



# Animal ethics - 04/06 May

Jacques de Vaucanson's mechanical digesting duck (1739)

# Animal ethics: sentience (pain consciousness)

## - 04/06 May 2022

1. Introduction to the debate: the moral considerability of non-human organisms;
2. The phylogenetic distribution of sentience;
3. Bioethical implications.

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# 1.1 Introduction to the debate

When we dealt with the themes of abortion and euthanasia, we dealt with the moral concept of person.

It was assumed that only humans are the possible persons of interest, the only organisms whose rights should be considered or protected.

When we consider the animal ethics debate and the issue of our treatment of other species, the issue becomes whether **non-human animals** (or non-human organisms more generally) are members of the moral community whose welfare (and possibly rights) should be considered or protected.

## 1.2 Introduction to the debate

**Speciesism:** characterisation of the concept of morally considerable member of the moral community in terms of a distinctive property of the human species.

Singer (1974) argued that speciesism amounts to a morally unjustifiable bias, like racism:

*“... the racist violates the principle of equality by giving greater weight to the interests of members of his own race, when there is a clash between their interests and the interests of those of another race. Similarly the speciesist allows the interests of his own species to override the greater interests of members of other species. The pattern is the same in each case.”* Singer 1974, p. 108

## 1.3 Introduction to the debate

Speciesism is a way of founding **human exceptionalism**, i.e., the thesis that the human species is morally superior to others.

Biologically, human exceptionalism is based on the assumption that there exist distinctive human-specific phenotypes on the basis of which humans have moral status and non-human organisms do not.

**First problem of human exceptionalism:**

if some universally distributed and unique phenotypic properties of *Homo sapiens* exist in the first place, they might be **morally irrelevant**.

For instance, only humans like cricket, wear clothes, write poetry, have sex in private etc. But are these relevant properties for moral consideration?

## 1.4 Introduction to the debate

### **Second problem of human exceptionalism:**

for any putatively distinctive phenotypic property, it will be very difficult to show that **all** humans have it (that it is universally distributed among *Homo sapiens*).

For instance, Warren - slide 1.10 in abortion class - identifies the ability to communicate as a criterion of personhood; but this ability is not only lacked by members of other species, but also by some humans.

So, are these humans excluded from our species?

## 1.5 Introduction to the debate

### **Third problem of human exceptionalism:**

for any putatively distinctive phenotypic property, it will be very difficult to show that **only** humans have it (that it is species-specific and unique to *Homo sapiens*).

Choose any morally relevant phenotype and ask: do non-human organisms possess it in some homologous form?

Homology is a consequence of evolution through descent with modification from a common ancestor: “*There’s no fundamental difference between man and animal in their mental faculties.*” Darwin, C. 1871.

## 1.6 Introduction to the debate

Given the difficulties of human exceptionalism, the alternative way to characterise the concept of morally considerable member of the moral community is to identify a **gradual property** that we share in common with other species.

Kant = moral considerability = rational, conscious and free agent.

Utilitarians = moral considerability = sentient being.

Both rationality and sentience are at the basis of moral choice. Rationality is the precondition choosing the morally correct course of action.

Sentience is the precondition of choosing to avoid pain and pursue pleasure, which are the morally correct actions.



## 1.7 Introduction to the debate

**First problem of characterising the concept of morally considerable member of the moral community by focusing on a gradual property: the issue of degree.**

Many other species exhibit rational and sentient behaviour.

Some non-human animals indeed exhibit behaviour that is more rational - e.g., utility-maximising - than humans.

The same (today we think) applies to sentience (which is the topic of this class).

## 1.8 Introduction to the debate

*“The idea of a person in the almost technical sense required by morality today is the one worked out by Kant in his Foundations of the Metaphysics of Morals. It is the idea of a rational being, capable of choice and therefore endowed with dignity, worthy of respect, having rights; one that must be regarded always as an end in itself, not only as a means to the ends of others. .... **Now, if intelligence is really so important to the issue, a certain vertigo descends when we ask, 'Where do we draw the line?' because intelligence is a matter of degree.**”* Midgley 1985, p. 3.

