



Anthropomorphism, primatomorphism, mammalorphism: understanding cross-species comparisons

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Abstract. The charge that anthropomorphizing nonhuman animals is a fallacy is itself largely misguided and mythic. Anthropomorphism in the study of animal behavior is placed in its original, theological context. Having set the historical stage, I then discuss its relationship to a number of other, related issues: the role of anecdotal evidence, the taxonomy of related anthropomorphic claims, its relationship to the attribution of psychological states in general, and the nature of the charge of anthropomorphism as a categorical claim. I then argue that the categorical reading of anthropomorphism cannot work and that it misrepresents what is being claimed when one claims that traits are shared between humans and nonhumans. We should think of such claims not as anthropomorphic *per se* – because that implies the trait is intrinsically human and only derivatively nonhuman. Instead, traits shared with mammals are mammalomorphic, for example, or primatomorphic when shared by primates.

[Epigraph:]

‘Usually, he would arrive after dark. By the light on our front porch I’d see him standing in the street, looking up at our windows like a captain looking for a sailor. I would turn out the front porch light and crack the door, and Misha would slip inside for a brief visit with my family and also with his, for by then he had married [...] the beautiful Maria, and was teaching some of his skills to the four children he had fathered [with] her. But eventually he would stand poised to go out again, looking back over his shoulder to see which of us would travel with him [that night]’. – Marshall Thomas (1993, p. 6)

‘Joshua clearly didn’t understand child play. Obadiah [his son] would be in there wrassling with his buddies, having a fine time, when Joshua would suddenly pounce into the center, defending his child from his menacing playmates, bowl the kids over, tossing them every which way. Obadiah would look confused, perhaps the nonhuman equivalent of the

excruciating embarrassment kids feel when their parents prove how lame they are.’ – (Sapolsky 2001, p. 20)

Introduction

The mysterious Misha and his wife, Maria, of the first epigraph are dogs. Joshua and Obadiah of the second are baboons. Both of these selections come from engaging, insightful, and remarkably sympathetic explorations into the lives of nonhuman animals. When read as scientific descriptions, however, the two passages are a bit unsettling. Among other things, they seem to exhibit a rampant and unbridled anthropomorphism. After all, it is merely metaphorical, one feels certain, to speak of Misha and Maria as ‘married’. And, does Sapolsky really think that a young baboon’s mental processes are anything near as complicated as those of a human teenager whose father has just enthusiastically asked her friends whether they like the new Fool CD?¹

Thomas and Sapolsky are not alone in describing the complicated mental lives and social behavior of nonhuman animals. During the past several decades, a new scientific paradigm in the study of animal behavior has arisen that seeks both to be genuinely scientific and to describe animal behavior in *prima facie* anthropomorphic terms: Cognitive ethology. Cognitive ethologists attempt to understand nonhuman animal behavior using the theoretical armamentarium that has been developed by the cognitive sciences during the past 4 decades or so.² In essence, it is the ‘cognitive revolution’ come to the study of animal behavior – an area of science that has been one of the final outposts of behaviorism. Since the cognitive sciences have traditionally focused their attention on *Homo sapiens* as the paradigm of ‘intelligent’ or ‘genuinely cognitive’ behavior, the advent of cognitive ethology has resulted in the attribution of human characteristics to nonhuman animals.³ As a result, today’s hot topics in cognitive ethology include such phenomena as play (or ‘play,’

¹For the would-be lame-parent reader, the correct band name is Tool.

²For a recent sampling of the kind of work being done under the rubric of cognitive ethology, see Bekoff et al. (2002). For more on the history and philosophical foundation of the field, see Allen et al. (1997) – see also Keeley (1999).

³Bekoff and Jamieson (1991) describe the gist behind cognitive ethology thus: “Just as it is often appropriate to explain the behavior of a computer in terms of its program, so [philosopher Hilary] Putnam suggested it is reasonable to explain human behavior by reference to mental states. By assimilating mentalist language to the program states of a computer... we could be both mentalists and materialists... By the 1970s the ‘cognitive revolution’ was upon us... It was no longer out of the question for scientists to explain human behavior in mentalist terms...then it seemed natural to explain animal behavior in mentalistic terms as well.” (p. 4–5). For more on the comparison of human and nonhuman animals in the context of cognitive science, see Keeley (2000).

depending on your perspective) in nonhuman mammals & birds (Allen et al. 1994; Rosenberg 1996; Bekoff et al. 1998), rape (or 'rape') in insects (Mitchell 1996; Thornhill 2000), and theory of mind ('mindreading') in nonhuman primates (Premack and Woodruff 1978; Premack 1988; Povinelli and Eddy 1996; Keeley 2002).

