Normative Practices of Other Animals

For *The Routledge Handbook of Moral Epistemology*
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Traditionally, discussions of moral participation – and in particular moral agency – have focused on fully formed human actors. There has been some interest in the development of morality in humans, as well as interest in cultural differences when it comes to moral practices, commitments, and actions. However, until relatively recently, there has been little focus on the possibility that nonhuman animals have any role to play in morality, save being the objects of moral concern (e.g., DeGrazia 1996, Gruen 2002, Rollin 2007, Singer 1975). Moreover, when nonhuman cases are considered as evidence of moral agency or subjecthood[1], there has been an anthropocentric tendency to focus on those behaviors that inform our attributions of moral agency to humans. For example, some argue that the ability to evaluate the principles upon which a moral norm is grounded is required for full moral agency (e.g., Korsgaard 1992, 2006, 2010; Rowlands 2012). Certainly, if a moral agent must understand what makes an action right or wrong, then most nonhuman animals would not qualify (and perhaps some humans too). However, if we are to understand the evolution of *moral* psychology and *moral* practice, we need to turn our attention to the foundations of full moral agency. We must first pay attention to the more broadly *normative* practices of other animals.

In Section I of this chapter, we will examine the recent attention to animal moral practice by philosophers and animal cognition researchers and argue that their approach underestimates the distribution of normative practice in animals by focusing on highly developed versions of morality. In Section II, we will argue for an approach to examining animal normative participation that begins with a categorization of the practices that may evidence valuing. Sections III and IV will consider evidence that great apes and cetaceans participate in normative practice. We will conclude in Section V by considering some implications of our view.

I. Current theorizing of animal moral participation

Philosophical and psychological interest in the evolution of morality and the possibility of moral participation among other animals has been growing in recent years (Andrews and Gruen 2014; Bekoff and Pierce 2009; Flack and de Waal 2000; Hauser 2006; Kitcher 2011; Korsgaard 2006; Plutchik 1987; Preston and de Waal 2002; Rowlands 2012; Tomasello 2016; Varner 2012; de Waal 1996, 2006, 2009). While these approaches start with different assumptions and draw different conclusions about animal moral participation, they all ground their approaches in some recognized philosophical moral theory. Hauser adopts a contractarian approach to ethics, Kitcher and Korsgaard accept versions of deontology, Varner assumes Hare's version of utilitarianism, and so on. Arguments that go on to suggest that animals do have some degree of moral

[1] Broadly, moral subjects are beings who can act for moral reasons, while moral agents can additionally scrutinize their motivations to act (see Rowlands 2012 for an extended discussion of this distinction).

participation, save being objects of concern, are often framed in terms of animals having empathy or sympathy (with Rowlands, de Waal, Andrews, and Gruen aligning in this respect). On the other hand, arguments suggesting that animals lack moral participation are often based on a pair of assumptions: (a) that metacognition is required to govern oneself autonomously and (b) that self-governance is essential to morality (as Korsgaard and Kitcher would have it). In fact, rather than investigating moral practice more generally, these projects typically look to see whether a nonhuman animal has what it takes to be a good Humean, a good Kantian, a good Rawlsian, etc. Additionally, philosophical discussions of animal morality center on four sets of psychological properties that are proposed to be cognitive requirements for moral participation: (i) consciousness, observation, and metacognition (Kantianism, Contractarianism, Naturalism), (ii) empathy or other-regarding emotions (Sentimentalism, Utilitarianism), (iii) personality traits and the ability to improve them (Virtue Ethics), and (iv) social roles and relations (Feminist Ethics, Care Ethics).

The empirical data that is given to support the view that nonhuman animals have a proto-ethics (or are moral subjects or agents) often consists in observations of behavior that would be deemed praiseworthy if performed by a human. For instance, in his discussion of the phylogenetic building blocks of morality, de Waal (2014) describes morality as a system of rules that revolves around helping and not hurting, emphasizing the wellbeing of others and the value of the community above the value of the individual.[2] Given this framework, de Waal argues that chimpanzees display the kinds of empathy and reciprocity necessary to meet the demands of morality (de Waal 2013). Rowlands (2012) argues that animals can be moral subjects insofar as their actions track objective moral reasons for good action, evidenced by their demonstration of concern. Bekoff and Pierce (2009) focus on behaviors that they deem consistent with cooperation, empathy, and justice.

This focus on what we might take to be laudable animal action reflects our common practice when we use the term 'moral,' because when we call someone 'moral,' we typically do so with the intention to offer praise. A moral person helps others and refrains from harming others out of her concern for wellbeing or the greater good. Or a moral person recognizes the intrinsic value of others and treats them accordingly. Likewise, when we call someone 'immoral,' we place them into the sphere of morality, but we do so in order to offer condemnation or at least correction.

However, this focus on laudable acts hinders our examination of the evolution of morality, given that the entryway into morality need not require objectively good behavior. When the investigation into animal morality only identifies laudable acts as evidence of moral participation, and when we look for evidence of specifically moral norms, we lose sight of the basic cognitive requirement for moral agency – namely, ought-thought, which is a cognitive modality much like mental time travel or counterfactual thinking. Thinking about what ought to be the case is – like thinking about what happened in the past, what might happen in the future, and what might be the case under various circumstances – a cognitive mode that requires the thinker to do more than represent what is currently the case. The cognitive mode of thinking about what ought to be the case is what we will refer to here as *naïve normativity* (Andrews, in preparation).

[2] It is noteworthy that de Waal excludes conventions that do not evidence empathy, reciprocity, or altruism from the moral domain. We'll say more about why this matters shortly.

Naïve normativity is meant to be a broader category of ought-thought than specifically moral thought, though it is a cognitive building block that makes moral thought possible. We understand naïve normativity to include diverse instances of valuing, some of which are not moral. For example, if someone wears the shoes of her favorite celebrity, she thinks of this celebrity as a fashion ideal. That is a kind of normative thought. If a person uses toilet paper because she implicitly recognizes that this is a sanitary expectation of those with whom she interacts, she is influenced by normative thinking. The same might be said if she takes off shoes before entering a home to honor the wishes of the homeowner, or the gods, or the community at large. If we begin our theorizing with a focus on *normative* thought and participation understood in this broad way, we can better reconstruct the emergence of moral thinking across and within species – without having to identify this early stage of moral cultural evolution with any particular moral theory.

Let us clarify what we mean by 'valuing' in terms of naïve normativity. Some may object that normative thought should not be understood as valuing, since we value what we desire, and desire is too widespread of an attitude to be considered *properly* normative. We do not contend that 'valuing' and 'normative thought' are synonymous, though we do think of valuing as necessary (though not sufficient) for normative thought. Nevertheless, introducing the language of 'valuing' allows us to begin to wrestle with the difficulty of delineating the normative sphere. When we speak of normative practices, we mean to signal patterns of behavior shared by members of a community that demonstrate they value certain ways of doing things as opposed to others. Thus, we would not say that an individual preference (though perhaps an instance of valuing) is a normative practice. Still, by adopting the language of valuing as opposed to merely talking about normativity as ought-thought, we hope to push back on the anthropocentricism that sometimes lurks behind discussions of ought-thought that focus on its articulation in language. In addition, by talking about 'valuing,' we are able to emphasize that normative behaviors can be observed within group practice. For example, when we see a group of meerkats mobbing a snake in their midst, we can see that they value eliminating the snake.

