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Darwin, Hume, Morgan, and the verae causae of psychology

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ABSTRACT

Charles Darwin and C. Lloyd Morgan forward two influential principles of cognitive ethological inference that yield conflicting results about the extent of continuity in the cognitive traits of humans and other animals. While these principles have been interpreted as reflecting commitments to different senses of parsimony, in fact, both principles result from the same vera causa inferential strategy, according to which "We ought to admit no more causes of natural things, than such as are both true and sufficient to explain their appearances". Instead, the conflict stems from Darwin's and Morgan's views about the true causes of human psychology. Darwin holds a thoroughly Humean philosophy of the human mind, from which he infers significant continuity between human and animal minds. In contrast, Morgan argues that Humean cognitive mechanisms cannot account for a class of uniquely human behaviors, and therefore, he concludes that there is a significant discontinuity between human and animal cognition. This historical debate is informative for current controversies in comparative psychology.

1. Introduction

Cognitive ethology, the project of inferring the nature of non-human minds, faces several unique obstacles. The first is that the mental states of others cannot be directly observed. Therefore, comparative psychologists have argued that knowledge about them must proceed via a double induction (Morgan, 1894). First, we must induce the relationships between the mental states that we can observe – our own – and their corresponding observable effects in behavior. Then, from a degree of similarity between animal behavior and our own, we induce a degree of similarity of their corresponding psychological causes. On this view, then, the inferences we draw about the psychological causes of animal behavior depend both on our theory of the psychological causes of human behavior and the principles by which we infer common mental causes from common behavioral effects.

Another obstacle arises when cognitive ethology is placed within an evolutionary context that acknowledges our close phylogenetic relationships with other animals. Human cognitive traits have evolved from more rudimentary ancestral cognitive traits, and given the relatively short period of time since our last common ancestor, we are likely to share much of our cognitive architecture with our closest primate relatives. Such considerations motivate a presumption of continuity in the psychological traits of humans and other animals. On the other hand, despite our recent common ancestry, there appear to be significant differences in human and non-human behavior – humans are the only species to have sophisticated language, culture, tool use, and scientific reasoning – and these seeming discontinuities motivate a conflicting presumption of discontinuity in their mental causes as well.

Because of the unobservability of psychological states and prominent considerations of both similarity and differences with animals, cognitive ethologists have utilized general principles to guide their inferences. Here, I will examine two historical principles that favor different presumptions in the debate over our mental continuity with animals.[1] The first, offered by Charles Darwin, states:

> I can see only one way of testing our conclusions. This is to observe whether the same principle by which one expression can, as it appears, be explained, is applicable in other allied cases; and especially, whether the same general principles can be applied with satisfactory results, both to man and the lower animals (2009, p. 25).

[1] In light of my historical focus here, I should note that, for the sake of continuity with current debates, much of my discussion will use the terms of modern contemporary psychology, despite the fact that some of these terms were not used by authors in question at all (for example, Darwin did not speak of "behavior") or were used in different ways by different authors. When an author's use of a term matters for philosophical or historical exposition (for example, conflicting definitions of "reason" will play a significant role in Sections 5–7), I will be much more faithful to the original usage. Thank you to the editor of this journal for calling for this clarification.

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Using his principle,[2] Darwin arrives at the conclusion that "there is no fundamental difference between man and the higher animals in their mental faculties" (2004, p. 86).

A second influential historical principle of comparative psychological inference, which has commonly been viewed as a necessary corrective to the anthropomorphic conclusions to which Darwin's principle leads, is stated in C. Lloyd Morgan's famous Canon:

> 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 (Morgan, 1920, p. 53).

From his principle, Morgan infers a significant discontinuity in the mental faculties of man and animals, at least with respect to the higher faculties of reason and abstraction. Interestingly, both Darwin and Morgan believed that their principles were consistent with, and indeed motivated by, natural selection and the thesis of recent common ancestry. Why, then, were they committed to such different principles?

A common tendency among commentators is to interpret them both as applications of Ockham's razor, focusing on two different senses of parsimony (Fitzpatrick, 2009). Darwin's can be interpreted as arising from a general principle of parsimony according to which explanations that unify various phenomena under a single type of cause are to be favored. Additionally, there is a specifically evolutionary undergirding for that principle; given that humans share a common ancestor with other animals, it will be more evolutionarily parsimonious to posit that similar traits across the phylogenetic spectrum arise from the same evolutionarily preserved causes (Sober, 2012; de Waal, 1991). Morgan's Canon has been interpreted as embodying a different type of parsimony principle in which explanations that posit simpler causes for a phenomenon are to be favored, with it remaining to be seen how "lower" psychological faculties are "simpler" causes (Sober, 1998; Fitzpatrick, 2008; Meketa, 2014; for a general discussion of the various uses of parsimony here, see; Sober, 2015).

