Generating Similarity Arguments for Animal Consciousness and Avoiding Human Chauvinism

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When interacting with our pet dog, Fido, his richly emotive behavior makes it difficult to deny that he has some level of consciousness. However, this claim is much more contested for other animals, especially non-mammals. The question of animal consciousness is a particular branch of the problem of other minds, where true knowledge of another's private phenomenology is seemingly impossible. To tackle the problem of other minds in humans, we call for an analogical argument of behavioral similarity. In animals, the problem of other minds is exacerbated, however, by neurobiological and evolutionary differences with humans. In this paper, we will first motivate the need for an analogical argument for animal consciousness. We will then propose an initial similarity framework to tackle the problem of animal consciousness, which relies on the three *central similarities* of behavior, neurobiology and evolutionary path with humans. A more careful scrutiny of this framework, however, will reveal that it commits human-chauvinism by anthropomorphizing behavior, requiring human neurobiology and discrediting other possible evolutionary sources of consciousness. This paper, then, will recommend that an analogical argument for the presence of consciousness in animals be based primarily on neurobiological human-abstracted similarity, and secondarily on behavioral and evolutionary similarities with humans.

Motivating an Analysis by Analogy for Animal Consciousness

Humans have *privileged access* to the contents of their own mind. In fact, you know your own mind better than anyone else because you have direct access to its contents. However, when you interact in the world with others, how do you know that they have minds, with experience as rich as yours? Regarded as the *problem of other minds*, the problem admits that any degree of advanced behavior cannot on its own guarantee the existence of mentality in others. However,

this does not mean that we do not have good reason to believe that other minds do exist. When investigating your own behavior, you observe that your feelings, aspects of the mind, have causation and effect. The classic statement of the argument comes from Mill, who says:

> "I am conscious in myself of a series of facts connected by a uniform sequences, of which the beginning is modification of my body, the middle is feelings, the end is outward demeanor. In the case of other human beings, I have the evidence of my senses for the first and last links of the series, but not for the intermediate link." (Mill, 237).

This argument by analogy, which is inductive in nature, stipulates that although you may not have access to the intermediate link, the sequence between the first and last is as consistent in others than it is in your own. Thus, you have good reason to believe that others have minds, by analogy. This argument, however, loses a lot of traction when applied to creatures less similar to us. When I come home and Fido, the family dog, welcomes me at the door and rubs his snout on my hand to indicate he wants to go for a walk, then it becomes tempting to ascribe consciousness to Fido. Here, it is important to make the distinction between *creature consciousness* and *mental state consciousness*. We say that a sentient entity is 'creature conscious' if it is awake, alert and responding to goings-on in its environment. There is no doubt, then, that Fido fulfills creature consciousness. On the other hand, mental state consciousness appeals to the distinctive conscious phenomenology of mental states or qualia. Mental state consciousness requires the awareness of how things seem to you, directly.

Seventeenth century philosophers concede only creature consciousness to animals. In *Discours de la Méthode,* Descartes, appealing to an analogy of reflex motion in humans, claims that brute animals are automata devoid of reason and consciousness. To complement Descartes line of reasoning, Huxley describes an experiment whereby a frog's spinal cord is cut. Below the cut, experimenters rub acetic acid on the frog, which under normal circumstances would yield great pain for an uninjured frog; since this skin is supplied with nerves from below the cut, the frog feels no pain. However, despite paralysis, the frog will involuntarily lift its leg and rub the skin where the acid was rubbed. More startling, when the leg is held down, the frog will lift its opposite leg to rub the skin. In a series of similarly incredible experiments, Descartes' theory of brute automata gains power, in that the "habits of a frog…involve such simple adaptations to surrounding conditions, that the machinery which is competent to do so much without the intervention of consciousness, might well do all" (Huxley, 226).