By reframing the discussion in terms of normativity rather than morality, we can leave behind a number of traditional distinctions that are often invoked in the discussion of moral development and evolution. The moral/conventional, prudential/moral, and etiquette/moral distinctions can all be set aside, as the practice of developing and following group norms are all cases of ought-thought in action. Norms, regardless of the content, are all action-guiding, aspirational ideals that individuals work towards, whether they are the norms of how best to open a coconut or the norms of how to be a reliable friend. By focusing on the normative rather than the specifically moral, we can also set aside traditional worries about the evolution of morality. It does not matter whether an action is self or other-directed, whether the norm guiding an animal's behavior is properly cultural or "merely" biological, or whether her motivation to conform to it is internal or external. A behavior may be in some sense self-directed, biological, and externally motivated – and still count as ought-thought in the sense at issue.

Furthermore, researchers should take note that norms can have a dark side. Norms lead us to express empathy and behave fairly with others, but they can also lead us to express disgust inappropriately and to behave unfairly with others. For example, revenge can be a manifestation of normative thought, even when based on an inaccurate

assessment of the crimes one is seeking to redress. More broadly, morality is appealed to in order to justify wars, terrorism, slavery, and oppression of all sorts.

We claim that there is evidence that great apes and cetaceans participate in normative practices and that many other kinds of species might as well. Whether they participate in morality is another topic that depends on a number of additional factors, not least of which is one's ethical theory. Instead of asking whether or not animals engage in moral practice, we will investigate the more general question of whether or not animals engage in normative practice, ultimately defending an affirmative response to this question.

II. Types of normative practice

Thus far, we have suggested that philosophers and animal cognition researchers underestimate the distribution of more basic normative practices in animals by focusing on moral behaviors. Still, the important work on morality can shed light on normativity. In this section, we sketch various categories of normative practice[3] (some of which are also moral) in order to examine whether or not we see evidence of the relevant kind of valuing in the actions of members of other species.

By reframing the question to focus on normativity as opposed to morality, we mean to broaden the space of consideration. That is, normativity includes a variety of practices involving valuing or ought-thought – whether or not that valuing or ought-thought manifests in concern for another, involves the attribution of praise or blame, or can be defended through the provision of reasons for acting some way or another. Consider the following cases: correcting the way a child holds her dining utensils, caring about our friends' allegiance to our city's football team, helping our partner fold clothes the right way, or pulling over to the side of the road to accommodate a funeral procession. These actions or attitudes matter to us, and we care how they are performed or adopted by others – but this kind of feeling is generally not taken to be sufficient for morality.

Though their focus is on moral behaviors, psychologists Haidt, Graham, and Joseph (2009) state that there is "some evidence of continuity with the social psychology of other primates," albeit stopping short of calling this a continuity of morality (Haidt et al. 2009, p.111). Their project, building upon Shweder and Haidt (1993), offers an account of the psychological foundations that underpin moral systems, despite the diversity of these systems. Initially, these researchers posited that five such foundations exist: harm/care, fairness/reciprocity, in-group/loyalty, authority/respect, and purity/sanctity. These foundations manifest in concerns about the suffering of others; inequality, unfair practice, and justice; loyalty, self-sacrifice, and betrayal; obedience, respect, and role fulfillment; and contagion and control of desires, respectively. Perhaps to capture both the good and bad sides of the moral story, the labels assigned to these foundations have since been modified to emphasize harm, cheating, betrayal, subversion, and degradation as the respective counterparts to care, fairness, loyalty, authority, and

[3] Our discussion will focus on what is meant by 'normative.' We should note, however, that by 'practice,' we are talking about patterns of behavior, rather than behaviors isolated from one another and from the performer. We are not using 'practice' here in any more technical sense.

sanctity.[4] A sixth foundation has since been suggested by Iyer et al. (2012): liberty/oppression, involving concerns about restrictions to freedom and autonomy, which often come into conflict with the authority foundation.

Also concerned with the evolution of morality, psychologists Krebs and Janicki (2002) describe five categories of moral norms: obedience norms, reciprocity norms, care-based and altruistic norms, social responsibility norms, and norms of solidarity. There is a great deal of overlap between this account and the moral foundations theory of Haidt et al., with more or less direct correspondence between obedience norms and the authority/subversion foundation, between reciprocity norms and the fairness/cheating foundation, between care-based and altruistic norms and the care/harm foundation, and between social responsibility norms and the loyalty/betrayal foundation.

This broadness of scope is not always found in accounts that focus on moral practice in other animals. For example, ethologist Marc Bekoff and philosopher Jessica Pierce limit their analysis to three "clusters" of behavior: "the cooperation cluster (including altruism, reciprocity, honesty, and trust), the empathy cluster (including sympathy, compassion, grief, and consolation), and the justice cluster (including sharing, equity, fair play, and forgiveness)" (Bekoff and Pierce 2009, xiv). These clusters capture only two of the norms and foundations categories on offer from Haidt et al., Iyer et. al, and Krebs and Janicki – with altruism, sympathy, compassion, grief, consolation, and forgiveness being accommodated by the care-based norms and the care/harm foundation, while reciprocity norms and the fairness/cheating foundation incorporate reciprocity, honesty, trust, sharing, equity, and fair play. Our point is not to diminish the importance of Bekoff and Pierce's work, which is remarkable both in its insistence that nonhuman animals engage in a panoply of moral behaviors and in its provocative discussion of species-relative moral agency. Rather, the point is that Bekoff and Pierce, like many other philosophers and researchers, focus on the kinds of behaviors associated with laudable moral actions rather than thinking more broadly about the more general class of normative practices of which these form a part.

We combine the theoretical frameworks of Haidt et al., Iyer et al., and Krebs and Janicki to establish a range of normative practices that we can examine conceptually and empirically. In the following sections, we will argue that these kinds of normative practices are present among at least some nonhuman animals, but first we must get our conceptual footing.

Obedience norms (Figure 1) can be reflected in the following kinds of behaviors: (a) displays of authority and respect, policing, or subversion (such as when wolf pack leaders police and interrupt sex acts between subversive female members and male outsiders), (b) demonstrations of guilt (including displays of submission in response to correction, as when a dog tucks her tail when being scolded for toppling the trash), (c) the meting out of punishments (such as when chimps destroy food that was taken by a thieving conspecific), or (d) more general teaching and obedience cases (including non-moral cases of teaching practices like instruction on how to correctly use a tool and praise of successful usage).