But isn't anthropomorphism supposed to be a mistake? Perhaps the anthropomorphism of the two opening quotations is excusable. Although both authors are scientists – Thomas, an anthropologist; Sapolsky, a neurobiologist – the books from which these quotations are taken are offered more as interpretive memoirs than as objective, purely scientific reports. The same cannot be said about cognitive ethology. Rigorous, hardheaded animal scientists are mistaken if they literally attribute human attributes to animals. Or are they? In this paper, I will argue that the alleged sin of anthropomorphism is largely a myth; that there is nothing in principle wrong with attributing human properties to nonhuman animals. That is not to say that all such attributions are always correct – for example, I suspect that Marshall has insufficient warrant to make many of her attributions, while Sapolsky may have more evidence for his somewhat less grandiose ones. I only argue that there is no *special* problem of anthropomorphism beyond the more basic problem of incorrect attributions. Further, I will show that, if anyone is guilty of a logical fallacy, it is the *opponents* of anthropomorphism (who, for lack of a better term, I will refer to as the 'antianthropomorphites'). Indeed, perhaps ironically, if cognitive ethologists and other so-called proponents of anthropomorphism are correct, much of what is dealt with under this blanket charge are not anthropomorphic at all, and to draw such a conclusion is to commit a fundamental misunderstanding of the biological world and the place of humans within it. If cognitive ethology is correct, then a concept such as 'play' would not be *anthropomorphic* at all; it is 'mammalomorphic' or perhaps 'endothermomorphic,' in that this trait belongs more appropriately to a broader category than humans.

Beyond simply clarifying and justifying a practice fundamental to cognitive ethology – one of the cognitive sciences, after all – there are further reasons why this discussion should be of interest to cognitive scientists. Understanding the relationship between humans and nonhumans with respect to cognition will help make clear the ubiquitous role of animal models in such areas of cognitive science as developmental psychology and neuroscience. Implicit in the use of macaque monkeys for the study of visual neurobiology or for the study of parent-child bonding is an acknowledgment of our evolutionary kinship with monkeys. The truth of the matter is that cognitive science has always been comparative, although perhaps because of worries concerning anthropomorphism, explicit discussion of this aspect of the field has generally been muted. Getting clear about what is wrong (and not wrong) about anthropomorphism will allow cognitive science to come out of the closet and embrace animal models and the study of nonhuman cognition in their proper context.

A short history of the sin

What exactly is the alleged sin of anthropomorphism? Succinctly, it is the attribution of human characteristics to any nonhuman entity. The choice of ‘sin’ rhetoric here is not arbitrary. The issue of anthropomorphism initially arose in the context of theology, where the question was how to understand the nature of God (or the gods). Did God create us in His image, or have we (falsely) created Him in our own? Among the ancient Greeks, both Xenophanes and Plato (the latter, most famously, in *The Republic*) criticized poets and storytellers for attributing too many human characteristics – particularly our basest qualities – to the gods. In the Judeo-Christian-Islamic tradition, the concerns continue, albeit with a tension. On the one hand, in the Old Testament, God is depicted as walking in the Garden of Eden with Adam, while on the other, the prophets Amos and Isaiah criticize their people for thinking that God’s judgments are subject to the same influences and prejudices that afflict human judges. During the Medieval period, the degree to which it is legitimate to anthropomorphize God was (and, for that matter, continues to be) an important question for Hebraic, Christian, and Islamic scholars. In his *Dialogues Concerning Natural Religion*, Hume has the character Philo (the skeptic) call Cleanthes (the orthodox believer) an ‘anthropomorphite’ for attributing human characteristics to God.

Laurie Anderson once sang, ‘Paradise is exactly like where you are right now... only *much, much better*.’ Those who would anthropomorphize God take a parallel approach: to understand the nature of God, consider your own human properties and extend them – consider what they would be if much, much better – and then attribute those perfected qualities to God. Anti-anthropomorphites point out that such a method is illegitimate. God and humans are in different categories. Or, perhaps, the divine is so far beyond our human powers of understanding that God might as well be in another category. Antianthropomorphites suggest that we are in an interesting epistemic situation with respect to God. We *know*, they argue, that we *cannot know* the nature of God in detail; God is so great as to be literally incomprehensible. From that we can conclude that any attempt that makes God comprehensible (perhaps the greatest appeal of theological anthropomorphism) must therefore be fallacious or wrongheaded from the get-go.

Starting in the late 19th century, anthropomorphism began to take on a new sense in a different arena: the scientific understanding of nonhuman animal behavior. As the study of animal behavior transformed from the province of gentleman naturalists and explorers into a respectable, scientific enterprise, two early camps developed. One group, including Charles Darwin (1871, 1872) and his disciple, Romanes (1882), citing the evolutionary continuity of all extant species, found it appropriate to use a continuous descriptive language, whether talking about humans, chimpanzees or octopi. Therefore, on their view of things, it might well be scientifically appropriate to speak of playing in *Canids*. The other group, including Morgan (1894) and Watson (1930), feared that the human

propensity to anthropomorphize might lead us astray and make us accept human attributions to other animals where nothing like the human phenomenon was going on. The latter camp accuses the former of committing the fallacy of anthropomorphism. As a later opponent of anthropomorphism puts it,

Almost all of our words have some sort of human connotation, imply some sort of human motivation and purpose. But such motivation and purpose may have no relevance to the behavior of other animals, and we must constantly guard against unwarranted attribution of human characteristics to other species. Anthropomorphic or teleological thinking has no place in a scientific study of animal behaviour... English (like all human languages), having been developed around human activities and human interpretations, inevitably reflects these, often with a strong cast of supernaturalism. ... You are cautioned, therefore, to recognize the pitfalls inherent in any application of human-oriented language to the activities of other animals. (Keeton 1967, p. 452; quoted in (Kennedy 1992))

That is to say, whatever baboons are doing when they ‘wrastle’ (as Sapolsky puts it), it is clearly *not* what humans do when they ‘play,’ with all the connotations that human term implies.