The case of the frog, whose life is rich with habitual activity, fits with Descartes' conception of animals as machines. However, it is unclear from this example that the frog is necessarily unconscious. Indeed, the frog behaving programmatically in response to stimuli does not entail that the frog is unconscious. Huxley claims that it will be clear to anyone who runs a pin into himself that "a mode of motion of the nervous system is the immediate antecedent of a state of consciousness" (Huxley, 238). Consider Fido, the dog, once more. When Fido and I play stick, and Fido returns with the stick wagging his tail and licking my palms, my immediate interpretation is that Fido is content and playful. Here, I am very much anthropomorphically projecting my expectation of how emotive behavior is tied to mentality onto Fido by claiming that 'motions' of the nervous system and the environment have evoked happy states of

consciousness in Fido. Although some philosophers purport that intuitions likes these hold epistemic weight, it seems all too easy for these intuitions to turn out to be false. This is especially true given advances in artificial intelligence, whereby a simple machine can pass the Turing Test and trick human beings. It seems that we are, once again, at an impasse with the problem of other minds.

So, how are we to deny Descartes' claims that animals are unconscious automata? I argue that we should not dismiss our intuitions and instead use them as clues. In projecting our expectation of conscious experience onto Fido – our clue – we are connecting Mill's first and last links just as we did for other humans. Our intuition, despite not being a strong enough epistemic source on its own, points us toward an argument by analogy: animals behave like us. However, where reliance on simple behavior similarities in humans was acceptable, this is not sufficient for animals. This is because, unlike humans, animals cannot describe and report their mental states using language. Additionally, similarities between our bodies and behavior are much weaker than in the human to human case. Thus, in order to reliably ascribe *mental state consciousness* to animals, we must generate a more robust analogical framework.

Designing a Robust Analogical Framework for Ascribing Animal Consciousness

We have seen that we cannot know that animals, or even other humans, have phenomenal consciousness and so we must infer its presence by analogy. In what are often called similarity arguments, we will use the human analogue and its defining features to justify animal consciousness. In the framework, I propose we appeal to three central similarities: (1)

behavioral, (2) biological and (3) evolutionary. Using these three similarities, we are able to complete the analogy argument:

> I know that I am conscious, by *cogito ergo sum*. When investigating certain animals, we observe that they are biologically similar, they are behaviorally similar and that we share evolutionary history. Therefore, certain animals satisfying these similarities are also conscious.

The source of these *central similarities* are clear. Since we are using the human as the analogue, and it is reasonable to assume that humans have mental state consciousness – ignoring skeptical arguments – we must ask ourselves what human characteristics of consciousness can be used as evidence for consciousness in other animals. The first characteristic, which acts as the source of similarity arguments for the problem of other human minds, is behavior. For example, the similar reactions of animals to pain humans would also report as painful, are evidence of pain responses.

Secondly, with the rise of identity theory and functionalism in the late twentieth century, it is commonly held that anything that exhibits mentality arises from a physical system organized in particular ways. In the case of humans, mental states arise from the physical constitution of our brain and nervous system, and using the human analogue, consciousness in other animals should arise from a very similar physical system. In fact, huge advances in neuroscience have allowed us to define more robust neurological criteria for consciousness. For example, we believe that consciousness requires a thalamus, a cortex and recursive pathways between the two (Roth, 35). Although damage to the cortex will not eliminate consciousness, damage to the thalamus can,

and so conscious animals will most likely require these structures. Moreover, consciousness activates many disparate regions of the brain's cortex, unlike input that we are not consciously aware of which remains confined to localized regions of the sensory cortex.

Lastly, we require that other animals be close to humans on the evolutionary scale. In the past, the view that humans were the only conscious animal was prevalent. In recent times, the idea that animals other than humans are conscious has gained traction. However, it remains unclear how consciousness in humans came to be. Was consciousness late-evolved? Did it evolve a number of times independently? Is it an old and broadly shared trait? With our current knowledge of consciousness, it is difficult to judge its evolutionary development. However, it seems plausible to claim that because humans are conscious animals, evolutionarily close animals are more likely to also have mentality. It also seems reasonable to think that consciousness, as rich as that as humans, is a survival trait. This last requirement, the similarity of evolutionary closeness, piggybacks off the previous two similarities discussed. If animals are closer to humans in an evolutionary sense, then their behavior and biology will also most likely be more similar.