Reciprocity (Figure 2) norms are at play in the following behaviors: (a) demands for fairness or cases of cheating (such as capuchin monkeys protesting when they are

[4] See the collaborative website *http://moralfoundations.org/*, a project of Peter Ditto, Jesse Graham, Jonathan Haidt, Ravi Iyer, Sena Koleva, Matt Motyl, Gary Sherman, and Sean Wojcik.

given a less desirable food for completing the same task for which a conspecific is rewarded with a more desirable food), (b) instances of direct reciprocity, cooperation, mutualism, or proportionality in dyadic exchanges (including sharing or exchanging goods for mutual benefit), or (c) preferential selection of or treatment of individuals (such as when chimps choose to beg from a generous human as opposed to a selfish one).

Many kinds of behaviors suggest the presence of **caring** or altruistic norms (Figure 3): (a) acts of caregiving and consolation by an observer (including responses to harm/injury, loss, or illness), (b) targeted helping acts on the part of an agent (which often involve the agent putting herself in immediate danger, such as when whales capsize hunting boats in response to the distress of injured conspecifics), (c) responses to one's own loss (which can refer to the loss of anything one values, as diverse as the loss of food or the death of a conspecific; e.g., when captive polar bear Arturo exhibited behaviors that were widely described as consistent with depression following the death of his cagemate Pelusa), or (d) emotion recognition (such as identifying emotions in conspecifics via direct perception of their facial expressions or behaviors).

While reciprocity norms typically occur in the context of dyadic relationships, **social responsibility** norms (Figure 4) are manifested in behaviors that are aimed at benefitting all members of one's in-group, such as: (a) cases of indirect reciprocity or cooperation (like distributing acquired goods to one's group members or using divisions of labor), (b) acts of loyalty to or betrayal of one's group, or (c) acts of aversion and protesting[5] (including aversions to incest, killing, or pollution).

Finally, **solidarity** norms (Figure 5), though perhaps less recognized in other species than the other norms we have discussed, may be manifested in (a) practices that reinforce group identity or culture, (b) instances of self-sacrifice in solidarity with one's group (consider cetaceans beaching themselves collectively), or (c) displays of stress or tension in response to individual freedom running counter to group interests, demands, or expectations.[6]

These normative practices are more varied and will likely be more widespread than specifically moral practices. A couple of clarifications should be noted before we consider the normative practices of chimpanzees and cetaceans in the next two sections. First, some practices may exhibit more than one norm. In such cases, we will classify the practice in the category that seems like the best fit. Second, some normative practices may also be moral, though they need not be. Finally, the research we report should be taken for what it is: namely, a report of particular studies or observations. These observations may be mistaken, so none of them should be taken as definitive evidence that the species in question has the identified capacity. What follows is a first pass on

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[5] Note that our inclusion of aversion cases within the social responsibility category is a departure from Haidt et al. (2009), who believe that sanctity/degradation behaviors warrant their own category. We are inclined to collapse the sanctity/degradation and in-group loyalty/betrayal foundations primarily because the former seems to involve too much cognitive sophistication (following Shweder's emphasis on divinity) to be productive for our present discussion.

[6] Iyer et al.'s (2012) addition of the sixth foundation of liberty/oppression, as with some of Haidt et al.'s (2009) sanctity/degradation behaviors, seems too cognitively demanding for our purposes. Consider that Iyer et al. discuss this sixth foundation in the context of libertarian political ideology. Still, we think that some of the tensions they describe between desire for individual freedom and respect for authority may be felt by, and displayed in the behaviors of, some other animals. For our purposes, we thought it best to categorize such tensions as the darker complement of solidarity (as harm is to care or betrayal to loyalty).

cataloging the kinds of behaviors that have been reported in other species that map onto the kinds of normative practices reported by moral psychologists and anthropologists. Nonetheless, we think that, as a whole, the body of evidence reported in the next two sections both supports the claim that these animals engage in normative practice and warrants further investigation into the normative capacities of other animals.

III. Chimpanzee normative practice

Chimpanzees are only one of the five great ape species; humans, orangutans, gorillas, and bonobos are the others. But we know more about chimpanzees than the other nonhuman great ape species, and philosophers have long been interested in their social abilities. If we were to examine the "nicest" great ape, however, we might instead turn our attention to bonobos, a matriarchal species that resolves conflict more by touching than by fighting and who are known to be more tolerant in areas such as food sharing than the chimpanzee. However, as we are looking for evidence that chimpanzees engage in normative practice (rather than evidence that they are kindly or empathetic to one another), and as we have decades of data on chimpanzee behavior both in the wild and in captivity, our focus here will be the chimpanzee.[7]

Chimpanzees are native to Africa and live in patriarchal fission-fusion groups, which consist of a large community (perhaps up to 60 individuals) that separates into a number of smaller groups (of up to 10 individuals) who will travel together for a time (a day or a few hours). Movement between smaller groups can be fluid, though strong family and affiliate bonds will affect the make-up of these smaller groups. When female chimpanzees mature, they leave their natal group and seek membership in a new community, where they seek mates and raise offspring, usually for the rest of their lives. Males remain in their natal community and participate in dominance hierarchies that can be established and destroyed via intra-group aggression. In addition to the violence within the communities, chimpanzee males engage in violent encounters with other communities. Goodall (2010) reported observing what she calls a territory war between two chimpanzee communities that lasted for 4 years. Chimpanzee inter-group aggression is now well established (Boesch and Boesch-Achermann 2000; Watts and Mitani 2001; Watts et al. 2006) (see Figure 5).

The social structure of the chimpanzee offers the first evidence that chimpanzees might engage in normative practice. The family identities, male alliances, and community identities suggest that chimpanzees might prefer certain "in-group" ways of doing things over "out group" practices. Furthermore, it suggests that chimpanzees are able to identify themselves as members of groups and that they are able to keep track of the different groups to which they belong (e.g., both intra-group alliance and inter-group identity). In addition, the existence of cultural differences (Whiten et al. 1999) between chimpanzee communities offers a possible mechanism for both delineating group identities and identifying out-group individuals, much in the way language, ritual, dress, etc. serve this purpose in human cultures. As females immigrate into new communities, they are at first typically very low ranking, and in order to become integrated into the group, they may be forced to learn new cultural traditions (Luncz et al. 2012; Luncz and Boesch 2014).

Much of the recent research on chimpanzees has focused on caring norms (see Figure 3). Chimpanzees appear to experience empathy for their kin and affiliates, and

[7] Note that scientists only discovered the existence of bonobos in the mid 20th century.

they console individuals when they have suffered some loss. De Waal has done much to observe, elicit, and categorize these sorts of behaviors, and he suggests that chimpanzees have what he calls "the building blocks of morality," which include empathy, reciprocity, conflict resolution, a sense of fairness, and cooperation. However, de Waal stops short of saying that animals are moral agents (de Waal 2006).