A debate unresolved

The cognitive ethologists are the contemporary heirs of the Darwin/Romanes’ side of the issue. Griffin (1976, 1984, 1992), generally considered the founding father of cognitive ethology, is explicit: anthropomorphism is *not* an evil to be avoided. Noting that, traditionally, students of animal behavior refuse to consider the possibility that animals might be thinking as they are behaving, Griffin (1992) declares,

We were, in effect, brainwashed... When one carefully examines such charges of anthropomorphism, it turns out that whatever it is suggested that the animal might do, or think, really *is* a uniquely human attribute. Such an assumption begs the question being asked because it presupposes a negative answer and is thus literally a confession of prejudgment or prejudice.... When applied to the suggestion that animals might think about simple things that are clearly important to them, this charge of anthropomorphism is a conceited claim that only our species is capable of even the simplest conscious thinking. (p. 24, emphasis in original)⁴

⁴Griffin (1992, pp. 24–26) calls this dogmatic refusal to attribute human traits to nonhuman animals an ‘inverse ‘Clever Hans Error.’ (See below for a discussion of this historical case.) Sheets-Johnstone (1992, pp. 345–346) also speaks of ‘reverse anthropocentrism,’ in a way that parallels Griffin’s discussion.

The other side of the aisle is taken by the intellectual descendents of Morgan and Watson – a group (Kennedy 1992) refers to as the ‘neo-behaviorists.’ He writes:

If the study of animal behavior is to mature as a science, the process of liberation from the delusions of anthropomorphism must go on. The more so, because what we have been witnessing recently is, on the contrary, less awareness of the dangers, with more indulgence towards and even some resurgence of traditional explicit anthropomorphism; that bodes ill for this branch of science. (p. 5)

Kennedy is not alone. Explicitly taking on what they feel are the descriptive excesses of Griffin and others, comparative psychologists Blumberg and Wasserman (1995),

...submit that it is this very goal of investigating animal consciousness that, although grand and romantic, falls far outside the scope of a scientific psychology that has struggled for the better part of the past century to eschew such tantalizing, but ultimately unsubstantiable, analyses of subjective mental experience. (p. 133)

Notice that the debate here is not empirical. The debate is meta-scientific; it is philosophical. The participants are not so much throwing data and experimental findings at one another (although, you will certainly find both in the literature on both sides of the debate). Rather, the debate here is primarily over such things as the appropriate and inappropriate ways to *interpret* such data, what does and does not fall within the scope of science, and what prejudices and irrational biases scientists bring (or should bring) to the study of animal behavior. Bekoff and Allen (1997) make this point in the form of a comment on those scientists who are most highly critical of the scientific basis of cognitive ethology – a group they refer to as ‘slayers’:

...it is ironic that [...] premises, which can only be defended in non-empirical, philosophical fashion, are produced by critics who would typically regard themselves as hard-nosed empiricists. Cognitive ethologists do empirical work, yet slayers who argue on such philosophical grounds rarely analyze that empirical work to see what it is designed to show and whether it in fact shows what it is designed to show. Instead, they base their arguments on claims that are at least as fraught with interpretive difficulty as the cognitive conclusions they wish to deny. This unwillingness to engage in debate about the actual empirical work of cognitive ethologists gives the impression that many slayers simply barge in, declare victory, and get out without genuinely engaging cognitive ethologists in a dialogue about their work. (p. 321)

This being the case, we need to get clear about exactly what's going on in this philosophical debate. We need to identify and discard any red herrings. We need to get clear about the nature of the charges being leveled by one side against the other. This will be the goal of the following section, and it may contain some surprises, despite the pedestrian nature of the charge of anthropomorphism. There is both more and less to this claim than is commonly understood. After getting clear about what the debate is all about, in 'Anthropomorphism, primatomorphism, mammalomorphism', I will try to convince you of better way to think of the relationship between human and nonhuman animals – a way that, in a sense, transcends the anthropomorphism debate as it is ordinarily understood.

Anthropomorphism is independent of anecdotalism

The first red herring that we need to identify and discard is anecdotalism. Darwin and Romanes' early efforts to establish the continuity of human and nonhuman traits were not only anthropomorphic, their evidence was also *anecdotal*. They made their case on the basis of stories of individual animal achievements, and they were criticized for accepting those stories rather uncritically.⁵ As the story of Clever Hans reveals, it is often extremely difficult to get to the bottom of animal behavior. Hans, who was exhibited in turn of the century Berlin, was purported to have significant mathematical and other astounding abilities (for a nonhuman animal, that is).⁶ In 1904, an eminent committee of behavioral scientists even issued a report indicating that they were unable to detect any fraud or subtle communication between Hans and his human interrogators. However, later that year, two members of that committee, Oskar Pfungst and Wilhelm Stumpf, issued a follow-up report describing their discovery that Hans was indeed picking up on extremely subtle and apparently entirely unintentional cues provided by the people around him. This unmasking was made possible by careful experimental controls that denied Hans any access to these cues.