These three central similarities of behavior, biology and evolutionary closeness compose our framework to judge whether animals have consciousness. Thus, if animals behave in a way that suggests similarity in mental processes to ours, based on satisfying these similarities, it seems reasonable to *shift the burden of proof* to those who would argue that what we are seeing, that Fido is conscious, is not what we think we are seeing. However, we have yet to more closely scrutinize the requirements we have set forth, and so this will be the focus of the next section.

Questioning the Framework by Appealing to Dissimilarities

Thus far, we have appealed to similarities between humans and animals to ascribe consciousness in animals. Admittedly, however, our understanding of consciousness is severely limited to our own case, and it is imaginable that any of the *central similarities* highlighted could prove to be misguided in the case of animals. The fear, then, is that humans having a trait does not entail that our animal relatives must also have that trait too. In order to mitigate this possibility, we will look more closely at each central similarity. After a closer investigation of each, we shall attempt to generalize issues that each share and reevaluate the suitability of this framework to the problem of animal consciousness.

Questioning the Similarity of Behavior

In order to infer consciousness in animals, we appeal to behavioral similarities. Behavior, however, does not correspond to the mental state itself but only a sign or piece of evidence for what mental state you may or may not be in. Thus, behavior similarities are open to certain vulnerabilities. The true nature of consciousness relates to qualitative states like pain, the *what it feels like* to be in a certain state, in Nagel's terms. In this respect, behavior is not an accurate representation of this qualitative nature. In a famous objection to Behaviorism, Putnam expresses his concerns in a thought experiment:

> "Imagine a community of 'super-spartans' or 'super-stoics' — a community in which the adults have the ability to successfully suppress *all* voluntary pain behavior. They may, on occasion, admit that they feel pain, but always in pleasant well-modulated voices...They do *not* wince, scream, flinch… or otherwise act like people in pain... However, they do feel pain,

> and they dislike it (just as we do). They even admit that it takes a great effort of will to behave as they do" (Putnam, 215).

This scenario is entirely conceivable. Taking conceivability as a guide to possibility, then it seems that pain behavior is contingent in the presence of pain. Thus, we refuse behaviorism's claims that the link between pain and pain behavior are necessary. Now, consider how this applies in the case of animals. In a famous experiment, Povinelli investigates whether chimpanzees have a *theory of mind*. Humans are distinctly able to reason about what others are thinking – they have a theory of mind – but it is unclear if this is a distinctly human capability. For example, if a chimp is charging at another chimp, is the chimp able to think, "the chimp is charging at me because he is upset"? The goal of their experiment was to see if chimpanzees can appreciate that visual perception subjectively links organisms to the external world. The results found that although the chimpanzees will follow the visual gaze of others, they seem oblivious to the attentional significance of that gaze; thus, they will "learn rules about visual perception, but these rules do not necessarily incorporate the notion that seeing is about something" (Povinelli et al., 2). Thus, it is not clear if behavior in animals – following another's gaze, in this case – is intimately linked with a mental state, as it is in humans.

In any case, it is clear that behavior is not linked to any mental state in any necessary way. In our framework, we wish to use behavior as a piece of evidence for consciousness – to be complemented with the other central similarities. Research like Povinelli's reveals that animals may act more reflexively than we may realize, in the same way Huxley's frog did.

Questioning the Similarity of Biology

With huge advances in neuroscience, we have come to know more about how consciousness arises in human beings. As stated previously, an accepted requirement includes (1) a recursive pattern of interaction between the cerebral cortex, thalamus and basal ganglia and (2) integration and connections between diverse regions of the cerebral cortex (Roth, 35). The neurobiology of most mammals satisfy these requirements, but the brains of many other animals do not. Is that to say that all other animals are unconscious? In light of the high degree of contingency of behavior, it would seem that our requirement for similar neurobiology in animals should be made strict. However, if we can show that there is potential for consciousness without a neocortex, then the requirement for similar biology should be revised.