Another area of normative participation that has been of much interest in chimpanzees is in the area of reciprocity norms (see Figure 2). Research on chimpanzee cooperation, punishment, and fairness has yielded mixed results. There is much evidence that chimpanzees seek to assist others, and they will engage in joint action to achieve a common goal. However, this claim has been explicitly disputed by Tomasello, who thinks that what looks like cooperation in chimpanzees is really competition. He argues that chimpanzees do not share a single goal in these cases; they just happen to have the same goal. He uses Searle's (1995) example of humans running from the rain and ending up together under a roof as an analogy for what chimpanzees are doing when they appear to be cooperating (Tomasello 2016). However, there is a wide range of conditions in which we see chimpanzees engage in behavior that secures a joint goal, so we are not convinced by Tomasello's skepticism. We note that studies of chimpanzee cooperation in captive settings are almost all focused on food, and chimpanzees may find cooperation particularly difficult in that context. In addition, captive chimpanzees are actively discouraged from cooperating in non-food contexts, in order to keep them under control. When chimpanzees do cooperate, this can cause a huge headache for caregivers, as when seven chimpanzees escaped from the Kansas City Zoo in 2014, after a male set up a log to be used as a ladder and then "beckoned to another six chimps to join him" (Millward 2014). Furthermore, we know that for humans social status can have substantial impacts on willingness to cooperate with and be charitable toward others (Kumru and Vesterlund 2010), and the studies of chimpanzee cooperation that have failed to find cooperative behavior have not, to our knowledge, controlled for prestige. Furthermore, recent studies of chimpanzee social cognition have found that chimpanzees are able to track human false beliefs in an active helping task (Buttelmann et al. 2017).

As for fairness, one experimental study of chimpanzees in an ultimatum game found that chimpanzees accept "unfair" offers, while humans will reject them, resulting in a loss both to self and to other (Jensen et al. 2007a). Jensen thinks this behavior shows that chimpanzees are not concerned with fairness. In the case of punishment, in experimental studies Jenson and colleagues (2007b) found that chimpanzees will punish others who directly target them, but another group failed to find evidence that chimpanzees will engage in third-party punishment (Riedl et al. 2012). However, in another experiment researchers found that chimpanzees will start out by making selfish offers but shift to making an equitable offer when the partner protests in an iterated version of the ultimatum game (Proctor et al. 2013). It is hard to know what to make of these captive studies; the results may have to do more with the specific norms in these chimpanzee groups than with some general lack of fairness (Andrews and Gruen 2014). Furthermore, if fairness is applying a norm to everyone to whom it should be applied (i.e., not making an exception for another), the first step to investigating fairness in chimpanzees must involve identifying norms. That is just beginning (see Figures 1-5), and it requires significant interest among field researchers, as the field is where we would most expect to see cultural norms.

One element of Krebs and Janicki's moral norm types and Haidt et al.'s and Iyer et al.'s moral foundations that seems to be missing in chimpanzee communities falls within obedience norms (see Figure 1). While chimpanzees clearly demonstrate some aspects of obedience norms, such as following dominance hierarchies, what we have not yet seen is evidence of guilt. This may be a part of normative practice in which they do not participate, or it may be that we have not yet found a way to uncover this emotion in other species. In addition, we see only sketchy evidence as of yet for some aspects of social responsibility and solidarity norms (see Figures 4 and 5).

When being an individual who sees norms and oughts in the world is conflated with being an individual who acts in a good way, it is not surprising that most of the research on chimpanzee moral practice would focus on the issues of empathy, consolation, cooperation, and reciprocity. By shifting focus to the foundations of normativity, we hope to invite more research into issues of social responsibility and solidarity practices as well.

IV. Cetacean normative practice

In the previous section, we focused on one species of great ape: chimpanzees. In this section, we will present evidence of normativity in several species of cetaceans. It is only over the last 50 years that cetaceans have become subjects of modern scientific research, so there is far less experimental and naturalistic data available on their behavior compared to apes. Cetaceans are marine mammals, including all whales, dolphins, and porpoises. They live entirely in aquatic environments, primarily in a world of sound, where some perceive and relate to their world using echolocation or sonar – a sensory system that we great apes do not share. Despite these differences, we argue that cetaceans share with the great apes the capacity for ought-thought.

As with chimpanzees, the social structures of cetaceans suggest that they might engage in normative practice. For example, bottlenose dolphins live in fission-fusion societies where individuals associate in small groups that can frequently change in composition (Conner et al. 2000). The social relationships within and between groups indicate that individuals can identify themselves as members of particular groups and can keep track of stable affiliations and shifting alliances. Communities, distinguished by home range and association, vary in structure and size. For example, the Shark Bay, Australia community numbers in the thousands. Both sexes are highly social, but the basic social unit consists of life-long bonded pairs or trios of males, arranged in dominance hierarchies established through aggression. These first-order alliances form second-order alliances or "teams," usually consisting of related individuals. Sometimes second-order alliances form additional, shifting alliances with other unrelated teams. Collaborating teams compete with others to secure females for reproduction (Stanton and Mann 2014; Connor et al. 2000) (see Figure 2).

Behaviors that distinguish bonded units from less affiliated individuals include petting (e.g., one dolphin actively moves her pectoral fin on a body part of another dolphin), synchronous movement (e.g., swimming close together and surfacing at about the same time), and similarity in signature whistles (e.g., individually distinctive whistles believed to signal an individual's identity) (Stanton and Mann 2014; Tyack 2000; Pack 2010). Calves adopt the signature whistle of their mothers, but as they separate from her, their whistles become more individualized. Bonded males adapt their whistles to that of

each other. These socially learned and distinctive whistles are indicative of normativity because they not only signal individual identity, but also group identity. Like chimpanzees, nested layers of group identities, affiliations, and dominance positions suggest that dolphins might engage in a preference for their in-group way of doing things. For example, a subgroup of the Shark Bay community uses sponges as foraging tools, whereas other subgroups do not (Mann et al. 2012) (see Figure 5).

The social lives of orcas offer some of the most compelling evidence that cetaceans participate in normative practice (see Figures 1-5). In the Pacific Northwest, there are three distinct populations, but we will focus on the two most studied – resident and transient (Barrett-Lennard 2000). Since they share the same geographic area, group differences are not likely due to ecological differences, but rather due to cultural differences (Whitehead and Rendell 2015). The resident population consists of three socially bounded communities (Bigg et al. 1990; Leatherwood et al. 1990) that are further broken down into nested social units. Matrilines are the fundamental units and consist of a female and her descendants, usually 4-12 individuals from 2-4 generations. They always swim within acoustic reach of each other, often within touching distance. Both sexes stay in their matriline for life (Barrett-Lennard 2000). Closely related and frequently associating groups of matrilines form pods. They share a distinctive dialect or set of vocal calls (Ford 1989). Groups of pods with related, but not identical, dialects form acoustic clans (Ford 1991). A community is made up of clans that share a common range. Pods freely associate within and between clans, but never outside of their community, suggesting very strong group identities (Bigg et al. 1990). Like language in human cultures, differences in dialect between communities offer a possible mechanism for both delineating group identities and identifying out-group individuals (see Figure 5).

