

OTHER MINDS: THE OCTOPUS, THE SEA AND THE DEEP ORIGINS OF CONSCIOUSNESS

Review of

Other Minds: The Octopus, the Sea and the Deep Origins of Consciousness

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Consider the old philosophical problem of other minds: What can we know about the minds of others? We certainly have access to our own mental states through introspection, inner monologue and meta-contemplation, but what about our friends? Do we have access to what they feel or think from outside observations of them? To some philosophers, the problem of other minds is a pseudo-problem set up by confused language. Talking about the “other” already implies mindedness, with the mind’s corresponding meaning-giving and sense-making abilities necessary for communication and for talking about minds in the first place. Furthermore, intelligent behaviour like the use of tools, puzzle-solving and flexible responses to novel situations are also known as aspects of mindedness, and can be observed in action: that is, from the outside. In that case, many animals can be said to have minds, as intelligent behaviour is observed in several species other than humans, like chimpanzees, crows, and elephants. Chimpanzees and elephants are one thing, they are after all mammals with large brains and complex endothermic bodies, and, furthermore, they are inherently social animals – and it takes intelligence to navigate the hierarchical and highly sophisticated ranks of the group. But what about birds, which are less similar to humans, having gone their separate ways on the evolutionary tree several hundreds of millions of years ago? We can observe intelligent behaviour in birds through their ability to use tools, their ability to recognise human faces

and to remember where they stored food (an interesting non-mammalian case of *episodic memory*). If intelligence is a clear sign of mindedness in a creature, and intelligence is related to complexity in both the body and the behaviour of the animal, this raises questions about where one should attribute mindedness. Many creatures are intelligent if you look at their interactions with their environment, but one would nonetheless hesitate to describe them as minded creatures. Bees are certainly complex in their interaction with their environment, but are we willing to say that they have minds? To which creatures are we willing to attribute minds, and to which are we not? What are the upper and lower limits of the mind? “Do bees really *remember* what has happened? These are not questions that have yes or no answers. There’s a smooth transition from minimal kinds of sensitivity to the world to more elaborate kinds, and no reason to think in terms of sharp divides” (2016:77).

Octopodes, squid and cuttlefish, all belong to a biological group known as *Cephalopods*. They all display highly complex behaviour, which has previously only been thought to reside in “higher” animals such as mammals and other complex creatures such as the aforementioned crows. Yet cephalopods are as different from both mammals *and* birds as can be. They are not even vertebrates! We have to go back as far as 600 million years to find a common ancestor to the cephalopods, the arthropods (insects, crabs, spiders, etc.), and the vertebrates. Yet octopodes, and the other cephalopods, seem to be creatures with *minds*.

Sometimes they respond in a strikingly human way to divers who gain contact with them in their oceanic habitats, and they have also been known to respond to individual humans in captivity.

One of the best aspects of Peter Godfrey-Smith’s book *Other Minds: The Octopus, the Sea and the Deep Origins of Consciousness* is that he himself is not only a philosopher, but also a freediver who has had first-hand (or should we say first-tentacle?) experiences with octopods and squid. He is not just encountering cephalopods in the laboratory, in a detached and reductive way, nor is he merely studying them in a tank; he is actively engaging with them in their natural habitat. His anecdotes are many, and much like an octopus will try to pull you into its den with its tentacles, the stories Godfrey-Smith tells us about the cephalopods pull you into the strange world of these fascinating creatures. Upon encountering a marvellously colour-changing cuttlefish off the east coast of Australia, he writes: “I swam down repeatedly, holding my breath, to watch this animal. Soon I was exhausted, but I was also reluctant to stop, as the creature seemed as interested in me as I was in it (in him? in her?). This was my first experience with an aspect of these animals that has never stopped intriguing me: the sense of mutual *engagement* one can have with them” (2016:5). If we can indeed communicate with the cephalopods in any way, even rudimentarily, this will not be the same as reaching a better understanding about the minds of other mammals, or even birds: “If we can make contact with cephalopods, it is not because of a shared history, not because of kinship, but because evolution built minds twice over. This is probably the closest we will come to meeting an intelligent alien” (2016:9). Interest in the minds and lives of cephalopods, and octopodes in particular, has mounted recently, as data is pouring in describing their various feats of intelligence and the strangeness of their body-structure. Take for instance *The Soul of an Octopus*, a book by Sy Montgomery from 2015, which in many of the same ways as *Other Minds* is exploring the complex world of these creatures, and their fascinating diversity. The inspiration for the movie *Arrival* is obviously also based on cephalopods, as the *heptapods* (cephalopod comes from greek and means “head-feet” and octopus correspondingly means “eight-legged,” whereas heptapods were classified in the movie based on this bio-taxonomical way of naming animals from their phylogenetic characteristics, as “seven-legged”) are curious and intelligent, alien yet communicative. (They even use *ink* as writing!) The big question in *Arrival* was how to communicate with the aliens, who, different as they are from us in body-structure