However, I will argue that looking for differing commitments to parsimony in the justification of these principles is a red herring. In fact, both authors followed very similar vera causa inductive strategies in arriving at their principles. The vera causa principle, embodied in Newton's first rule of reasoning, states that "We ought to admit no more causes of natural things, than such as are both true and sufficient to explain their appearances" (Newton, 2003).

In the double induction of comparative psychology, one's theory of human cognition specifies the "true", known causes of behavior. I argue that the main source of disagreement between Darwin and Morgan rests in their different views of human psychology. In particular, they disagree about whether the causes specified by a Humean empiricist theory of mind suffice to explain all of human behavior. Once we lay bare their disagreements on that point, we see that Darwin's principle and Morgan's Canon are quite inferentially inert on their own; their varying principles "fall out" of their similar vera causa approaches and their particular views of the true causes of cognition.

To begin to make this case, in Section 2 I will first characterize Darwin's belief in mental continuity with animals and argue that he was not driven to that conclusion by any principles of evolutionary inference that he accepted. Next, in Section 3, I will consider and dismiss another possible source of his principle, an argument from analogy from Hume. In Sections 4 and 5, I will argue that Darwin employs a vera causa argument in his inferences about animal minds and show how his particular philosophy of mind leads him, and his successor Romanes, to the judgment of mental continuity.

I will then turn to a consideration of Morgan's vera causa argument to the opposite conclusion. In Section 6, I will explicate the specific "higher" and "lower" faculties for which Morgan intended his principle. In Sections 7 and 8, I will reconstruct Morgan's argument against Humeanism and for discontinuity. Finally, in Section 9, I will show that the very same point of contention that separates Darwin and Morgan has re-emerged in a central debate among comparative psychologists today.

2. Darwin's judgment of continuity

Darwin's theory of human and animal cognition is developed over his two great works on the topic, *The Descent of Man, and Selection in Relation to Sex* and *The Expression of Emotions in Man and Animals*. Leaving a more thorough analysis of his reasons for believing in strong continuity between human and animal psychology for later sections, we can give a brief flavor of Darwin's ideas here.

In the third chapter of the *Descent*, titled, "Comparison of the Mental Powers of Man and the Lower Animals", Darwin's stated goal is to show that "there is no fundamental difference between man and the higher mammals in their mental faculties" (2004, p. 86). His argument is not merely that human capacities could have been gradually evolved from precursors in animals. Instead, Darwin argues for the stronger claim that all of the psychological causes of human behavior are present in other extant species. He states that humans and the "higher animals"[3] share the same senses, emotions, and "faculties of imitation, attention, deliberation, choice, memory, imagination, the association of ideas, and reason, though in very different degrees" (2004, p. 100). Though Darwin admits that there are significant differences between humans and animals, these differences lie on a continuous spectrum:

> We must admit that there is a much wider interval in mental power between one of the lowest fishes, as a lamprey or lancelet, and one of the higher apes, than between an ape and man; yet this interval is filled up by numberless gradations (2004, p. 86).

Darwin's analysis of mental faculties in the *Descent* contains two key claims. The first is that there is continuous variation in the behavior of animals and humans. The second is that this continuous variation in behavior can and should be explained via continuous variation in the same underlying mental causes. These claims are elevated to the above-quoted general principle from the *Expression of Emotion*, in which Darwin maintains that human behavior ought to be explained via the "same general principles" as the behavior of lower animals.

Darwin's inferential strategy here is surprising for several reasons. First, for certain human behaviors, such as language, tool use, and scientific reasoning, the presumption is strongly in favor of discontinuity with animals. Though Darwin discusses these examples at length in the *Descent* and attempts to establish the

[2] Radick (2007, 66) suggests that the idea embodied by this principle is "what we might anachronistically call *Darwin's Canon*".

[3] Darwin explicitly states that this category includes the Primate order (Radick, 2007, p. 100). However, his discussion of cases shows that he extends this judgment of continuity to other mammals, like horses, elephants, and especially dogs. He also argues for some continuity with non-mammals, such as fish, birds, and insects.