In-group/out-group differences are most apparent between the resident and transient orca populations. The basic transient social unit is the matriline, but unlike residents, the transient population is a fission-fusion society wherein juvenile and adult offspring may disperse, sometimes permanently. Transient groups tend to be smaller, echolocate less frequently, and use fewer discrete call types; and they do not have discrete vocal repertoires. However, subpopulations do use a similar set of calls, and some variants are shared between subpopulations (Ford 2002; Barrett-Lennard 2000). Residents and transients never associate despite sharing the same waters. They usually avoid each other but have been observed in aggressive conflict (Ford and Ellis 1999) (see Figure 4). They have completely different diets: transients only eat marine mammals and some seabirds, whereas residents eat only salmon, some other fish, and squid. Such dietary specialization has been described as extreme and unprecedented in sympatric species (Ford 2002).

The resident orca communities are one of only two mammalian species where neither sex disperses from their natal groups; the other is the long-finned pilot whale. In other species, including chimpanzees, dispersal is likely an incest avoidance adaptation. Using DNA analysis, Barrett-Lennard (2000) determined that the norm for residents is outbreeding and found no evidence of inbreeding. Individuals always mate within their community, sometimes within their clan[8], and never within the same pod. Barrett-Lennard posits that individuals are sexually attracted to others with a similar – but not too similar – dialect. We have classed this manner of incest avoidance as aversion (see Figure

[8] There is only one clan in the southern resident community.

4). We cannot make the empirical claim that orcas have social taboos regarding incest, but considering how many facets of their lives indicate normative participation (e.g., dialect, diet, foraging), it stands to reason that their incredibly successful incest aversion mechanisms include normative practices around mating.

A darker phenomenon that we think indicates normative practice in cetaceans, particularly norms of solidarity, is mass stranding or beaching (see Figure 5). One of the more complete accounts involves three groups of sperm whales off the coast South Australia (Evans et al. 2002). Their basic social unit is the matriline, consisting of several related adult females, as well as juveniles and calves of both sexes (Whitehead and Rendell 2015). Females generally stay within their natal groups, whereas males leave at about 10 years of age. They go on to associate with other adult males or live solitarily. Matrilineal units have distinctive dialects consisting of echolocation clicks. In the Pacific, two or three units form acoustic clans distinguished by habitat use, dialect, movement strategies, and alloparenting (e.g., some groups suckle each other's calves while babysitting).

At one stranding site, witnesses saw a tightly packed group of whales offshore. One whale separated and started swimming parallel to the shore. The whale then started swimming in a "frantic" fashion and moved inshore until she stranded on the beach. The remaining whales followed in groups of two or three and seemed to passively let the surf strand them. The final two whales to strand swam parallel to the beach, then turned and swam back past all the stranded whales. Next, they turned inshore and appeared to actively strand together a little further down the beach. None could be rescued. Stranded whales consisted of adult females and juveniles and calves of both sexes, which suggests group membership. At another site, one male was rescued, then re-stranded, was rescued again, and finally swam away. The reported behaviors suggest deliberate action. In these cases, there were no noxious sounds, which are sometimes correlated with strandings (Jepson et al. 2013). In other cases, changes in group behavior to avoid stranding were reported after larger individuals returned to the water. If the larger animals are also the leaders, then this suggests a leadership role might be involved. Whitehead and Rendell (2015) compare this kind of behavior to that of a human military group or mass suicide, where leaders are followed into certain death, and individual interests are subjugated for the sake of group cohesion.

Whether on the bright side, such as rescuing those in peril, or the dark side, such as mass strandings, cetacean social practices exhibit norms of obedience, reciprocity, caring, social responsibility, and solidarity (see Figures 1-5). The social structures and behaviors of cetaceans indicate the cognitive capacity for normative ought-thought that is foundational to normative practice and to moral psychology.

V. Implications

We are aware of some deflationary explanations of the phenomena that we are describing as normative. We want to respond in particular to the "good-mood" hypothesis and the "expectations of future help" hypothesis, as well as to the objection that scrutiny is required for morality (and perhaps even proto-morality or normativity).

One such deflationary explanation of seemingly altruistic behavior is called the "good-mood" hypothesis. The suggestion is that receiving help improves your mood, leading you to help others indiscriminately. This explanation is deflationary when

conjoined with the sense that we should only call helpful behaviors "altruistic" when they are motivated in the "right" way. People differ in the motivations they are willing to term altruistic, but it is generally linked to some non-derivative concern for the wellbeing of someone other than yourself. Of course, being in a good mood might explain why you are looking for people to help. But this explanation will nevertheless deflate attributions of altruism for those (like Kant) who thought positive mood and the benevolence to which it gives rise too transient and passively acquired to redound to the merit of the benefactor.

There is obvious empirical difficulty in trying to untangle mixed motives, particularly in beings who do not use sentential forms of language. But there is no reason why skepticism about animal altruism should operate as a default assumption. One might appeal to the principle of parsimony here, but the invocation of this explanatory virtue might be criticized in this context (e.g., Sober 2015). Moreover, the good-mood hypothesis does not seem to apply to many apparent cases of nonhuman normativity. A monkey who has recently received grooming is more likely to then share food with conspecifics, but only with the monkeys who have groomed her. This is not indiscriminant sharing, so it cannot be explained by the "good-mood" hypothesis (Brosnan and de Waal 2002). We interpret this case as evidencing dyadic reciprocity norms. But it is of course possible (indeed typical) to offer some distinct deflationary explanation of these cases too. If not good mood, then one might invoke the "expectations of future help" hypothesis, involving the kind of self-interested calculation of long-term gain equally thought incompatible with genuine altruism.

Perhaps these self-interested motivations are inconsistent with an attribution of altruism, given customary usage of that term. But are they compatible with the more general hypothesis of normative thought? Consider the "expectations of future help" hypothesis, suggesting that you help another only because you expect their help in the future. This kind of enlightened self-interest is consistent with ethical egoism, the view that the right thing to do is whatever serves one's own interests – but it is (at least potentially) incompatible with more widely accepted moral theories (e.g., utilitarianism, Kantianism, virtue ethics, care ethics, etc.).

As with the "good-mood" account, there are a couple of reasons to resist the "expectations of future help" hypothesis as a general account of the behaviors in question. First, we might be psychological egoists who think self-interest is all there is to moral cognition. Perhaps we just talk of human altruism but never display the phenomenon as we imagine it. Second, even if a given species acts from self-directed ultimate motives in the absence of other-regarding sentiments (as Vonk et al. 2008 suggest is invariably the case), this does not foreclose the possibility of cooperation or collaboration within animal communities. Grooming expectations might realize social norms that have little to do with altruism. Again, it is important to distinguish the more general category of normativity from the narrower category of moral normativity. Altruism is a narrower category still.

The role metacognition and reflective scrutiny play in normativity is closely related to these concerns. After all, we might think that what makes human morality unique is our ability to question our desires, drives, and motivations and to suppress or overcome them to act as we judge we ought. In fact, Korsgaard (1992, 2010) argues that this ability to identify one's inclinations so as to question the propriety of acting as one is inclined to act is necessary for the possession of normative concepts (like 'should' and

‘obligation’) and the normative thoughts they make possible. It is only as we humans come to ask these questions and construct reflective value schemes on the basis of our answers to them that valuing comes to exist. According to Korsgaard (1992, 2010), only humans have the substantial kind of “normative self-government” that comes from an animal’s querying its own motivations. So, we alone among the animals are moral beings.