Recent research in children with anencephaly – a disorder that results in the absence of a neocortex – have shown that some phenomenological consciousness is present. These children, who lack near-total of a cerebral cortex, have behavior consistent with someone with consciousness, including "distinguishing familiar from unfamiliar people and environments, social interaction, functional vision, orienting, musical preferences, appropriate affective responses and associative learning" (Shewmon et al., 364). This behavior is extremely consistent with that of a person who is conscious, and so we should question the idea set forth that the neocortex is a necessary requirement for consciousness.

These findings serve to show that our focus on identifying the human structures of consciousness in other animals, though well-intentioned, is not perfect. Indeed, it is very much possible that other brain-types support consciousness. We have shown that having a neocortex may not be

necessary, but researchers purport that structures with a high level of integration and connections with other parts of the brain are still required. This requirement, in and of itself, does not put a limit on form. In birds, the dorsal ventricular ridge acts as a principal integrating center, which is similar to the sensory neocortex in mammals. It is believed that this structure can play an analogous role to the neocortex in humans. Moreover, some bird species have varying tool-making abilities that vary with the size of this structure (Torley, "Animals and Other Living Things"). Thus, by coupling the analysis of a structure seemingly analogous to the neocortex in its integrative capacity with complex behavior, we are able to argue for the presence of consciousness in non-mammals like birds.

Questioning the Similarity of Evolutionary Closeness

We have found that other physical brain forms could potentially support consciousness, and that consequently, non-mammals like birds could be conscious. In this way, our initial intuition that only animals closely related to humans on the evolutionary scale (i.e. mammals) could support consciousness may be flawed. It remains entirely possible that our evolutionary branch is not the only one that supports consciousness, and that consciousness may have arisen from an older ancestor. This is consistent with the Darwinian view of life, where a characteristic of a given species either arose in that species or is derived from an ancestor. If consciousness did not arise in humans, then which ancestor did it originate from? Another possibility is that consciousness arose independently multiple times like winged flight in insects, bats and birds (Colin, "Animal Consciousness). With such limited neurological knowledge of consciousness, it remains very difficult to make any non-speculative claims on this front.

On another note, one could argue that evolutionary closeness is irrelevant, because epiphenomenalism threatens the evolutionary continuity of qualia. If we take epiphenomenalism to be true, then mental states are causally impotent with respect to the physical world. As such, brain states cause physical changes in the world and mental states are simply byproducts of these brain states. In *Epiphenomenal Qualia*, Jackson argues that, by Darwin's Theory of Evolution, natural selection chooses the traits most conducive to physical survival and so we should expect qualia to be conducive to survival. But, Jackson claims, "they could hardly help us to survive if they do nothing to the physical world" (Jackson, 134). Now, consider the polar bear's coat:

> "Polar bears have particularly thick, warm coats. The Theory of Evolution explains this by pointing out that having a thick, warm coat is conducive to survival in the Arctic. But having a thick coat goes along with having a heavy coat, and having a heavy coat is not conducive to survival. It slows the animal down. Does this mean that we have refuted Darwin because we have found an evolved trait…which is not conducive to survival? Clearly not. Having a heavy coat is an unavoidable concomitant of having a warm coat" (Jackson, 134).

A parallel to the polar bear's coat is consciousness. Here, the polar bear's warm coat refers to brain states and the heavy coat refers to qualia. Qualia, then, is a by-product of brain processes which themselves are conducive to survival. Thus, under epiphenomenalism, we must be committed to the fact that qualia are not an evolutionary result but a simple coincidence. This threat to the evolutionary role of consciousness also threatens similarity arguments. We currently do not know how consciousness arises from the physical brain system; as this system has changed through time, qualia may have come and go in a discontinuous way. However, I believe

that this is grounds to reject epiphenomenalism because the evolutionary advantage of qualia seems incontestable.

Calculated Chauvinism: Relying on Generalized Properties of the Brain

From this critique of the *central similarities*, we have made several key findings. Firstly, we have found that behavior is highly contingent and that our intuitions about animal behavior may be colored by our anthropomorphic projections. Secondly, we have found that our current understanding of the brain and how consciousness arises is incomplete. More importantly, we observe that the initial requirements set on the physical system – being composed of a neocortex, for example – assume a human structure when a functionally analogous structure could fulfill consciousness. Lastly, we have found that evolutionary closeness may be less important than first thought, especially if consciousness can arise from diverse brain structures.