In other words, what the case of Clever Hans taught the scientific community is that mere uncritical anecdotes about the behavior of animals is insufficient evidence for determining their traits and capacities. Instead, careful and rigorous experimental investigation is essential. Whether experimental evidence is always superior to anecdotal reports is not the issue of

⁵This criticism is not restricted to antianthropomorphites. In their essay attempting to legitimize cognitive ethology and distinguish it from flawed earlier endeavors, Jamieson and Bekoff (1993) term the approach of Darwin and Romanes as 'anecdotal cognitivism.' They go on to identify its methodological failings and distinguish it from the more experimental modern science of cognitive ethology.

⁶The classic review of this historical case is Rosenthal (1965).

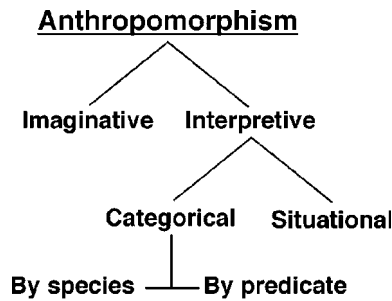


Figure 1. A taxonomy of anthropomorphic claims. (Adapted from Fisher (1996).)

this essay.⁷ However, it is important to note that the anecdotal quality of evidence is independent of its anthropomorphic quality. One can offer anti-anthropomorphic anecdotes of animal traits just as well as one can offer anthropomorphic stories. If there is something epistemically problematic about anecdotes, then both sets of evidence should be suspect. However, it is entirely possible to be an experimental anthropomorphite – indeed, that is exactly what cognitive ethology purports to be. Griffin (1984) is explicit: ‘A cognitive approach to ethology offers the hope that *testable hypotheses* can be developed, along with methods by which the thoughts and feelings of animals can be studied objectively’ (v, my emphasis). ‘Testable hypotheses’ imply experiments; that is, cognitive ethology should be an experimental, not a purely anecdotal, science.⁸ For this reason, let us set aside the independent issue of anecdotalism and focus our attention specifically on anthropomorphism.

Fisher’s taxonomy of anthropomorphic claims

Anthropomorphism cobbles together a number of different senses, only some of which are relevant to the case at hand. Therefore, we need to get a little clarity on the concept itself. Fisher (1996) has provided a good start on the job,

⁷For a discussion of the potentially positive role of anecdotes in the study of animal behavior, see De Waal (1991). A good source for many points of view on both anecdotes and anthropomorphism are the papers collected in Mitchell et al. (1997).

⁸It should be noted that – the just-quoted claim aside – Griffin does rely too heavily on anecdotal evidence, at least enough so to draw the attention of exactly those cognitive ethologists for whom he has paved the way. For example, Allen and Bekoff (1997) complain that Griffin, ‘...often does not tell us *how* to go about empirically testing his and others’ ideas. Rather, he primarily tries to convince readers of the possibility of animal cognition by citing numerous examples that indicate consciousness and thinking... It is up to others to pick up where Griffin leaves off by using his collection of anecdotes, his discussion of empirical research, and his ideas to motivate new and highly innovative studies, the bases for which might not have been obvious before his work’. (p. 36, emphasis in original)

and it is worth reviewing here his conceptual scheme embodied in the figure I have reproduced as my Figure 1.⁹ The first distinction he draws is meant to separate the kind of anthropomorphism at which the Disney Corporation excels from that proposed by anthropomorphically inclined scientists. By ‘imaginative anthropomorphism’ Fisher means, ‘the productive activity of representing imaginary or fictional animals as similar to us’ (6). This sort of representational *production* needs to be distinguished from ‘interpretive anthropomorphism,’ which is the *explanatory* gambit of interpreting an animal’s traits as being caused by similar mechanisms or constituted in ways similar to human traits. It is this latter explanatory strategy that is at issue in the present debate. Imaginative anthropomorphism is one of the herrings to be avoided, and I will do so in the rest of this essay.

Focusing then on interpretive anthropomorphism, Fisher proposes a further distinction. When evaluating a particular trait attribution as anthropomorphic, there are two ways in which to understand this: ‘*Categorical Anthropomorphism* involves ascribing [traits] to creatures to which the [traits] don’t ever in fact apply.... By contrast, *Situational Anthropomorphism* occurs when we misinterpret an animal’s behavior in ways that could possibly apply to that animal in other circumstances, but which do not in the situation in question’ (6, emphasis in original). For example, at zoos, visitors often misinterpret the bared teeth of some primates as ‘smiles’. This is a mistaken interpretation; but the present distinction underlines that it can be wrong in two different ways. One might argue that while chimps can indeed express a positive and inviting emotional expression (a smile), the bared-teeth display just isn’t it; the baring of teeth is a *threat* gesture. This would be to make a situational anthropomorphic error. However, more dedicated antianthropomorphites may well deny that chimps *ever* smile, in the human sense of the term.

While the situational case is, by definition, a mistake, it does not seem to be the precise *kind* of mistake alleged by the opponents of anthropomorphism. It is only possible to identify a situational anthropomorphic error empirically. For example, in the case at hand, one would have to conduct an ethological study of chimpanzees to determine what their various facial expressions mean and then determine whether calling the bared-teeth display a ‘smile’ is correct. However, this does not seem to be what the antianthropomorphites cited above have in mind. At issue for them is a broader fallacious line of reasoning, and the kind of category error suggested by the latter half of the distinction fits the bill better. On this reading of the charge, one need not conduct an ethological study of chimps to determine whether the bared-teeth display is a smile. They are chimps and the term ‘smile’ cannot (or should not) be applied to a member of that category. This is a charge of categorical anthropomorphism.