To be clear, in criticizing Korsgaard, we are not arguing that nonhuman animals are moral agents. Our position is that members of other species engage in practices that evidence normative thought. We mean to pull apart the concepts of normativity and morality that Korgaard fuses together. But more pointedly, there are reasons to be skeptical of the claim that the ability to scrutinize one’s own prospective motivations is essential to acting for moral reasons (Rowlands 2012).

We have presented empirical evidence to support our claim that chimpanzees and cetaceans participate in normative practices (see Figures 1-5). Much of this evidence is anecdotal, and as such, one could object that it is insufficient to justify claims of nonhuman animal normativity. But under certain conditions, anecdotes can build into a reliable data set: a set of observations that can increase our knowledge of the species under observation and augment the ecological validity of subsequent experimental hypotheses and designs (Whitehead and Rendell 2015; Bates and Byrne 2007). To use anecdotes as data, Bates and Byrne (2007) recommend that (a) observers are experienced with the species, (b) original records are used because of the fallibility of human memory, and (c) multiple independent records of the same phenomenon are analyzed in combination because little can be concluded from a single observation. Thus, anecdotal data need not imply unscientific data. Further, much animal cognition data is unavoidably anecdotal, considering that some behaviors are rare or unpredictable (e.g., mass strandings), and some subject sets are small or inherently difficult to observe (e.g., non-captive cetaceans who spend most of their time out of human view).

Whale researchers have recently put the recommendations of Bates and Byrne (2007) into practice. Pitman and Durban (2009) describe a humpback whale “rescuing” a seal (see Figure 3). The seal was fleeing from predatory orcas and swam toward humpback whales. One humpback swept the seal onto her chest between her flippers. As the orcas approached, she arched and lifted the seal out of the water. Finally, the seal escaped to the safety of an ice floe. To find out if and why such “rescues” are common practice for humpbacks, Pitman et al. (2016) compiled and analyzed 115 accounts of humpbacks interacting with orcas. They include published and unpublished observations by scientists, naturalists, and lay-people, so these reports vary in accuracy, detail, and interpretation. Taking this variation into account, Pitman et al. identify a clear pattern of behavior for humpbacks. When individual humpbacks detect an orca attack, they interfere. Witnesses observed prey including humpback calves, grey whale calves, seals, sea lions, and ocean sunfish. Pitman et al. conclude that the “mobbing behavior” is targeted toward mammal-eating orcas, as observed interactions with fish-eating orcas have been peaceful. Their interpretation of the behavior posits altruism. When the intended prey and its rescuer are conspecifics, kin selection can explain the evolution of the rescuer’s motivation. When prey and rescuer are likely to interact in the future, and prey has the capacity to help the rescuer or her kin, reciprocal altruism is a reasonable hypothesis. But since these hypotheses do not fit a humpback’s rescue of a seal or sea lion, “interspecies altruism, even if unintentional, could not be ruled out” (Pitman et al.

2016, p. 2). This case shows that compiling and analyzing anecdotal evidence plays an important role both in identifying important cases and in narrowing the field of *prima facie* explanations of those cases. We have been arguing that the evidence of animal normativity is already sufficiently compelling to warrant belief, but Pittman's analysis suggests that animal altruism may be confirmed to this degree as well.

One could object that our interpretation of the evidence for nonhuman animal normative practices is vulnerable to anthropomorphism, which is the unwarranted or overly lax attribution of human traits to nonhuman entities. Some could argue that our use of terms such as 'policing,' 'friendship,' and 'cooperation' is anthropomorphic because there is something uniquely human about these capacities. For example, as we noted above, Tomasello (2016) claims that "true" cooperation is unique to humans. He argues that to cooperate, with a joint goal in joint intention, we must know what the other has in mind – take the perspective of the other, know what the other believes and desires, and know that each other knows this about the other. According to Tomasello, cooperation requires a certain kind of mindreading ability or a tacit theory of mind, which Tomasello claims[9] is unique to humans. On his view, when chimpanzees or orcas appear to be cooperating, they simply happen to have the same goal and take advantage of the effects of each other's actions to reach that goal.

We argue that anthropomorphism can be avoided by being careful about operational definitions. When searching for evidence of a trait or capacity that we know is present in humans, the operational definition should not demand more than what is typically regarded as sufficient in the human case (Andrews and Huss 2014; Buckner 2013). It is far from a settled question as to whether or not human cooperation requires the kind of sophisticated theory of mind Tomasello characterizes (Andrews 2012). For example, when they cooperate to saw a piece of wood, Keenan does not need to take Fatima's perspective or think about her beliefs in order to know that he should hold the wood while she saws. It is sufficient that they perceive that their goal is to cut wood, they have learned something about sawing wood, and they can modify their behavior according to the other's actions. To deny that this is sufficient for cooperation would exclude many cases of human activity that we intuitively or pre-theoretically describe as cooperative in nature. Cooperation typically involves learning norms and responsibilities within group activities that have a common goal, such as team sports, mass production, predation, or communal defense. Since cooperation in humans largely involves normative participation, we take evidence of cooperation in other cognitively flexible, intelligent, social species as evidence for normative practice. Support for this claim is strengthened where roles are specialized, such as in some dolphins and humpbacks (see Figure 4).

To avoid anthropomorphism, evidence should not be cherry-picked or utilized in isolation from our other commitments and observations. We recognize certain patterns of behavior in humans as constituting certain phenomenon (e.g., friendship, policing, babysitting, etc.). When we see similar patterns effecting similar ends in other social species, we are warranted in classifying them as instances of these same phenomena. That is what consistency requires, so long as the attribution of friendship, policing, or babysitting still seems apt after all the known and likely capacities of the species in

[9] While Tomasello defends this position in his 2016 book, subsequently he has been among the authors in two published papers purporting that chimpanzees understand false beliefs (Krupenye et al. 2016 and Buttelmann et al. 2017); it is unclear whether Tomasello will continue to hold this view.

question have be taken into account (e.g., their capacities for emotion, social learning, creative problem solving, etc.). We need to develop or embrace definitions of the phenomena in question to allow for unambiguous attribution to both humans and other animals. For instance, if we define "friendship" in terms of developing and maintaining affiliative social bonds, then it would be an error to deny that chimpanzees have norms of friendship. Such errors impair our knowledge of other species.

Eschewing anthropomorphism "at all costs" is a "well established convention" in science (Barrett-Lennard 2000). However, the pursuit of knowledge should not be impaired for the sake of this convention. One of its costs in animal research is that it leads to preferring the error of false negative claims over the error of false positive claims (Andrews and Huss 2014; Sheets-Johnstone 1992; de Waal 1999). The costs of this "anthropectomy" (Andrews and Huss 2014), denying that animals have properties when they in fact have them, are just as great – if not greater – than those of anthropomorphism. For example, consider the claim that pilot whales do not have culture. If this claim is erroneously accepted due to anthropectomy, then not only is knowledge impaired, but maintaining the "grindadrap"[10] tradition of the Faroe Island human culture is automatically privileged over maintaining the cultural traditions of the cetaceans (since their existence is denied). Since entire pods are killed, all the cultural information and traditions that are unique to those pods are lost forever.

