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Long Paper 2

What is a non-human mind? To dive into this question, we must first approach what the mind is. The theory of mind refers to the “ability of individuals to speculate about other’s mental states and make casual explanations for their behavior (Yin, 2022).” This can then be boiled down into four broadly construed conditions: conscious, rational, self-aware, and other-aware (Rowlands, 2019). Meaning, that if a non-human thing meets all four basic conditions, it would be a non-human mind. However, this is not a perfect explanation in terms of an ultimate answer. This is because within the term meeting all four basic conditions, the term meeting has a very wide variety of answers. Such as, is it important for a non-human mind and a human mind to match the brain conditions of when a certain condition meets? Or is it important that they display the same actions?

Something can be considered phenomenally conscious if it is sentient, or has the experience of being something. Sentience, which is defined as the capacity to experience feelings such as pain, pleasure, hunger, warmth, excitement, and so on (Birch & Schnell, 2021), is usually connected to pain in academic research, as it is the most easily observable trait. The report *Review of the evidence of sentience in cephalopod molluscs and decapod crustaceans* proposes the eight markers of pain to measure sentience. These include three neurobiological properties such as the possession of nociceptors, the possession of integrative brain regions, and connections

between nociceptors and integrative brain regions. Three behavioral properties such as responses affected by potential local anesthetics or analgesics, motivational trade-offs that show a balancing of threat against the opportunity for reward, and flexible self-protective barriers in response to injury and threat. Then the combination of the two such as associative learning that goes beyond habituation and sensitization and behavior that shows the animal values local anesthetics or analgesics when injured. This report makes one assumption in terms of sentience, which is that mammals, birds, reptiles, and fish feel pain. Building off from this assumption, this paper argues that there are sufficient levels of evidence for the presence of the markers, thus cephalopod molluscs species feel pain. If they feel pain, they are sentient. The article *"All animals are conscious": Shifting the null hypothesis in consciousness science* (Andrews, 2024) continues from this methodology to argue that all animals are conscious, with the premise that animal consciousness does not entail anything about how animals are conscious. This in summary entails that animals are conscious, just in different ways.

What is rationality? In terms of the mind, to be rational is to be able to execute at least some rational inference with the possession of the required materials for such inferences, such as beliefs and desires (Rowlands, 2019). To argue this Mark Rowlands in his book Can Animals Be Persons de-anchors the attributes of beliefs and desires that are anchored to humans, and shows examples of multiple animals displaying impressive capacities for causal reasoning, and even logical reasoning operations such as modus tollendo ponens.

Self-awareness refers to one's capacity for self-directed attention and includes knowledge of one's private mental states such as thoughts and emotions (Lei, 2023). The main technique used to detect animal self-awareness is the mirror self-recognition test. For this test, An animal is placed in front of a mirror, where a researcher analyzes its action toward the mirror. After, the animal is anesthetized, and an odorless mark is placed on a body part that can normally not be seen. If the animal reacts to this odorless mark, the animal can then be considered to have the ability of self-recognition. This ability is closely related to the sociality of an animal, due to social animals being more likely to possess more complex cognitive abilities. This is the Social Intelligence Hypothesis (SIH). The SIH argues that social animals evolve larger brains and more sophisticated cognitive abilities in response to complex social environments. This is due to social animals being more exposed to opportunities for cognitive development, which cycles into advancing their social environment, increasing exposure to more opportunities, finally leading to a higher probability of developing self-awareness.
It is important to note that self-recognition is not directly connected to self-awareness. Self-awareness includes parts other than the behavioral actions of an animal. However, a lot of research suggests that animals are self-aware, such as in the case of bonobos, bottlenose dolphins, and the most recently discovered, the cleaner wrasse. This was also directly linked to brain volume relative to body size, such as the spotted hyena having the biggest brain volume relative to body size compared to 3 other species of hyena.

Other awareness refers to the ability to recognize another as minded. This ability is identified with mindreading, or the ability to attribute mental states to another and use this to predict or explain a behavior (Rowlands, 2019). A great example of this is the ocras and dolphins. Orcas have been studied to have about 40 sounds used by each whale, but recent scientists who have analyzed the nature of the calls say that these are dense, rich, and have tremendous variations in intensity, volume, tone, and emotional content. Dolphins have been observed to learn up to fifty human words used in the correct context (ocranation, 2019). These examples display other awareness, as in both cases the animals recognize that it is speaking to another, and expect them to understand. However in primates, according to the research *Comparative Stidues Of Mind Reading: Similarities and differences in theory of mind between non-human primates and humans and corresponding explanations(Yin, 2022)* only displayed competitive intentions from others rather than cooperative intentions or shared intentions.

If the above paragraphs speak mainly about non-human animal minds, how about AI machines? Can machines be conscious, rational, self-aware, and other-aware? In the current state of artificial intelligence, this answer is a very challenging task to approach. First, the current state of AI development is focused on deep learning, composed of neural networks and layers that gather the most probable answers with multiple filters. This essentially can be compared to a filtered copy-and-paste mechanism. With this understanding, it might be possible to argue on both sides, depending on whether the display of these conditions is important or the

actual process. Display of conscious, rational, self-aware, and other awareness are quite simple to demonstrate for any LLMs, as they can be specifically trained for each function. A machine could seem to recognize what and who it is, utilize beliefs, understand that it is itself, and display understanding of others. However, the machine is simply copying and pasting the most probable answer to the given context or query. Probability is purely based on the training data provided. So it could be said that although machines display these 4 conditions, they are not processing them as minds do.

In biological non-human minds or mainly animals, the question of the existence of a mind can be more directly referenced. However, in terms of machines, this question lacks a reference point to measure whether or not they possess a mind. This proves that the mind does require both conditions, the behavioral and the internal, to be considered a mind.

References

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