UNIVERSITY OF CAPE TOWN
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WEEK 3 ANSWER TO QUESTION 2

STEP 3.9 ASK MARK

Here's question two. I quote. "You say that the presence of the reticular activating system is evidence of consciousness. Would you agree that the absence of a reticular activating system is not necessarily evidence of a lack of consciousness? For example, some people have commented here on the intelligence of the octopus. Could consciousness emerge in such creatures, despite the very different arrangement of their nervous systems, through the process of convergent evolution?"

So that's the second question. As you can see, it's closely related to the first. And I'm really partly going to repeat myself in answering it.

I do agree that the absence of a reticular activating system is not positive evidence for a lack of consciousness. I'm claiming only the converse, that the presence of a reticular activating system, all experimental evidence suggests that the presence of such a system is good grounds for assuming the presence of consciousness. In other words, if you look at the thing from the outside and you see a reticular activating system, there's good reason to believe empirically that from the inside of that creature, you experience consciousness.

But not only is it possible through convergent evolution that there may be some other mechanism, other than the reticular activating system, which also makes a creature capable of consciousness, not only is that possible and plausible, it's also, even more so, possible and plausible that there's some sort of protoreticular activating system, some sort of primordial arrangement that precedes the evolution of the reticular activating system, which may have given rise to some form of protoconsciousness

Interestingly, in the mammalian brain stem and the vertebrate brain stem, there are structures which are important for regulating the sleep/waking cycle, which are lower in the brain stem than the upper brain stem structures which generate emotional consciousness. And these structures may very well serve some of the kind of protoconsciousness functions of the kind that I'm referring to.

There may also be entirely different arrangements. And I must confess I know very little about the nervous system of the octopus. But I would be very interested to know-- and perhaps one of our participants can inform us about this-- I would be very interested to know which structures in the nervous system of an octopus, when damaged, lead to the

external appearance of coma, or lack of volition, lack of intentionality, lack of a sleep/waking cycle and whatnot in the octopus?

I would then be particularly interested to know what those structures are connected to. Because one of the reasons why I am so persuaded by the importance of the reticular activating structures that we've been talking about, by the evidence for their importance in relation to consciousness, is the intriguing link between these structures and body monitoring structures. The monitoring of the internal milieu of the body in turn is very closely connected to and broadcasts to these reticular activating structures. And this makes good theoretical sense in terms of what consciousness appears to be there for, at least in its most elemental form. It seems to have something to do with monitoring the state of the subject, making the subject aware in real time as to how it's doing within a biological scale of values

So these are indeed open questions. I really don't wish to foreclose on them. All I'm trying to do is, in a sense, the opposite. Is to try to find the most liberal, if you will, method, an empirical method, which will enable us to be as inclusive as the evidence permits of other creatures, other than us humans, in the family of conscious being. I'm very ready to believe that there are different and other earlier systems which performed a similar function.

The capacity to be aware of your own biological state is obviously of such fundamental importance that it is almost hard to imagine how an ambulant creature, a creature that is moving around in its environment, how it would go about doing this in a way that promotes and sustains survival and reproductive success if there weren't some sort of value system, some sort of quality attaching to-- a quality of goodness and badness attaching to different types of actions in relation to these values of survival and reproductive success.