We have constructed and defended a theoretical framework for examining the conceptual and empirical questions of normativity in nonhuman animals. To help determine what counts as normative practice, we merged moral foundations theory (Haidt et al. 2009; Iyer et al. 2012) with Krebs and Janicki's (2002) categories of moral norms. If we find evidence of such norms in the social practices of nonhuman animals, then we have evidence of normative ought-thought – the kind of cognitive capacity that underpins moral cognition. When we remove the anthropocentric lens that has obscured some research, we can see that some claims of human uniqueness with regard to normative practice – and perhaps even the foundations of morality – may be spurious. By disentangling the question of morality from that of normativity, we can set aside theoretical commitments within moral philosophy so as to get a clear view of the normative capacities of nonhuman animals. From this vantage point, we can investigate the further question of what makes a normative practice a moral practice, and see if any nonhuman normative practices count as moral ones.

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[10] The grindadrap is an on-going Faroese tradition dating back to the 16th century. Participants harass entire pods of cetaceans into stranding on certain designated beaches, then slit their arteries with knives, causing them to bleed to death (http://www.seashepherd.org/faroes/about-campaign/the-grindadrap.html).

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Figures

Obedience Norms		
Behaviors	*Examples in Chimps*	*Examples in Cetaceans*
Authority and subversion	Hierarchical societies in which the dominant male must be deferred to (de Waal 1982)	Male bottlenose dolphins establish hierarchical dominance relationships (Connor & Norris 1982; Connor et al. 2000)
Punishment	Destroy food stolen from them, but not food given to the other (Jensen, Call & Tomasello 2007)	After being trained by "time-outs," dolphin gives a "time-out" to researcher whenever offered food has unwanted parts (Reiss 2011)
	Lack of evidence of third party punishment in an experimental captive setting (Riedl et al. 2012)	
Teaching and obedience	Demonstration teaching, with correction (Pruetz & Bertolani 2007; Boesch 1991, 1993)	Dolphin mothers teach calves to produce and manipulate bubbles which are used in hunting (Kuczaj II & Walker 2006)
	Teach by inhibition, preventing	Dolphin mothers teach foraging tactics to

	another individual from acting (e.g., mothers pull infants away from plants not normally in diet) (Hiraiwa-Hasegawa 1990); mothers intervene when infants play with unusual or dangerous objects (Hirata 2009)	calves: pursue prey longer, make more referential body-orienting movements, and manipulate prey longer while calves observe (Bender et al. 2008)
	Adults tolerate youngsters closely watching them perform tasks and permit touching or taking tools (see Van Schaik 2003 for a review)	Orca mothers teach hunting techniques to calves: push them on and off beach and orient them toward prey (Whitehead & Rendell 2015)

Figure 1. Obedience norms: regarding relationships of authority or dominance

Reciprocity Norms		
Behaviors	*Examples in Chimps*	*Examples in Cetaceans*
Fairness and cheating	Share food that is easily divided (Hare et al. 2007)	
	Refuse to participate in tasks upon witnessing another receive a higher-valued reward (Brosnan et al. 2005, 2010)	
	Accept all offers and fail to reject unfair offers in ultimatum game (Jensen et al. 2007a)	
Direct reciprocity, cooperation, mutualism, and proportionality	Coordinate rope pulling to access food (Crawford 1937; Hirata & Fuwa 2007)	Two dominant male dolphins, but not subordinates, coordinate rope-pulling to access and share food, and then synchronously interacted with emptied container (Kucsaj II et al. 2015)
	Share food gained after hunting monkeys proportional to effort (Boesch 1994)	Orcas share prey non-aggressively: each takes a piece of prey and swims in opposite directions, tearing the meat (Guinet et al. 2000)
	Dyads with strong social bonds cooperate to get food in an experimental setting (Melis et al. 2006)	Male bottlenose dolphins form alliances that collaborate in securing consortships of females, competing with other groups to do so (Connor et al. 2000)
	Dominant male and infant coordinate lever pulling to access food, but others fail to work with dominant (Chalmeau 1994; Chalmeau & Gallo 1996a, b)	
	Share and coordinate tool use in order to gain access to food (Melis & Tomasello 2013)	

	Chimpanzees in long-term relationships share food and engage in grooming (Jaeggi et al. 2013)	
	Keep track of and tend to support past supporters (de Waal & Luttrell 1988)	
	Adults more likely to share food with individuals who had groomed them (Brosnan & de Waal 2002)	
	Chimpanzees, bonobos, and orangutans distinguish between true and false beliefs in their helping behavior; they infer a human's goal and help them achieve it (Buttlemann et al. 2017)	
Preference for individuals; discrimination	Prefer to beg from a generous human donor over a selfish one (Subiaul et al. 2008)	Bonded male dolphins perform specific affiliative behaviors with each other: synchronous swimming, petting, and adjusting signal whistles to match (Stanton & Mann 2014; Tyack 2000)
	Prefer to select more skillful collaborators in a rope pulling cooperation task (Hirata & Fuwa 2007; Melis et al. 2006)	
	Juveniles self-handicap when playing with weaker individuals; also evidence of role reversal (Hayaki 1985)	
	Remember who attacked them and are more likely to attack former attackers (de Waal & Luttrell 1988)	
	Prefer to cooperate with partners who share rewards more equitably (Melis et al. 2009)	

Figure 2. Reciprocity norms: regarding relationships of support or mutual benefit

Care Norms		
Behaviors	*Examples in Chimps*	*Examples in Cetaceans*
Caring and consolation	Console those who lose fights and reconcile after fights (de Waal & van Roosmalen 1979; Kutsukake & Castles 2004; deWaal 2009)	Cetaceans "stand by" others in distress, staying close but not offering aid, often in dangerous situations such as whaling (Connor & Norris 1982)
	Console bonded individuals in distress (Fraser et al. 2008)	
Targeted helping/hurting	No preference for food delivery method that also delivered food to a conspecific (Silk et al. 2005)	Cetaceans "support" others in distress, pressing them to the surface until the supported recovers or dies; observed intra- and inter-specifically (Connor &