⁹The title of Fisher’s essay – ‘The myth of anthropomorphism’ – gives away his main conclusion. In large measure, I see my essay as reaching the same conclusion. I see my essay as an addendum to, and an extension of, Fisher’s arguments. If you are unconvinced by the arguments I put forward here, you may be convinced by his; or, vice versa.

Finally, Fisher notes that a still further distinction can be drawn within the class of categorical anthropomorphic errors. (1) *Species type*: Unwarranted attribution of any human traits to a *particular species*. That is, it might be argued that the attribution of rape to flies is incorrect because *insects* cannot exhibit any such *human* qualities, but perhaps such an attribution *could* conceivably be warranted in the case of *chimpanzees*. Categorically speaking, insects are off-limits, but chimps are open to consideration. (2) *Predicate type*: The issue here is not over which species may or may not be attributed a given trait, but rather *which traits* may appropriately be attributed. So, while the attribution of rape to humans and nonhumans alike might be warranted, one might be tempted to restrict the attribution of complex social embarrassment, such as that attributed by Sapolsky to Obadiah in the opening quotation, to humans alone. In sum, species type anthropomorphism restricts the attribution of human traits to particular species, while predicate type restricts the attribution of particular traits. While both of these charges are open to the critic of anthropomorphism, it is best to be clear exactly what kind of mistake is being alleged. Fisher's distinctions will be useful to hold in mind during the rest of this discussion.

Anthropomorphism need not necessarily be psychological

One curious thing about the anthropomorphism debate is that it is often centered on the attribution of human *mental* or *psychological* traits to other creatures, yet the justification for this restriction is far from clear. Further, it is often simply assumed without discussion. For example, Fisher (1996) explicitly restricts his discussion of anthropomorphism to the attribution of what he terms 'M-predicates': 'the class of extended mentalistic predicates: predicates referring to mental states and processes, cognitive and emotional, as well as verbs of action (e.g. 'hunt,' 'play') and predicates of moral character and personality (e.g. 'loyal,' 'brave,' 'sneaky')' (5). Asquith (1984) defines anthropomorphism in the context of animal behavior as, 'the ascription of human *mental experiences* to animals' (p. 138, my emphasis). Blumberg and Wasserman (1995) never explicitly define anthropomorphism, but their article seems to treat it as synonymous with a 'mentalistic approach' to the study of animal behavior (133). Indeed, a 'mentalistic approach to the study of animal behavior' is not an unfair description of what cognitive ethology is all about (see the passage quoted in Footnote 3, above). For many critics of the field, the claim of anthropomorphism is part and parcel with their conviction that 'cognitive ethology' is simply an oxymoron, or a category error in and of itself.

The clear historical precedent for this focus on the mental is one of the earliest and clearly stated proscriptions against anthropomorphic reasoning: Morgan's Canon. In his influential 1894 work, *An introduction to comparative psychology*, Morgan enjoins students of animal behavior: 'In no case may we interpret an action as the outcome of the exercise of a higher *psychical faculty*,

if it can be interpreted as the outcome of the exercise of one which stands lower in the psychological scale' (p. 53, emphasis added). However, as Sober (1998) notes in his discussion of the Canon, if Morgan's principle is the general evolutionary principle that its proponents purport it to be, then it should not be restricted to psychological traits:

For example, if an organism is able to digest a particular protein, we may ask what internal mechanism enables it to do so. Morgan tells us to prefer a hypothesis that attributes a lower digestive mechanism over a hypothesis that attributes a higher mechanism. Comparative psychology is a branch of comparative biology. (pp. 225–226)

However, as Sober (1998) discusses in detail, interpreting the Canon as a principle of parsimony does so at the cost of rendering it clearly false. In the case of nonpsychological traits, Mother Nature is not necessarily parsimonious and there is no clear reason to believe she makes an exception for psychological ones.

Furthermore, the placement of the debate in a larger, biological context is appropriate to the history of the term. While theologians have clearly been concerned about the attribution of human goals and desires (that is, psychological attributes) to God, they have held that debate alongside discussion over whether God should be considered to have *literally* walked in the Garden of Eden (which would imply that He has legs – a human attribute). After all, the term here is *anthropomorphism*, not *anthropopsychism*!

However, this etymological point might just be an historical accident. If the discussion so far is correct, it seems that the would-be antianthropomorphite could agree with Sober's position that comparative psychology, cognitive ethology, etc. are indeed branches of (or at least should not contradict) evolutionary biology. If this means not singling out specifically mental traits as the logical basis for the charge of anthropomorphism, so be it. As appealing as this route might be, unfortunately, it does not work, but I need to postpone the discussion of why until after the next section.

Anthropomorphism is not simply unwarranted attribution

The preceding discussion should make it clear that the charge of anthropomorphism is a very specific kind of claim. It is intended to demarcate a particular kind of mistake. Not just any unwarranted attribution is open to the charge of anthropomorphism. Anthropomorphism is not simply to make an incorrect or unwarranted attribution. If that were all there was to it, there wouldn't need to be a *special* proscription to 'Eschew anthropomorphism!' 'Eschew unwarranted attributions of any kind!' would be enough. Not to mention, completely unnecessary. Presumably we would all like to avoid saying false and unwarranted things. This is why I said before that what we are after

here is more akin to Fisher's 'categorical' than his 'situational anthropomorphism.' The case of situational anthropomorphism is merely to make a false attribution that, conditions being different, might well have been true. Situational anthropomorphism is an empirical error, not a logical one.