So, the crucial question becomes: **what degree of rationality or sentience is sufficient for moral considerability?** (We shall return to this in section 3).

## 1.9 Introduction to the debate

**Second problem of characterising the concept of morally considerable members of the moral community: which gradual property should we choose? Rationality or sentience?**

There is something intuitively morally abominable in choosing rationality as the morally significant property.

As Dawkins (2001, pp. S27-S28) puts it: *“After all, you don’t need to be very clever to feel pain or hunger or fear”*.

**It is thus not surprising that many classic arguments in animal ethics - both from (unsurprisingly) the utilitarian (Singer 1974) and deontological (Regan 1985) tradition - focus on sentience.**

Indeed “Animal sentience forms the foundation of animal welfare science and it is why animals need protection” (Proctor et al. 2013, p. 897).

## 1.10 Introduction to the debate

**Sentientism: sentience is the key biological property making an organism morally considerable.**

*“The day may come, when the rest of the animal creation may acquire those rights which never could have been withholden from them but by the hand of tyranny ... What else is it that should trace the insuperable line? Is it the faculty of reason, or perhaps, the faculty for discourse?...**the question is not, Can they reason? nor, Can they talk? but, Can they suffer?**”*. Bentham, J. 1780/1789, chapter xvii, paragraph 6

**So, one crucial question becomes: are some non-human organisms sentient?**

## 2.1 The phylogenetic distribution of sentience

*“Other animals, which, on account of their interests having been neglected by the insensibility of the ancient jurists, **stand degraded into the class of things** .... “. Bentham 1780/1789, chapter xvii, paragraph 6.*

Why is that so? Let us take a look at history.

Aristotle: only humans have rational souls, while the locomotive souls shared by all animals, human and nonhuman, endow animals with instincts suited to their successful reproduction and survival.

Distinction between instinct and reason paves the way to an ontological distinction, a phylogenetic fracture, between humans and non-humans.

## 2.2 The phylogenetic distribution of sentience

Descartes' conception of animals as automata makes sentience superfluous.

Mechanistic explanation of the behaviour of nonhuman animals by reflex.

**Animals are reflex-driven machines, with no intellectual capacities.**

(cf. The mechanical digesting duck in the first slide).

*“Descartes himself practiced and advocated vivisection (Descartes, Letter to Plempius, Feb 15 1638), and wrote in correspondence that the mechanical understanding of animals absolved people of any guilt for killing and eating animals.”* Allen & Trestman 2016, section 3

## 2.3 The phylogenetic distribution of sentience

Aristotle: instinct vs. reason + Descartes: mechanical reflex vs. rational thought.

The alternative idea of **behavioural flexibility**, of being able to go beyond instinct or mechanical reflex, possibly involving some form of sentience, arose with evolutionism and Darwinism.

*“It is a significant fact, that the more the habits of any particular animal are studied by a naturalist, the more he attributes to reason, and the less to unlearnt instinct.”* Darwin 1871, Book I, p.46.

Indeed, sentience studies have generated a drive towards the **widening of sentience ascription** once confined to humans and now encompassing primates, mammals, vertebrates etc. (Allen & Trestmann 2017).

## 2.4 The phylogenetic distribution of sentience

Contemporary sentience studies are supported by a rich theoretical framework.

A crucial requirement for sentience is **nociception** (i.e., the capacity to sense noxious stimuli). Evidence of nociception is ubiquitous (e.g., bacteria perceive noxious stimuli). But nociception is considered insufficient for sentience ascription (otherwise bacteria would be considered sentient).

A basic theoretical distinction is drawn between mere nociception and pain: being sentient is being **pain conscious**, i.e., being able to feel the aversive quality of noxious stimuli, its feeling of unpleasantness, that is, to experience the suffering generated by noxious stimulation.



