There are commonalities in the cognitive architecture of all animals on Earth

Stance: Agree **Word Count: 393**

Cognition can be understood as the mind's way of learning, reasoning, remembering, and processing information. While countless post-behaviorist models have been proposed to map out cognitive architecture, any attempt at describing such an abstract concept remains speculative. Still, the assumption made here is that some mental features must have similarly evolved in all animal species. This argument is supported by similarities in neurological composition, behavior, and processes involved in memory and future cognition.

One way to argue for similarities in abstract cognitive processes, is to look at similarities in the physical structures from which they emerge. To begin with, differences between the brain's weight, size, and structures cannot solely explain cognitive architecture. Contrary to what it may seem, smaller brains do not contain less neurons, they are just more "densely packed".[1] Like primates, species lacking complex brain structures also deal with stress, pair-bonding, and motivation with similar neurotransmitter-hormonal responses.[2]

Using conditioning or pharmacological treatments, various laboratory animals are continuously used experimentally to explain human behavior and cognition. This suggests the cognitive architecture underlying certain behaviors is similar across many species. Although birds and reptiles lack certain structures that mammals evolved for cognitive control (i.e. neocortex and cortical lamination), they instead have structures like the pallium for the same purpose.[3] For instance, the locations differ but molecularly, the "biophysical properties" giving rise to short-term memory, are similar in both primates and reptiles.[1] Additionally, brain areas involved in human speech production and processing (Broca's and Wernicke's respectively) have analogous areas in other animals. For example, communication modules are directed towards gestures, facial expressions and detecting specific calls within chimps[1] whereas for the bumblebee it is through movement, dance, and odor.[4] Furthermore, basal ganglia systems are found in even the most primitive vertebrates to yield reward seeking behavior alongside the cognitive processes to calculate and judge the required effort to obtain said rewards.[5]

Finally, animals also display commonalities in their cognitive architecture for memory and future cognition as storing food requires planning, anticipation, and self-control to not consume said food.[6] For animals not storing food, episodic memory[7] and future planning is used to predict where desired food is located.

Overall, the statement that there are commonalities in the cognitive architecture of all animals on earth can be supported by many similarities across species that include but are not limited to the ones described in this essay.

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