That anthropomorphism is not simply an unwarranted attribution is also clear from the fact that the way we typically judge whether attributions are warranted is by empirical means. We look and see, so to speak. However, as noted above, anthropomorphism is judged by its critics as something that we can know to be false or unwarranted *a priori*. It is a category error; a logical fallacy. Presumably, it would be misguided to attribute detailed knowledge of the theory of quantum gravity to either Clever Hans or to the average college undergraduate. But only the first attribution is open to a charge of anthropomorphism. According to this line of thought, horses belong to a different category of being – a category that we know *a priori* not to contain quantum-gravity-understanding entities. It may well be the case that a given college undergraduate is unfamiliar with quantum gravity, but she *could* have been (say, if she were the next Richard Feynman, knowledgeable of contemporary theoretical physics from a relatively young age). It is not to commit a category error to attribute knowledge of quantum gravity to the members of the undergraduate student body. Hans is a horse of a different color though. Or at least, this is what must be the case if anthropomorphism is to define it as the special kind of mistake its proponents present. In his own discussion of Fisher's taxonomy, Mitchell (1997) makes the same point, writing that, '...most authors writing about inaccurate anthropomorphism are concerned with the categorical variety' (p. 410).

Finally, the categorical understanding of the charge of anthropomorphism in the context of animals renders it consistent with the theological origin of the concept, as discussed in "a short history of the sine" above. In its original guise, a noncategorical reading is a nonstarter. Given the sort of being God is purported to be – by all parties in the debate – rules out anything but a categorical understanding of the claimed fallacy. God is not the sort of being open to empirical comparison with humans, or anything else for that matter. In fact, God's eminent nature is the very thing that marks God as a member of a unique category, essentially different from all creation. The very same kind of argumentative framework seems to be what is at play in the historically more recent use of the charge of anthropomorphism in the debate over the proper understanding of nonhuman animals.

Anthropomorphism, primatomorphism, mammalomorphism

The upshot of the preceding section is manifold. Anthropomorphism is not a matter of anecdotalism. It is illegitimate to restrict it to psychological traits (although there will be more on this below). The term is commonly used in a variety of ways, but the most powerful understanding of it in the current

context is that it is not just any kind of mistake, but rather a form of category error.

If my above analysis is correct, the dialectic between those who would anthropomorphize nonhuman animals and those who reject this explanatory strategy goes something like this: The anthropomorphite proposes that some nonhuman trait should be understood in ways consonant with a trait possessed by humans, say, that canids should be said to ‘play.’ The anti-anthropomorphite responds that to make such an attribution to canids is fallacious; that to attribute this human trait to this nonhuman animal is to commit a category error of some type (depending on whether the given charge of anthropomorphism is by predicate or by species). The anthropomorphite then responds that we simply cannot know *a priori* whether a given human trait is or is not uniquely human, or whether a given species shares any human traits (and hence whether the charge of anthropomorphism has merit in the case at hand).

Here’s where a problem arises. The next step in the dialectic is prompted by the phrase, ‘whether a given species shares *any* human traits.’ Recall that in Fisher’s schema, a claim of categorical anthropomorphism – the more robust form of the charge that concerns us here – will fall into one of two classes. Some anthropomorphic claims are such by virtue of the predicate attributed; that particular predicate is (allegedly) uniquely human and should never be attributed to nonhumans. Other claims are anthropomorphic by virtue of the species being predicated of; such-and-such species shares no traits with humans so any attribution of a human trait to them commits a category error. But as so described, anthropomorphism-by-species should raise the hackles of anybody with even passing familiarity with modern biology. There is perhaps no more fundamental corollary of post-Darwinian biology than that all life on earth is related, and hence share traits with one another. A central tenet of modern evolutionary theory is that, in a sense, all life on earth shares a literal ‘family resemblance’ because we are all situated on the same, huge family tree.

This brings us back to the earlier discussion of attempts to restrict claims of anthropomorphism to ‘cognitive’ or ‘mental’ attributions to nonhuman animals. Recall that in Fisher’s discussion of the taxonomy of anthropomorphism, he explicitly limits his discussion to the attributions of ‘M-predicates,’ i.e., the attribution of *mental* properties, not any number of other traits that humans and nonhuman animals might be said to share. As a result, at the very top level of his schema, there is already a by-predicate cut being made long before you get to the by-predicate/by-species distinction at the bottommost level of his hierarchy. His whole schema of anthropomorphism is already limited to the attribution of *mental* predicates, such that when we get to the bottom and talk about an anthropomorphic claim by virtue of species predicated of, it is *already* assumed that we are only talking about the attribution of specifically mental predicates to a particular species. Therefore, we need to augment his taxonomy with an additional cut at the top of the hierarchy reflecting this initial distinction concerning the traits under consideration (Figure 2).