		Norris 1982; Williams 2013)
	Help a human obtain out of reach objects (Warneken et al. 2007)	Cetaceans help others deliver infants and help raise newborns to surface (Connor & Norris 1982; McKenna 2015; Whitehead & Rendell 2015)
	Prefer to use a token that supplied food to self and conspecific, rather than only to self (Horner et al. 2011); note Skoyle's (2011) interpretation of this behavior as mean-spirited, not pro-social (but still normative)	Cetaceans approach injured individuals, show violent or excited behavior, come between captors the injured, bite or attack capture vessels, and push the injured away from captors; observed intra- and inter-specifically (Connor & Norris 1982)
	Help another chimpanzee even when there is no direct benefit to self (Yamamoto et al. 2009)	Dolphins approached a sailor who fell overboard, then approached search boats, going back and forth, thereby leading human rescuers to the sailor (Whitehead & Rendell 2015)
	Target individuals to kill, castrate, and disembowel (Peterson & Wrangham 2003; Boesch et al. 2008; Wilson et al. 2014)	Orcas guided lost researchers by surrounding and staying with the boat until they reached home, then swam away in opposite direction (Morton 2002)
	Males and dominants aid females and youth in road crossing (Hockings et al. 2006)	Humpback whales interfere with orca whale predatory attacks on various species, sometimes rescuing the prey (Pitman & Durban 2009; Pitman et al. 2016)
		A bottlenose dolphin guided a mother/calf pygmy sperm whale pair out of an area of sandbars upon which they were repeatedly stranding (Lilley 2008)
		A captive orca attacked and killed a human trainer at Seaworld, holding the trainer underwater too long (Kirby 2012; Neiwert 2015)
Response to loss (grief)	Mothers carry dead infants until they are mummified (Biro et al. 2010)	Adult cetaceans carry dead calves and juveniles, sometimes until they decompose (Connor & Norris 1982; Reggente et al. 2016)
	Responses to dying and death include caring for dying individual, examining for signs of life, male aggression to the corpse, all-night attendance by adult daughter,	Captive orca Bjossa remained with her dead calf for days, touching her and preventing humans from approaching (http://www.apnewsarchive.com/1995/Killer-Whale-Calf-Loses-Fight-for-

	cleaning the corpse, and subsequent avoidance of the place of death (Anderson et al. 2010)	Life/id-0a2a8961200d44de8938963260ce058b); captive orca Corky made specific distress vocalizations and refused food for days after calf died (Morton 2002)
Emotion recognition	Recognize basic emotions in facial expressions (Parr et al. 2007)	

Figure 3. Care norms: regarding the wellbeing of others

Social Responsibility Norms		
Behaviors	*Examples in Chimps*	*Examples in Cetaceans*
Loyalty/betrayal	Trust friends but not non-friends to share food (Engelmann & Herrmann 2016)	When transient orcas are detected nearby, resident orca groups move into and hold a defensive formation and vocalize in low grunts (Morton 2002)
	Form alliances with intragroup support (de Waal 1982)	Resident orca group aggressively chased and attacked a transient group, driving them into a harbor toward the beach (Ford & Ellis 1999)
Aversion and protesting	In an ultimatum game, make more equitable divisions after partner protests (Proctor 2013)	Neither sex disperses from resident orca natal groups; with no inbreeding, mating occurs within community and sometimes clan, but never the same pod (Barrett-Lennard 2000)
	Protest infanticide (Rudolf von Rohr et al. 2011)	After a human approached a dolphin calf, the mother approached the familiar tour group leader, rather than the trespasser, and tail slapped the water; authors interpret as protesting norm violations (White 2007; Whitehead & Rendell 2015)
	Bonobos protest unexpected social violations (Clay et al. 2016)	
Distribution of labor-based on skill	Cooperatively hunt monkeys in groups of four after years of training (Boesch 1994)	One dolphin ("the driver") herds fish against a wall of conspecifics; the same individual in each group repeatedly serves as driver (Gazda et al. 2005)
		One dolphin swims in circles around shoal of fish, strikes muddy bottom with tail, creating a mud-ring around fish; the rest of the group gathers outside of the ring, catching jumping fish (Torres & Read 2009)
		Humpback whales specialize in different elements of cooperative foraging; particular individuals are bubble-blowers or trumpeters

		(Whitehead & Rendell 2015)
Indirect reciprocity; cooperation for the benefit of the group	Break hunting snares, thereby protecting group members (Ohashi & Matsuzawa 2011)	Transient orcas coordinate hunting and share prey (Saulitis et al. 2000)
		Both orca and dolphin groups herd fish into balls and take turns feeding (Similä & Urgarte 1993)
		Humpback whales cooperate to corral herring, blowing encircling bubble nets, blasting herring with sound, and using their flippers (Whitehead & Rendell 2015)
		Sperm whale females take turns babysitting each other's calves while mothers dive to hunt (Whitehead & Rendell 2015)

Figure 4. Social responsibility norms: regarding social roles and duties that benefit the group

Solidarity Norms		
Behaviors	*Examples in Chimps*	*Examples in Cetaceans*
Sanctity/ degradation	Throw feces and wet food at humans (Hopkins et al. 2012)	
Liberty/ oppression	Police conspecifics by intervening to stop fights (Rudolf von Rohr et al. 2012; de Waal 1982)	
	Look longer at images of infanticide; interpreted as bystander effect by authors (Rudolf von Rohr et al. 2015)	
Group identity/ culture	Demonstrate 39 patterns of behavior that differ between communities in tool usage, food processing, grooming, and courtship; differences not due to ecological features (Whiten et al. 1999; McGrew & Tutin 1978)	Greeting ceremony: southern resident pods each forms a rank, swim toward each other, come to a halt and face each other, pause, then dive and swim together in tight sub-groups, with lots of vocalization, social excitement, and no hostility (Whitehead & Rendell 2015)
	Patrol boundaries between chimpanzee communities, sometimes invading and killing adult males and infants and stealing females (Mitani & Watts 2001; Watts et al. 2006)	Sympatric orca social groups are differentiated by dialects and diets (Ford 2002; Barrett-Lennard 2000); sympatric sperm whale social groups are differentiated by dialect (Whitehead & Rendell 2015)
	Throw rocks in particular trees, resulting in a cairn-like structure; authors interpret as ritual or	Humpback whale communities have specific songs, synchronously performed by males; songs change

	communication behavior (Kühl et al. 2016)	between and within generations and over distance as innovations are introduced (Whitehead & Rendell 2015)
		Signature whistles, petting, and synchronous swimming differentiate stable social units of Bottlenose dolphins from more loosely associated community members (Conner et al. 2000; Pack 2010)
		Northern resident orcas rub their bodies on particular underwater-pebble beaches, whereas other resident communities or sympatric transients do not; the same beaches are revisited throughout generations (Ford et al. 2000; Whitehead & Rendell 2015)
		A subgroup of the larger Shark Bay dolphin community uses sponges as foraging tools and attaches sponges to their rostrums to forage amongst sharp rocks; others sharing same habitat do not exhibit this socially learned behavior (Mann et al. 2012)
Self-sacrifice	Lack of evidence of self-sacrifice accounted for by a lack of cultural systems of reward; otherwise warfare is a good model of early human warfare (Wrangham & Glowacki 2012)	Some highly socially structured cetacean groups beach themselves in mass strandings, following each other onto the beach in a deliberate manner; typically won't leave the beach by themselves (Connor & Norris 1982; Simmonds 1997; Evans et al. 2002; Whitehead & Rendell 2015)

Figure 5. Solidarity norms: regarding social cohesion, group identity, and belonging