course there are still many further developments to come. The key is that they no longer consider and act toward individuals based only on their own individual judgments of them (although they certainly continue to do that). Rather, they have in addition begun to understand and even internalize the agent-neutral social norms of the group and to consider individuals as group members who both apply social norms to others and have social norms applied to them. And, crucially, they come to consider themselves as just one individual among others—nothing special in the eyes of social norms—and even, in an astounding testament to their bifurcated sense of self, to apply the norms and accompanying punishment equally to themselves.

Four- and 5-year-old children thus operate with an agent-neutral, norm-based morality in which all individuals, including themselves, are equal players. Moreover, they come to self-regulate their behavior in accordance with these norms, so much so that older preschoolers typically enter new situations not just following norms, but actively seeking out what those norms are: "What am I supposed to do here? How do I do it?" (Kalish 1998). Their sense of self is bound up with behaving in accordance with norms.

CONCLUSION

There is no doubt that humans are a prosocial and cooperative species, but it is becoming increasingly clear that humans are not unique in this regard. Our closest living relatives, the nonhuman great apes, are also prosocial and cooperative in several ways: Under some circumstances, they help others instrumentally, share food with others, reciprocate favors, coordinate efforts with others, and choose partners selectively based on their prior experiences with them. The evolutionary origins of human morality and cooperation are thus undoubtedly to be found in our primate cousins. Yet humans are vastly more, and distinctly, cooperative as compared to other primates. In contrast to great apes, human societies are much more egalitarian in nature, as evident, for instance, in our childcare practices, in which many individuals help mothers raise children. Moreover, human societies are universally marked by the cooperative endeavors of norms and institutions that have been mutually agreed upon by the members of the group and that govern the behavior of those in the group.

We have argued that these unique aspects of human cooperation have resulted from changes in human feeding ecology that caused humans, in a first step, to become obligate collaborative foragers, which created an interdependence among individuals unprecedented in the primate order. At this point in humans' evolutionary history, prosocial and cooperative behaviors were based on interpersonal interactions with specific individuals, as they seem to be with apes. What was different was that humans began to take a mutualistic rather than a purely individualistic approach to cooperative activity such that they became deeply invested in not only their own but also their partners' welfare—they began to care about the joint nature of their cooperative activities—and they began to care about how they were perceived by others as partners.

In a second step, the rise of intergroup competition gave way to a group-mindedness that is, we argue, totally unique to humans among primates. At this stage, humans began to care not only about their personal interactions and histories with others but also about the more general functioning of the group, which meant keeping track of how individuals (including the self) contributed to or detracted from the group's well-being. This was the beginning of the agent-neutral, group-level, norm-based psychology that marks so much of human

cooperation and morality today. We may thus propose that although great apes are certainly prosocial and cooperative in some ways, and early humans extended this considerably, later humans cooperated in a special, agent-neutral way that is fully "moral."

Interestingly, these two evolutionary steps are, at least to some degree, paralleled in ontogeny. From very early on, children and perhaps even infants seem to cooperate at the interpersonal, or second-personal, level wherein they collaborate with others, sympathize with those in need, have a basic sense of equality, evaluate others' behaviors, and engage in reciprocity. Moreover, even children's early cooperative tendencies are marked by the mutualistic or joint attitude that we argue emerged in the first step of our evolutionary history. Thus, already in the early toddler years, the nature of children's prosocial and cooperative behaviors is distinct from that of apes.

By 3 to 4 years of age, children begin to demonstrate the norm-based group-mindedness that also represents the second evolutionary step in our story. Children now function not only at the second-personal but also at the agent-neutral level, and they now view individuals (including themselves) as group members who ought to follow the group's social norms. Moreover, they begin to enforce these norms on others and on themselves. With these developments, children begin to demonstrate the special, agent-neutral, and norm-based sort of cooperation that is considered to be fully moral. Thus, in both the evolutionary and the ontogenetic stories, the first step in the sequence is mutualistic collaboration and prosocially motivated interactions with specific other individuals, and the second step is the more abstract, agent-neutral, norm-based morality of individuals who live in more large-scale cultural worlds full of impersonal and mutually known conventions, norms, and institutions.

One question that arises is what contributes to the ontogenetic shift from a second-personal to a norm-based morality. A part of the answer certainly lies in social-cognitive development: In order to engage in a norm-based morality, children must move from seeing individuals and social interactions purely in interpersonal terms to additionally seeing all individuals from an agent-neutral or bird's-eye perspective (the "view from nowhere"; Nagel 1986). They must also develop the capacity to see themselves as individuals just like all other individuals, to evaluate their own behavior, and to understand that others evaluate them in the same way that they evaluate others. These are all quite challenging developmental feats that are likely accomplished gradually over time rather than all at once. The transition from a second-personal to a norm-based morality is thus not an abrupt one, and so it is plausible that some norm-based morality is evident even at age 2 years, whereas in many circumstances, even adults may not demonstrate a full-fledged norm-based morality or else the two forms may conflict in a moral dilemma (e.g., should I break the law to help my friend or relative?).

Furthermore, there are certainly enormous influences of culture and socialization on the emergence and development of morality in childhood. There is, for example, evidence of cultural and experiential influences on children's prosocial behavior (see Eisenberg 1989, 1992). For instance, although similar levels of instrumental helping were recently found among 18-month-olds in Canada, India, and Peru (Callaghan et al. 2011), a study of 5-year-olds' prosocial behavior revealed that German and Israeli children displayed more prosocial behavior toward a distressed adult as compared to Indonesian and Malaysian children (Trommsdorff et al. 2007). Trommsdorff et al. (2007) propose that in cultures that promote face-saving values and respect for hierarchical relations (such as Indonesia and Malaysia), ignoring the mishap of another person (especially an authority figure) can be more valued than attempting to help and thereby risking that the other person lose face. The learning and internalization of such society-specific norms likely takes some time, meaning that cross-cultural differences in prosocial behavior and in morality more generally may often

become apparent only in the late preschool years. Such findings of variation across contexts are provocative because they highlight the ways in which culture and experience fundamentally shape prosocial responding, and they demonstrate vividly that prosocial responding is not a unitary process but rather is open to a diverse set of influences. Still, we would argue that these influences do not create the basic prosocial and cooperative tendencies seen in children but rather modify and shape them.

In conclusion, from an evolutionary perspective, cooperation (and therefore morality) is always problematic, as it requires individuals to suppress their own interests in favor of those of others or equate their own interests with those of others. Cooperation can thus evolve only in certain specific circumstances. Humans have managed to evolve highly cooperative lifeways through participating in a variety of collaborative activities in which they are interdependent. These collaborative activities are the origins of human morality.

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Annual Review of Psychology
Volume 64, 2013

Contents

Indexes

Errata

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