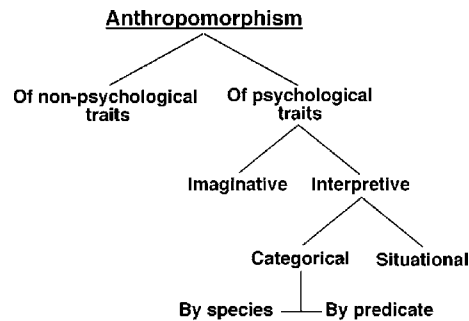


Figure 2. Revised taxonomy of anthropomorphic claims.

This is not to fault Fisher in any way. Indeed, he is merely accurately reflecting contemporary charges of anthropomorphism on the hoof, as it were. As a matter of fact, almost all claims of anthropomorphism are claims that it is illegitimate to attribute specifically human *mental* properties to nonhuman animals. Bekoff and Allen (1997) also note this; they conclude their paper with the observation that, ‘Our analysis of criticism of cognitive ethology as a scientific discipline has [...] revealed the large extent to which critics depend on philosophical views about the nature of mind’ (331). Yet now we see the *reason* for such a delimiting move on the part of the opponents of anthropomorphism. It has to be done to avoid running afoul of evolutionary considerations. We now see the tightrope that the antianthropomorphite must walk. To make the charge of a category error stick in the case of anthropomorphism, there needs to be some essential feature of the human kind that makes it a different type of entity than nonhuman kind. Ever since Darwin, the obvious feature – our unique species membership as *Homo sapiens* – is not an option. Merely being a member of a different species does not rule out the possibility of cross-species comparison, indeed, Darwinism implies that there will be many such legitimate comparisons. (This is the most obvious explanation for why Darwin himself was an anthropomorphite.) Instead, some *other* essential feature must be found to establish the category – to wit, mentality.

Yet, to simply assume *a priori* that human mental properties are not shared with our nonhuman evolutionary relatives begs the question. To rule out anthropomorphic attributions *a priori*, instead of addressing them individually, empirically, and on a case-by-case basis, we commit what Sheets-Johnstone (1992, pp. 345–346) accurately terms ‘reverse anthropocentrism’. The connection between anthropomorphism and anthropocentrism is an important one that now needs to be addressed. As the preceding discussion should make clear, the dogmatic refusal to attribute human traits to nonhuman animals has a strong flavor of anthropocentrism about it – seeing humanity as not only separate from, but also superior to, other species. This human-centered valence is explicit in Morgan’s Canon: ‘In no case may we interpret an action as the

outcome of the exercise of a higher psychological faculty, if it can be interpreted as the outcome of the exercise of one which stands lower in the psychological scale.' It presupposes a scale of value from lowest to highest. And guess who resides at the top of that scale? Humans, of course. Sheets-Johnstone concludes,

Man is indeed the measure of all things in a reverse anthropocentrism – *man* understood here not as independently perceiving individuals but as self-privileging beings apportioning sub-mental credit to the whole of creation from on high. Indeed, reading out [humanness] is an aggrandizing gesture by which the whole human species is plucked out – saved as it were – from its place in the evolutionary mainstream of life. (p. 346, emphasis in original)

So, it is at this point in the dialectic that the anthropomorphite can turn the tables on her opponent. If the anthropomorphite is correct in rejecting the special status of the mental and in accepting the Darwinian interrelatedness of all life on Earth, then she can accuse the antianthropomorphite of committing his own category error. Much of what the antianthropomorphite calls 'anthropomorphism' is no such thing at all; that is the wrong category.

To see what I am getting at, consider that when a cognitive ethologist makes a claim that is allegedly anthropomorphic, say, that both humans and monkeys make use of a theory of mind, this is against an assumed Darwinist background. It is made assuming that which can be assumed without saying in post-nineteenth century biology: that monkeys and humans are relatively close evolutionary relatives. They are both primates and that we share a common ancestor who was the proto-primate and whose progeny gave rise to modern humans and monkeys, not to mention the rest of the nonhuman apes. Therefore, the claim that both humans and monkeys make use of a theory of mind is not to make an *anthropomorphic* claim at all. Instead, it is better thought of as making a claim about *primates*. Indeed, very often the crux of a claim of a shared trait between human and nonhuman animals is that we share those traits in virtue of our shared ancestry. In the language of comparative biology, such shared traits are homologous.¹⁰ Hence, it is a category error to speak of such a trait as 'anthropomorphic' at all. Instead, it is more accurately thought of as 'primatomorphic' (a trait shared by and perhaps largely unique to primates) or 'mammolomorphic' (a trait shared by and perhaps largely unique to mammals). For humans to lay primary or exclusive claim to a trait shared between our nonhuman evolutionary relatives and us is to make the anthropocentric basis of the charge of anthropomorphism most evident.

However, not all traits discussed by cognitive ethologists are homologous in nature. They are not always the product of a shared evolutionary lineage between the two species being compared, such as in the case of many attri-

¹⁰I will address analogous traits below.

butions of apparently human traits to our primate relatives. Sometimes, environmental contingencies are such that two distantly related species will evolve the same trait, even though their common ancestor likely did not have that trait. This is the process of convergent evolution and comparative biologists speak of these shared traits as analogous. Yet even when such traits have been hit upon independently in two or more lineages, it can still be very useful to compare the two instances of the same trait.

