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Sentience and sentient minds

Commentary on [Rowan et al.](#) on *Sentience Politics*

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Abstract: My commentary builds on Rowan et al.'s (2022) comprehensive review to address the question 'what do we mean by sentience?' It suggests how we might recognise degrees of sentience within the animal kingdom, ranging from primitive sensations such as hunger and pain to more complex emotions that determine quality of life.

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History. Rowan *et al*'s (2022) review of the history, science and politics of animal welfare and animal sentience does what it says on the tin. It begins conventionally with the bad guy (Descartes: 'they are but automata') and good guy (Bentham: 'can they suffer?'). From examination of the literature, it concludes that, by the middle of the 19th century, most reasonable thinkers, if not the legislators, were prepared to give the animals the benefit of the doubt. However, when scientists entered the debate, they clouded the water for many years.

The belief that 'good science' must be based exclusively on what can be observed and that it must avoid any hint of subjectivity gave rise to the cult of Behaviourism. Behaviourists sought to explain animal reactions to stimuli entirely in terms of their observable actions, excluding, in the words of Watson (1928), 'all subjective terms such as sensation, perception, image, desire, thinking and emotion'. By excluding subjective states, behaviourists closed their minds to the possibility of their existence. Another egregious example (not quoted in Rowan et al.'s target article) was the mistaken assumption that fish could not feel pain because they did not possess the region of the brain known to be associated with pain perception in animals (see Key 2016). As with behaviourism, this conclusion was formed without once asking the fish.

The more important question, both intellectually and morally, is not 'what do animals do?' but 'why do they do it?' To address this, we have no option but to ask the animals. This is the basis of motivation analysis, well described in the target article, which seeks to discover the preferences and aversions of a particular animal and the relative strength of these preferences and aversions. Motivation analysis begins with a subjective exercise in reverse anthropomorphism that asks not 'how would this animal feel if it were me?' but 'how might I feel if I were this animal?' The behaviour of the animals observed in a well-designed experiment becomes a measure of how close that original subjective guess has been to the truth. Parallel measures of hormonal and other indices of stress or satisfaction provide convincing evidence that the motivation of behaviour is driven by feelings; the exact nature

of the behaviour is modulated by cognition, enforced by experience and, in some case, education.

Politics and Legislation. The existence of animal suffering has long been recognised in law. The UK Protection of Animals Act (1911) made it an offence to ‘cause unnecessary suffering by doing or omitting to do any act’. This was interpreted in practice as a prohibition on direct acts of cruelty to individual animals or groups of animals, through actions or neglect. It was Ruth Harrison (1964), in her seminal work ‘Animal Machines’, who highlighted the fact that this law did not cover institutional cruelty to the vast number of animals reared for food consumption. She pointed out the absurdity of the [UK Protection of Birds Act](#) (1964) which required any caged bird to be given enough space to flap its wings ‘*provided this subsection does not apply to poultry*’: at that time, over 99% of caged birds.

[Compassion in World Farming](#) has undoubtedly led the march towards improved welfare standards for farm animals; this was based on the recognition of sentience. The [1997 Treaty of Amsterdam](#) acknowledged that ‘since animals are sentient beings, members should pay full regard to the welfare requirements of animals’ (a clumsy phrase). The [UK Animal Welfare Act \(2006\)](#) imposed a duty of care on responsible persons to provide for the basic needs of their animals (both farmed animals and pets). This act signified a considerable advance, since it is no longer necessary to prove that suffering has occurred; it is only necessary to establish that animals are being kept or being bred in such a way that is *liable to cause suffering*. These proscriptive laws are written in broad terms, which gives them the flexibility to deal with a range of specific circumstances. However, they beg several questions. ‘What constitutes suffering, especially necessary suffering? ‘What are the welfare requirement of animals?’, and (above all) ‘What is meant by sentience?’

Sentience and the sentient mind. Sentience is a generic term that carries no more specificity than (say) nutrition. It covers too wide a spectrum to be of much help in governing our interactions with specific animals in specific circumstances, and the legislation that governs our actions. Should we assume that animal sentience is an either/or thing or are there degrees of sentience? If we assume that there are degrees of sentience, at what degree do the capacity to experience pain, fear, grief and joy and the motivation to seek quality of life (for example) matter to the animal (and so to us)?

In a new book (Webster 2022) I have adopted the protocol of the five Buddhist skandhas of sentience: matter, sensation, perception, mental formulation and consciousness, not as an expression of conversion to Buddhist belief, but as a scientifically compact way of classifying stimuli, feelings and emotions. According to this classification, all living matter is sentient in that it reacts to stimuli: sunflowers turn to the sun, amoebae move away from acid solutions; **but we have no reason to assume that this involves feelings.** Sensation involves the recognition of primitive stimuli such as hunger and pain, well documented in mammals, birds, fish (perhaps not sharks), and cephalopods (**see also Crump et al. 2022**), and now recognised by the [1986 UK Scientific Procedures Act](#). The power of perception gives an animal the ability to recognise and remember the events associated with stress and satisfaction and to adjust its future behaviour. Such animals do not just live in the present. The powers of mental formulation and higher consciousness enhance the capacity of animals to interpret their past experience, adjust their future behaviour and educate their offspring. I argue that while all animals may be sentient, those with the ‘higher’ powers of perception, mental formulation

and consciousness have *sentient minds* that experience not just primitive sensations such as hunger, pain and acute fear, but also a much wider spectrum of lasting emotions ranging from chronic anxiety, depression and grief to companionship, comfort and joy.

This characterisation of sentience and sentient minds matters to us. To give a facile example, we would not expect to apply the same ethical standards to a sunflower as to an elephant. To be more practical, the UK Scientific Procedures Act 1986 requires that procedures involving laboratory animals should only be allowed subject to a harm/benefit analysis where the cost to the animal in terms of ‘pain, suffering, distress, or lasting harm’ can be justified in terms of the potential benefit to humans (or other animals). Once we accept that a laboratory rat has the power of perception (a sentient mind), the cost to the animal in suffering and lasting harm is not determined by the procedures alone but by the animal’s overall quality of life (e.g. barren cages v. enriched environments).

This is a very brief glimpse at a very big topic that is indeed the whole *raison d’être* of this journal. I offer the skandhas as a scientifically elegant classification of the degrees of sentience as a potential basis for discussion, experimental design and our actions toward the animals in our care.

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