## 2.5 The phylogenetic distribution of sentience

This distinction between sensory (i.e., nociception) and affective pain is ubiquitous in sentience studies (even though it's also criticised, see Talbot et al. 2019).

But if pain consciousness requires a **subjective experience** concerning the aversive quality of noxious stimulation and its feeling of unpleasantness, **how can we identify the pain conscious and sentient organisms** who experience the affective dimension of pain?

We need to identify phenotypes that are linked to sentience: what are the **indicators of sentience?**

## 2.6 The phylogenetic distribution of sentience

Two kinds of evidence:

1. **evidence from comparative morphology and physiology, that is, phylogenetic.** The difficulty of the problem of establishing the phylogenetic limits of sentience is that when the organisms of different lineages are too different, then phylogenetic evidence becomes increasingly problematic.
2. **behavioural evidence.** The difficulty in this case is that there are various behavioural indicators of sentience and that evidence for each is difficult to interpret in a neutral way (without endorsing a biased phylogenetic perspective).

## 2.7 The phylogenetic distribution of sentience

Example 1: phenotype = anterior cingulate cortex (ACC). **Sentience = mammalian phenotype. Phylogenetic distribution: all mammals.**

1. The ACC is unproblematically associated with sentience in *Homo Sapiens* and mammals;
2. Investigate whether fish (e.g., salmon) possess a structurally homologous or a functionally analogous trait X' to ACC;
3. Salmon lack X'. Thus fish are not sentient.

But this argument is too coarse. Why?

## 2.8 The phylogenetic distribution of sentience

First, why should ACC be such a crucial phenotype? Is the evidence that, in humans, ACC is crucial for pain consciousness (in processing the affective dimension of pain) rather than nociception enough to dismiss the possibility of fish being sentient?

Secondly, and most generally, the use of analogical evidence can be criticised for a fundamental reason, i.e., **evolution might have produced a variety of morphological and physiological structures realising sentience:**

*“While the ACC is important to mammals, there remains the possibility that other taxa may have functionally similar structures, such as the corticoidea dorsolateralis in birds.”* Allen & Trestman 2017 section 6

## 2.9 The phylogenetic distribution of sentience

“... *the most obvious place to draw a line between pain-conscious organisms and those not capable of feeling pain consciously is between vertebrates and invertebrates.*” Allen & Trestman 2017 section 7.1

Example 2: phenotype = centralised nervous system (CNS). **Sentience = vertebrate phenotype. Phylogenetic distribution: all vertebrates.**

1. The CNS is unproblematically associated with sentience in *Homo Sapiens* and many vertebrates;
2. Investigate whether insects (e.g., bee) possess a structurally homologous or functionally analogous trait X' to CNS;
3. Insects lack X'. Thus insects are not sentient.

Again, this argument is too coarse.

## 2.10 The phylogenetic distribution of sentience

First of all, vertebrate brains vary extensively, from lampreys to humans. Secondly, morphological evidence of this kind is difficult to interpret. For instance, Barron & Klein (2016) argue that the cephalic ganglion of the insect brain executes a command function over the behavioural system, making the insect brain functionally analogous to a vertebrate CNS. Thirdly, the use of analogical phylogenetic evidence can again be criticised because evolution might have produced a variety of morphological and physiological structures realising sentience. Indeed, in sentience studies, phylogenetic evidence is complemented by behavioural evidence.

## 2.11 The phylogenetic distribution of sentience

Behavioural indicators of sentience: what kinds of behaviour should be associated with pain consciousness or affective pain?

Theoretically speaking, pain consciousness is hypothesised to require integrated cognitive processing of noxious stimuli with other kinds of perceptual, memorised and internal (i.e., physiological) stimuli.

The integration requirement is necessary in order to distinguish between:

1. organismal responses that are **systemic/global** from those that are dependent on the reactive capacities of subsystems such as cells or organs;
2. organismal responses that are **flexible and plastic** from those that are instinctual, reflexive, innate or genetically determined.

