

Review of: "Growing Confidence and Remaining Uncertainty About Animal Consciousness"

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This is a nice review of the many and diverse theories of consciousness. However, there are many theories, but very little actual data to support any of the proposed ideas. One problem is the notion that consciousness arises solely from the activities of the nervous system and brain, yet there is convincing evidence that this is not correct (see below). In addition, trying to extract mechanisms of consciousness from studies of the nervous system in lower animals is fruitless because all we can do is observe the behavioral outcome of neuronal activity, which is not an objective measure for any higher functions. For example, the marine invertebrate *Aplysia* exhibits both habituation and sensitization, which are considered elementary forms of learning and memory. Thanks to Eric Kandel and his colleagues at Columbia University, we know in great detail the molecular events that are involved, and they can be reduced to: stimulus- signal transduction, action potentials- Kinase cascades -etc. Thus, the animal responds to environmental cues, but there is no actual learning or memory, and certainly not awareness.

More serious is that the review does not mention the mind, which, by consensus, is where experiences are perceived and consciousness arises. The issue here is that whereas the brain is material in nature, the mind is not. Physicalists, materialists, and other philosophers argue that the brain and the mind are one, yet there is no evidence from studies of how the brain functions that supports this view. Rather, there is more and more evidence for the opposing view, namely, that the mind and brain are separate entities and that both are necessary to experience the sensations that are the basis of consciousness. Thus, the brain acquires information from our senses, and the mind processes this information into experiences. Interesting are the findings that the two are linked via synchronized oscillating waves that emerge from each of our senses, as was proposed by Crick and Koch in 1995 from their studies of the visual system. More recent evidence comes from the studies by Mcfadden and others.

In conclusion, the review is a thoughtful compendium of theories, but its usefulness in furthering our understanding of consciousness is limited because it omits any discussion of the connection between the brain and the mind.