Take, for example, the phenomenon of ‘Theory of Mind,’ the alleged capacity of one organism to reason about the psychological states of another. ‘Alleged’ in the case of nonhumans, at least, as it is considered a commonplace that normal humans have this skill.¹¹ The question of much debate is whether (or to what extent) nonhumans should be said to have this skill. When it comes to chimpanzees and bonobos, there those who argue that they too can reason about the minds of others (Savage-Rumbaugh et al. 1998). There are also detractors whose experiments purport to show that while these close human relatives are extremely clever in many ways, they do not understand the nature of occult mental states in others, and that theory of mind is a unique human cognitive adaptation (Povinelli and Eddy 1994, 1996).

On my reading, what is going on in this debate between these scientists is a debate over the comparative extent of the mindreading capacity.¹² According to Savage-Rumbaugh and her colleagues, the ability to reason about other minds is an apeomorphic trait (at the very least, it might turn out that it is shared by monkeys, in which case it would be better understood as ‘primatomorphic’ in nature). In Povinelli’s understanding of the results of his experiments, theory of mind is genuinely anthropomorphic; that is, that it is a unique human adaptation not shared with any other species so far studied. All species are unique and have adaptations not shared with others and Povinelli suspects that mindreading is such a unique feature of *Homo sapiens*.¹³

But note that Povinelli’s anthropomorphism is not categorical in the sense we’ve been discussing as it is something we can only know after a great deal of experimental exploration. Indeed, the reason that it is not categorical in the same sense is that here the categories themselves are still up for grabs, scientifically speaking. In trying to decide whether a given trait possessed by humans is genuinely anthropomorphic, primatomorphic, mammalomorphic, etc., much scientific work needs to be done to determine exactly to what the categories of

¹¹There is debate concerning whether certain psychologically abnormal individuals, particularly those with autism, fully possess it (Frith 1989; Baron-Cohen 1995).

¹²Relative to my earlier discussion, it should also be noted that the debate here is an empirical one. There isn’t a struggle over semantics between these two groups of scientists, but rather a to-and-fro over the experiments themselves and what they can be said to show based on their respective methodologies, control studies, etc.

¹³I should be fair and note that I am over-reading the state of this debate a good bit. Both sides of the debate think that the jury is still out and that more experimental and theoretical work needs to be done before we should feel comfortable drawing any strong conclusions. What I am characterizing here is the state of opposing working hypotheses that seem to be motivating the debate.

'human,' 'primate,' or 'mammal' amount. In large part, the debate over theory of mind is a debate over what it means to be human or a chimpanzee or an ape. As traditionally understood, the charge of anthropomorphism presupposes that such categories are well-understood and then attempts to make use of that alleged fixed point.

Getting clear on this aspect of the debate, that what is at issue are the categories themselves, the very thing that antianthropomorphites take for granted, shows exactly how these critics go wrong. As Griffin notes in an earlier quotation, the opponents of anthropomorphic reasoning are begging the question against anthropomorphites when these opponents make a categorical charge. de Waal (1999), too, stresses the importance of being as clear as possible about exactly what is (and is not) being argued about in such debates:

Thus, while we should be reluctant to postulate capacities for which there is no evidence anywhere in a species' behavior, charges of anthropomorphism are meaningless without a precise critique of the hypotheses under consideration. In a Darwinian framework, there is no good reason to avoid concepts merely because they derive from the behaviors of the species to which we belong. Application of these concepts to animals not only enriches the range of hypotheses to be considered, but it also changes the view of ourselves: the more human-like we permit animals to become the more animal-like we become in the process. (272)

De Waal's final point is important because it brings us back to the theological starting place of the concept of anthropomorphism (albeit, unwittingly). To see purported claims of anthropomorphism instead as biologically broader claims of primatomorphism, mammalomorphism, etc. not only changes our understanding of our primate and mammalian kin, it also leads inevitably to a new understanding of our nature as human beings. It is a process of redefining the category of 'humanity.' That which we have traditionally held on to as ours and ours alone may have to be shared with those who are nonhuman. This process is, by its very nature, de-centering. It undermines our position as superior to other elements of creation on the Great Chain of Being.¹⁴

Situated above humanity on that chain is God. The original, theological use of the charge of anthropomorphism was exactly to prevent the removal of God from that eminent position in our ontology. We can easily paraphrase de Waal's final sentence above to capture exactly what bothered those early theologians about anthropomorphizing God: Application of human concepts to God not only enriches the range of hypotheses to be considered, but it also changes the view of God: the more God-like we permit humans to become the more human-like God becomes in the process. While this conclusion may be

¹⁴The idea that the science of animal behavior undermines the Great Chain of Being is a central theme of Savage-Rumbaugh et al. (1998).

comfortable to 20th-century existentialists, it was anathema to most Medieval theological scholars.

Categorically ruling out anthropomorphism in the theological context was their response. However, my point in this paper is to underline that such a categorical approach is illegitimate in the post-Darwinian science of animal behavior. The study of animal behavior is (or at least, ought to be) scientific, not theological in method.

If what I have urged in this essay is correct, then the fallacy of anthropomorphism is largely a myth. Further, far from being a fallacy, it is the opponents of anthropomorphism who lie in danger of committing a fallacy. Only empirical work in comparative biology (and, we now see, comparative psychology and cognitive ethology) can tell us what traits we do or do not share with particular nonhuman species.

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