## 2.12 The phylogenetic distribution of sentience

The rationale of this view is that global and flexible responses can be interpreted as somehow planned and directed behaviours, indicating some form of “**decision-making**” on the basis of nociception.

Some behavioural indicators of sentience:

1. motivational trade-offs: the organism behaves as if weighing its preference to avoid a noxious stimulus against other preferences;
2. conditioned place avoidance: the organism learns to avoid locations at which it previously encountered noxious stimuli.

**On the basis of behavioural evidence, can we extend sentience ascription beyond the vertebrate limit?**



## 2.13 The phylogenetic distribution of sentience

Elwood and Apple (2009) subjected hermit crabs to weak electric shocks (not eliciting immediate evacuation of the shell).

What such shocks elicited was a series of more complex behavioural responses compatible with the occurrence of “evaluations” on the basis of memorised information concerning the strength of the shock and the quality of the shell as well as perceptual information concerning the presence of competitors and predators.



## 2.14 The phylogenetic distribution of sentience

For instance, crabs were more likely to abandon the less preferred species of shell and they were less likely to evacuate their shells when the presence of predators was perceived, thus displaying a capacity of evaluating comparatively whether the advantage of keeping the shell for protection is worth the cost of being electrocuted or predated.

It seems intuitive to conceptualise crabs' avoidance of prospective painful experiences because, despite having neurologically unsophisticated brains, they seem to be able to somehow realise the capacity of feeling affective pain, that is, the aversive quality of the noxious stimulus (Elwood 2019).

This is possible evidence of sentience.

**Sentience ascription might thus include some invertebrates.**

## 2.15 The phylogenetic distribution of sentience

The same kind of methodology of mixing phylogenetic and behavioural lines of evidence can be applied to all organisms, including plants and bacteria for instance.

**So, how far down phylogeny can we find evidence of sentience?**

Difficult question as much molecular research is still “Cartesian” in spirit (assuming that organism= machine):

“To me, one of the most interesting questions of behavior is how an organism can make a decision about what to do when it encounters conflicting stimuli .... We are now identifying the genes involved in that mechanism, and we will determine how the proteins normally made by those genes declare a decision. This may apply not only to flies but perhaps also to other organisms including humans.” Adler 2011, p. 59

## 3.1 Bioethical implications

Summing up, the drive towards widening sentience ascription shows that:

1. Speciesism and human exceptionalism should be considered biases grounded on an anachronistic view of biological organisms as reflex-driven machines. This perspective has its rationale in evolutionism.
2. At the same time, contemporary biological research shows the difficulty in finding an objective way to establish which lineages are sentient and which are not.

**Can scientific evidence ever be sufficient to draw a line between sentient and non-sentient organisms? If it cannot, how can biology inform bioethical debates concerning animal welfare?**

## 3.2 Bioethical implications

General point: **science cannot determine policy; there is no pure evidence-based policy.**

The issue is not only that we are often ignorant (that evidence is insufficient), but that bioethical questions have an irreducible **ethical component** (e.g., when does a developing human become a person? Is the right to die morally acceptable? Is the Covid vaccination of children ethical?).

In the case of the putative sentience of non-human organisms, analogous ethical issues emerge: **what degree of sentience is sufficient for legal protection?** This question looks scientific but it has an irreducible ethical component.

