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No need for certainty in animal sentience

Commentary on [Crump et al](#) on *Decapod Sentience*

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Abstract: This commentary supports Crump et al.'s (2022) point that where risks to welfare are severe, strong evidence of sentience is sufficient to warrant protecting welfare. Crump et al.'s eight criteria for sentience are also useful. Flexible decision-making (5) and flexible behaviour (6) are consistent with Ng (1995). The concession that the “no-need-for-sentience” proposition is unnecessary also strengthens the importance of the target article's conclusions.

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I strongly support Crump et al.'s (2022) main point that, “If severe welfare risks are present, then (for ethical reasons) we must act on evidence that strongly supports attributions of sentience without providing certainty.” The set of eight proposed criteria for sentience is also useful. Criteria 5 and 6 on “flexible decision-making [and]... flexible... behaviour” are also consistent with Section 3.1 of Ng (1995), especially Propositions 1 and 2', linking consciousness and sentience to plasticity/flexibility in behaviour.

1. Nociception
2. Sensory integration
3. Integrated nociception
4. Analgesia: (a) endogenous (b) exogenous
5. Motivational trade-offs
6. Flexible self-protection
7. Associative Learning
8. Analgesia preference: (a) self-administer (b) location (c) prioritised

[Crump et al.'s 8 criteria](#)

The target article's set of eight criteria have additional structural and behavioural aspects that are useful in helping to evaluate sentience. The application of these criteria to the taxon of decapod crustaceans (including crabs, lobsters, shrimps, etc.) with the conclusion that the “evidence of sentience is strong for true crabs (infraorder Brachyura) and substantial for anomuran crabs, astacids, and caridean shrimps” is also useful and supports its recommendation to include “all decapod crustaceans in the scope of animal welfare laws.”

This commentary is mainly concerned with the target article's proposition that "We accept that any set of behavioural, cognitive and neuroscientific patterns could conceivably be achieved without sentience (e.g., Dawkins, 2001; Karin-D'Arcy, 2005)."

Although Crump et al. go on to say that "demanding certainty is inappropriate," thus qualifying the implication of accepting the "no-need-for-sentience" (NNS) proposition, I wish to go further to argue that NNS is largely irrelevant. Dropping it would effectively strengthen the main arguments of the target article.

If we interpret the "conceivably" in the NNS proposition as possibly inclusive of an epsilon probability of 0.000...0001% as conceivable, then it is not invalid. However, since "along with the 'private' nature of sentience... we cannot resolve the question of invertebrate [if not also many other animals] sentience with certainty," we should go for the balance of probability, instead of entertaining epsilon probabilities such as 0.000...0001%. In particular, if we can reasonably conclude that the behaviours of members of an animal species are flexible, we should accept that they are probably sentient (as I argued in Ng 1995), without worrying that they could also "conceivably" be non-sentient.

The target article mentions a difficulty here "that even animals without a central nervous system, such as sea anemones, show some flexibility: they have reflexes that another stimulus, such as a conspecific, can inhibit." The presumption here is that animals without a central nervous system cannot be sentient, and hence the example of the sea anemones suggests that flexibility in behaviour is insufficient to establish sentience. This is related to the way flexibility is understood in the target article. It "does not imply a capacity for planning ahead or reflection—only that the animal can respond to the same noxious stimulus in different ways, depending on its situation."

My own definition of flexibility/plasticity (Ng 1995, p.265) is the following:

"[P]lasticity in behaviour is in contrast with fixed patterns of responses predetermined by genetic programming... Plasticity requires the organism to have flexibility or be able to choose different responses for a given situation. All hard-wired responses are non-plastic. 'Soft-wired' responses (those that involve learning) may or may not be plastic depending on whether the learning is completely fixed genetically"

Thus, if the inhibition of the reflex of sea anemones by a conspecific is fixed genetically, this does not constitute flexibility/plasticity, on my definition. We accordingly do not need to worry "that even animals without a central nervous system, such as sea anemones, show some flexibility." This means that the target article does not have to make much concession to the NNS proposition as it has done. It actually strengthens the main arguments and conclusions of the target article.

If we read the two papers (Dawkins, 2001; Karin-D'Arcy, 2005) cited by the target article as supportive of the NNS proposition, we may note that this proposition is debatable. In particular, we may take into consideration the different or even opposite views of Menzel & Johnson (1978, especially p.587), de Waal (1991), Wilder (1996), and Smith et al. (2003). Their views further support that NNS is largely irrelevant, thereby strengthening the main conclusions of the target article.

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