

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

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Review of "Louis Irwin: Growing Confidence and Remaining Uncertainty About Animal Consciousness" (Received 1.4.2024)

My feeling is that there is a tendency to associate consciousness with a generally potent neuronal processing, and if it is less potent, then there is less consciousness. For instance, how can one demonstrate a lack of focused attention, which would then give a hint to a lesser consciousness?

There is not much weight given to the remark in the present review of Güntürkün and Maldarelli: "While 20 years ago, many scientists were skeptical if any animal outside the human realm has consciousness (and if so, then only great apes), we currently discuss consciousness in invertebrates." In Dr. Irwin's text, I see barely a trace of that older view.

The "only primate" view is apparent when the "Sense of Self" is considered: A rat can distinguish rats from animals of other species so that it can direct social behaviour to its conspecifics. However, it is extremely unlikely (and not required) that a rat can recognise that itself is a rat as well. Rather, it is a kind of neuronal unicum, based on the network connectivity of its entire brain. That connectivity encompasses its entire knowledge of the world, and all its possibilities to interact with the world. Within that network, a part is devoted to signals concerning interactions with other rats. Thus, from a network viewpoint, another rat is a fraction of the rat itself. Moreover, that fraction has an internal structure that differs from that of the whole network of the rat itself. To express it in other terms: If a camera had a kind of "understanding," and if it takes pictures of other cameras, it could barely understand that the photographing camera "itself" is the same thing as the photographed cameras. There is hardly any material overlap between a complete operating camera and the electronic or chemical traces of a photographed camera on a light-sensitive receptor layer.

In the section "Sense of Self," I do not see a trace of this situation, which must be the common situation in the animal kingdom. It implies that a neuronal procedure, working successfully for whatever sensory analysis of (or behavioural interaction with) conspecifics, cannot be applied when the roles of the conspecific and the animal itself are interchanged. Thus, an evolutionary advantage can be expected if that interchangeability could be ensured.

I am an older scientist sensitive to the remark of Güntürkün and Maldarelli: In my opinion, monkeys took the first step in that evolutionary direction. One can see what happened if one considers a robot that controls the actions of its tweezers by a video camera. If similarly looking tweezers of a second robot enter the visual field of the first robot, control chaos arises. In some sense, in evolution, this occurred to monkeys. A big brain was required to resolve the possible confusions

arising from viewing foreign manipulating hands. In contrast, a rat cannot confuse its "manipulating" mouth with that of another rat. The outcome was "I am a monkey like my conspecifics," as manifested by the activity of mirror neurones in monkeys (Di Pellegrino et al., 1992), and the suspicious absence of reports about such neurones in rats. (Rats stand for many other animal species.)

All this points to a particular role of primates, at least with respect to the sense of self. Consciousness may be related to the ability of humans (initiated by monkeys) to "observe" themselves from an outer-world perspective.

Another aspect, familiar to laypersons, is missing in Dr. Irwin's article: When I do not remember where I have laid down my car keys, I am convinced that I have done this unconsciously. In other words, there is a link between memory of the episodic type and consciousness. I can recall at least for a brief time whatever became conscious. In contrast to procedural memory, the retrieval from episodic memory does not require the presentation of a sensory pattern that has to be recognised. Therefore, an external clue is lacking that could prove the operation of episodic memory, so that this approach to consciousness is blocked.

Perhaps Dr. Irwin can add some remarks to the points I have mentioned.

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Di Pellegrino G, Fadiga L, Fogassi L, Gallese V, Rizzolatti G. (1992).

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