## 3.3 Bioethical implications

**How much evidence is necessary to convince us that an organism is sentient?** Absolute certainty is unachievable:

*“Whilst other areas of science will often make do with imperfect data, animal sentience is required to buck the trend and provide unequivocal proof. Neuroscientist Donald Griffin coined the term ‘Paralytic perfectionism’ to describe this contradictory way in which scientists still demand absolute certainty before they can accept animal sentience.”*

Proctor et al. 2013 p. 883

**The lack of absolute certainty is not a good reason to deny legal protection to potentially sentient animals. A precautionary approach could be justified when evidence is insufficient.**

## 3.4 Bioethical implications

A precautionary principle can be formulated in the case of animal welfare in this way: *“Where there are threats of serious, negative animal welfare outcomes, lack of full scientific certainty as to the sentience of the animals in question shall not be used as a reason for postponing cost-effective measures to prevent those outcomes.”* Birch 2017, p. 3

The application of a precautionary approach is particularly understandable from a utilitarian perspective: consider the billions of farmed animals and millions of animals used in lab testing; if unprotected, their suffering would cause a massive decrease in the total happiness of the moral community.

## 3.5 Bioethical implications

Now consider the case of decapod crustaceans (e.g., crabs, lobsters, crayfish).

There is some evidence in favour of their sentience (slide 2.14), but if the evidence is considered inconclusive, how should we act?

A precautionary approach would recommend some form of protection decapods (UK 2021 Sentience Bill: <https://researchbriefings.files.parliament.uk/documents/CBP-9423/CBP-9423.pdf>).

However, the current EU Animal Welfare directive (<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0063&from=EN>) does not include decapod protection.



## 3.6 Bioethical implications

**Why this difference in approach? The difference depends on other ethical and pragmatical considerations.**

One of the reasons at the root of the lack of protection of decapods in EU legislation might be that the biomedical research practice to “reduce, refine and replace”\* would be impeded because decapods would not be used as alternatives to **replace** vertebrates in animal research.

\* Replace the use of animals with alternative techniques + Reduce the number of animals used to a minimum + Refine the way experiments are carried out, to make sure animals suffer as little as possible.

## 3.7 Bioethical implications

This is a utilitarian argument: the benefit of continued biomedical experimentation with decapods for the moral community outweighs the costs for decapods.

A criticism of this position might be that animal models in biomedical research are, as a matter of fact, not very useful (e.g., that *in vitro* techniques are much more useful, see Carvalho et al. 2019).

But there are deeper ethical questions:

what kind of ethical argument could be used to justify the view that some animals' suffering (e.g., vertebrates) is morally more important than others' (invertebrates)? Is this not a higher form of speciesism?

## 3.8 Bioethical implications

**Is evidence of sentience necessary and sufficient for legal protection?**

**What kind of protection?** The issue is generally not about eating, but about methods of capture, transport and slaughter.

**Is this form of limited legal protection ethically acceptable?**

If sentience ascription is widened extensively to include all organisms, what ethical implications should we draw?

Does it make sense to compare the sentience capacities of humans, cows, octopi, crabs, plants, unicellular organisms etc?

**What degree of sentience is sufficient for moral considerability?**

## 3.9 Bioethical implications

From a Kantian perspective, it might be argued that it is an **obligation** to protect animal welfare whenever there is evidence of sentience. Regan (1985, p. 24) argues that given that many animals are sentient, they have **an intrinsic value** and, as ends in themselves, should be thoroughly protected. Veganism is the way forward.

From a utilitarian perspective, it might instead be argued that evidence of sentience is enough for moral considerability, but not enough for granting strong forms of legal protection. The moral community includes all humans and all sentient species, so protection for one species must be counterbalanced by an **analyses of the benefits for the entire moral community**.

Primary resource:

Allen, C. and Trestman, M. 2017. Animal Consciousness. The Stanford Encyclopedia of Philosophy (Winter 2017 Edition). Edward N. Zalta (ed.) - Sections 3, 6 and 7.1

<https://plato.stanford.edu/entries/consciousness-animal/>

Additional resources:

Adler, J. 2011. My life with nature. *Annual Review of Biochemistry* 80:42–70.

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Talbot, K. et al. 2019. The sensory and affective components of pain: are they differentially modifiable dimensions or inseparable aspects of a unitary experience? A systematic review. *British Journal of Anaesthesia*, 123(2):e263-e272