and language, still were minded creatures, intent on establishing true contact with us *homo sapiens*. This is similar to how Godfrey-Smith and his colleagues try to communicate with octopodes, squid, and cuttlefish.

The book is divided into 8 chapters with catchy titles such as “Meeting Across the Tree of Life” and “Octopolis,” which in turn are divided into several illuminating sub-topics. The book is part biology, part evolutionary theory, part psychology, and part philosophy. He begins with a very interesting account of the history of life on earth, going back to its very beginning. Godfrey-Smith generally does a good job of making the subjects accessible and also generally interconnected, yet sometimes one feels as if there is a slight discrepancy in topics, as in chapter 3 where we go quickly from the evolution of the octopus, to recent psychological empirical data on them. As a result, it can sometimes be hard for the reader to follow the exact route Godfrey-Smith points to. Perhaps it boils down to the sheer range of topics presented in the book, and the difficulty inherent in bringing them together. The book is after all called the octopus, the sea *and* the deep origins of consciousness. What binds these various themes together is the general metaphysical problem of other minds. The author wisely avoids certain problems (such as whether there is a problem of other minds at all (as for Wittgenstein) and the acceptance of others (such as the question of correlating intelligence and consciousness to the nervous system of animals)). The author explicitly acknowledges a form of qualia-thesis, encapsulated in the famous definition by philosopher Thomas Nagel in 1974 as “what it is like”.

According to Nagel, we have to be open to the fact that there is something *it is like* to be, for example, a bat, even if the bat is quite different from us in body and senses. This difference is particularly apparent in bats’ sense of echolocation, its ability to hear the “auditory relief” of objects, hindrances – and especially – prey, by sending out high-frequency screams that bounce off of the bodies in its environment. In the paper, in which Nagel hints to the irreducibility of consciousness, he defines bats as “alien,” at least in appearance and bodily structure, all in order to widen our conception of consciousness to include creatures quite different from us. But bats are after all mammals, and thus of course vertebrates as well, so they actually share quite a lot of features with humans. Cephalopods, on the other hand, even if some of their organs (like their eyes) are comparatively similar to our own (they both have lenses that absorb light, and light-receptive cells, etc.), are even more alien to us than bats are. As mentioned above, they parted ways with the lineage that was to become the

vertebrates 600 million years ago. So it is naturally even more difficult to imagine what it must be like to be an octopus, fighting off other octopodes, finding a mate, hunting and relaxing in its den than it is for us to imagine what it must be like to be a bat.

Juxtaposed with the amazing feats of the octopodes, such as their ability to recognise individual humans and shutting off lights by short-circuiting the power supply by shooting bursts of water, is their strange phyla, or body-plan (the structure of the parts of the body, and the way they are related). Like mollusks, they have no central spine, hard bones, or tissue such as cartilage (which makes up shark-skeletons) other than a beak to give them an “orderly” body structure, so their main bodies seem to consist of one head (cephalopod after all means “head-feet”) with eight tentacles jutting out in all directions around the entirety of the octopus. Octopodes move like the other cephalopod, by jet-propulsion, but they can also swim and “walk” along the sea floor. Its soft body makes the octopodes extremely flexible, and they can squeeze out of holes no larger than their hardest part (their beak), which makes them particularly good escapees and tricksters. They have been observed escaping from *inside closed jars*. Suddenly cats and crocodiles (both vertebrates) seem to have more in common than cephalopods have with almost any other complex creature. The strangeness of the body, however, is paralleled by its complexity, with over 500 million neurons spread out throughout it. Contrary to what one finds in vertebrates, many of the neurons in cephalopods are found in its tentacles, so that the tentacles seem to have mini-brains of their own, capable of living semi-separate lives from that of the “main-brain” localised in the head. This is a particularly interesting phenomenon for embodied cognitivists who study the link between mind and body, and how the body, its abilities, and its functions are related to perception and consciousness. To us, consciousness seems to situate us (our bodies) in a constantly changing, yet stable and unified perceptual field. There seems to exist a correlative link between the connection and self-communication of our nervous systems and the apparently essential unity of our conscious experiences. Now, if the unity of our brain is connected with our experiences, then what of the octopus with its brain-tentacles? When we reach for something in order to grab it, it seems as if we decide, and then move out of our own volition. In the case of the octopus, however, it seems that it can engage its tentacles, and then watch them reach their target with their own problem-solving brainpower. What in the world is it like to have all these “mini-selves” capable of