From these findings, I argue that the initial similarity framework is too human-chauvinistic. By this, I mean that our framework relies too strongly on close similarity with human behavior, human neurobiology and human evolutionary history. This is not a surprise, given our initial motivations: the only thing we can know is that humans have consciousness, and so anything similar to us must also have consciousness. However, it is now clear that our similarity arguments must be able to abstract away from the human and generalize. This is, of course, much easier said than done. In order to do this, I propose that we have *calculated chauvinism* which (1) revolves around neurobiology, (2) abstracts away generalized properties of the brain that support consciousness and (3) uses behavior and evolutionary closeness as complements.

Although our current understanding of how consciousness arises from brain processes in humans is limited, progress is very promising. From our current knowledge, it is clear that most mammals have consciousness, although less rich than ours. In order to deduce consciousness in other animals, we must be able to generalize about what kind of properties in the brain yield consciousness and how different yet analogous structures in other animals can have these properties. One of these properties, for example, is that the structure supporting consciousness must be deeply integrative and connected. With this neurobiological focus, we are rejecting evolutionary closeness as a main guiding similarity because of a need to be more open about the possible evolutionary sources of consciousness, and espousing the functionalist-motivated idea that consciousness is multiply-realizable and not constrained to specific forms. However, we are also able to complement our neurobiological judgment with behavioral and evolutionary analyses. If the animal has a neurobiology with properties that characterize conscious beings, then does its complex behavior and evolutionary history complement this assessment?

In this way, we are placing emphasis on the physical system where consciousness arises, as it is the more reliable piece of our puzzle. Research done on fish validates this focus on biology, rather than behavior. This research found that "behavioral responses to noxious stimuli are separate from the psychological experience of pain" (Rose, 1) and that although these fish display physiological stress responses to noxious stimuli, they lack the essential brain regions for pain experience. Hence, we recommend that our *analogical argument be based primarily on neurobiological human-abstracted similarity, and secondarily on behavioral and evolutionary similarities.*

Thus, from our initial intuitions that certain animals should have consciousness, we have motivated an initial similarity framework and revised it to have one central similarity – neurobiology – and secondary similarities of behavior and evolutionary history. Since the problem of other minds is seemingly intractable with our current physicalist vocabulary, this kind of framework should only act as guidance as we continue to further develop our scientific understanding of consciousness. It is my hope that further research in the field will allow us to identify the many necessary properties of consciousness of the brain, and more accurately identify analogous structures in other animals.

References

Allen, Colin. "Animal Consciousness." *Stanford University*. Stanford University, 23 Dec. 1995. Web.

Huxley, Thomas Henry. "On The Hypothesis That Animals Are Automata, And Its History [1874]." *Collected Essays* (2009): 199-250. Web.

Jackson, Frank. "Epiphenomenal Qualia." *The Philosophical Quarterly* 32.127 (1982): 127. Web.

Mill, John Stuart. *An Examination of Sir William Hamilton's Philosophy, and of the Principal Philosophical Questions Discussed in His Writings*. London: Longman, Green, Longman, Roberts & Green, 1865. Print.

Povinelli, Daniel J., et al. "What young chimpanzees know about seeing." *Monographs of the society for research in child development* (1996): i-189.

Putnam, Hilary. "The nature of mental states." (1967).

Roth, Gerhard. "The quest to find consciousness." *Scientific American Mind* 14.1 (2004): 32-39.

Rose, James D. "The neurobehavioral nature of fishes and the question of awareness and pain." *Reviews in fisheries science* 10.1 (2002): 1-38.

Shewmon, D. Alan, Gregory L. Holmes, and Paul A. Byrne. "Consciousness in congenitally decorticate children: developmental vegetative state as self-fulfilling prophecy." *Developmental Medicine & Child Neurology* 41.06 (1999): 364-374.

Torrey, Vincent. "Animals and Other Living Things: Their Interests, Mental Capacities and Moral Entitlements." Web.