self-propulsion and action? From the perspective of people that have worked with embodied perception and cognition and skill acquisition, this might be a phenomenon that appears (in a less extreme sense) in us humans as well. Just think about the various automatic reflexes we have, and top athletes and artists who claim to have “blacked out” in great performances as their skilful active bodies did their thing without “central command” being responsible.

Does this show that we might have more in common with other creatures endowed with complex, active bodies than we think? Much more exploration is needed to understand the relationship with the nervous system, action, and perception, and the role they play for consciousness in living animals. In any case, Godfrey-Smith’s discussion of embodied cognition is highly interesting and illuminating as it is tied to a wider discussion on consciousness found in chapter 4 “From White Noise to Consciousness”. In this chapter the question of consciousness and the way it is related to the evolution of the nervous system is raised. Luckily, the preparatory work for the discussion of consciousness, which in contemporary philosophical debates is almost always controversial, was made in chapter 2 and 3. In chapter 2, fascinating information on early animal body-types and activities is taken up along with the early function of the nervous system, as a preparation for the arrival of the first cephalopods in chapter 3. In chapter 3 the early cephalopods are discussed, and their subsequent evolution from shell-clad to soft-bodied animals. So we get (in relatively broad strokes) the entire history of the cephalopods in elegantly written prose: There are many new things to learn in these chapters for almost everyone, no matter which field you are in, or what interests you have, as a great deal of information is provided in quick succession. The only problem is perhaps that *too* much information is provided, as one sometimes would prefer a breather-chapter in which the threads (tentacles) could come together, in order to sum up for the reader the themes covered thus far.

That said, the book offers important insights that make you see the bigger picture, of not just cephalopods, their consciousness and intelligence, but also about questions of life and death, language and thought. In those sections (for instance when the author discusses language and subjectivity in chapter 6) the themes automatically come together, as we try to understand the relation between mind, thought, consciousness and biological life. Especially interesting is the author’s discussion in chapter 7 on the question of biological death, which in the philosophy of biology is presented thus: Why do organisms *die* in the first place?

Some fish live to be over a hundred, the giant tortoise of Galapagos over 150, and some “superorganisms” reach thousands of years of age. The intelligent cuttlefish: Barely two! “Giant cuttlefish, these large and complicated animals, have very short lives[.] ... I could hardly believe it. I had assumed that the cuttlefish I’d been interacting with were old, had met humans often and worked out how they behaved, and had seen many seasons pass in their patch of the ocean” (2016:160). Godfrey-Smith goes on to ask the poignant question of what the point is in building these large and complex nervous system in the octopodes, if they are just going to die within a couple of years or so. “What is the point of investing in a process of learning about the world if there is almost no time to put that information to use?” (2016:160). Evolutionarily speaking, we have to assume that the complexity of their bodies and brains have paid off, otherwise they would not be here today. But, it makes you wonder as to why creatures live as long (or short) as they do, and the very interesting question of why complex life evolved at all. Godfrey-Smith shows himself as the skilled philosopher of biology he indeed is in pre-

senting suggestions and theories as to the aforementioned questions, all to better understand consciousness and the life it is tied to.

All in all, *Other Minds* is an illuminating, inspiring book, filled with awe, wonder and even love for the strange and beautiful creatures known as cephalopods. Several strategies for understanding them and the lives they lead on all of the biological, behavioural, and psychological levels are presented throughout. The book is dedicated to “all those who work to protect the oceans”. It is a book dedicated to bringing to light the *continuity* of conscious life rather than the disparity. Godfrey-Smith warns us at the end of the last chapter not to take our oceans for granted, but be wary of increased contaminations of them; contamination that is liable to culminate in the extinctions of the marvellous mischievousness of the giant pacific octopus, or the ever-changing display of rainbow-coloured cuttlefish. “There are many reasons for us to appreciate and care for the oceans, and I hope this book has added one. When you dive into the sea, you are diving into the origins of us all” (2016:204).