Animals, Ethics and Trade

THE CHALLENGE OF ANIMAL SENTIENCE

Edited by Jacky Turner and Joyce D'Silva

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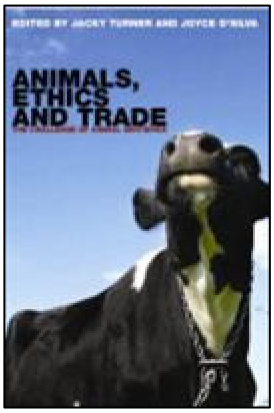

- The use of animals for meat, for hide, for their labour and in laboratories has been justified with the assumption that unlike humans, animals aren't fully sentient beings.
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The Distribution of the Capacity for Sentience in the Animal Kingdom

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At the Amsterdam Summit in June 1997, agreement was reached by the European Heads of State to make provision in the Treaty of Rome (which established the European Community in 1957) '. . . to ensure improved protection and respect for the welfare of animals as sentient beings'.

'We live at a unique point in the history of science. The technology to discover and characterize how the subjective mind emerges out of the objective brain is within reach. The next years will prove decisive' (Koch, 2004).

Sentience: Solo to symphonic

My view about animal welfare is in line with the sentiment behind the agreement reached by the European Heads of State at their Amsterdam Summit in June 1997 (see above), though it is not, as I will discuss later, in line with what it actually says. For me, concern for an animal's welfare is concern for its feelings – concern for the quality of its life as it experiences it. (Here and throughout I use 'feelings' as shorthand for conscious/subjectively experienced feelings, likewise by 'feel' I mean consciously/subjectively feel.) Thus, it seems to me that welfare is: 'The balance, now or through life, of the quality of the complex mix of subjective feelings associated with brain states induced by various sensory inputs and by cognitive and emotion processes' (Kirkwood, 2004a). I think it is helpful, in this way, to reserve the use of the word 'welfare' to address feelings rather than using it to include health also. How an animal feels can be influenced by its state of health and by its environment, so these are of course often central to the subject of animal welfare, but it seems to me that there is much to be gained and nothing to be lost by keeping the meanings of the terms *health* and *welfare* distinct in this way.

To be sentient is to have the capacity to feel (in the sense defined above) something. Except in deep sleep or some pathological states, the lives of most of us humans are characterized by many kinds of feelings. Some of these, including sights, sounds, tastes, warmth and cold, and the various sensations arising from touch, are associated with our external sensors. Others are associated with internal sensors that provide our brains with information about the states of our bodies. The latter include general, non-localized or only vaguely localized feelings such as exhaustion, malaise or ecstasy, and localized feelings such as aches and pains. In addition, we experience a spectrum of feelings associated with the thoughts and emotions that may be prompted either by the inputs from these internal and external sensing devices, or (it seems) by the constant internal conversations – some conscious, some subconscious – of our brains. For example, fear (or, in others, delight) may be induced by a glimpse of a snake beside one's unshod foot, and feelings of sorrow or joy may be evoked by music or by remembering sad or happy events.

It is conceivable (though I struggle with the notion) that the kind of multifaceted sentience that we experience – symphonic is a good word to describe it – may have sprung suddenly into existence from non-sentient ancestors. For example, some genetic change may have resulted in a crucial alteration in the organization, the patterns of communication, among brain modules, which resulted in the emergence of sentience. If this conferred a significant evolutionary advantage, then it might have spread rapidly through the descendent population of our ancestors. Such a scenario would be consistent with the views of those who believe that the current scientific evidence is that sentience is limited to humans only, or to humans and perhaps a very few other species (see, for example, Kennedy, 1993; Bermond, 1997; Macphail, 1998).

The other, and perhaps more likely pattern of events than this *non-sentient to symphonic sentience in one step* hypothesis, is that our kind of symphonic sentience evolved in stages from an earlier, simpler, 'solo' version. The first sentient organism may have been consciously aware of only one sense – one aspect of sight, for example (our conscious vision is formed from the coordinated activity of many distinct and separate brain modules that each handle specific tasks to do with, for example: colour, recognition of particular objects, position, distance and movement). This faculty for conscious awareness might then have been commandeered by evolution to enhance (if that is what it does) other aspects of vision, and then have been further applied to other senses such as hearing and taste, and then to cognitive and emotional processes also. I am not suggesting that this may actually have been the sequence in which various senses and neuronal processes came under the spotlight of consciousness – it might have happened in the reverse order – but only that there may have been a stepwise development in the range of phenomena that could be accessed within consciousness.

As stated above, to be sentient is to have a feeling of something. This implies that the phenomenon of sentience either exists or it doesn't: that an organism either is sentient or it isn't. How could this discrete presence or absence be consistent with the gradual process of evolution? There is no problem envisaging gradation in the intensity of a feeling – pain can vary from a barely discernible to a very severe sensation – but it is much harder to see how the very capacity to be aware of pain could be other than either present or absent. You either feel something, no matter how slightly, or you don't – it is hard to conceive a halfway stage here. This may well be an important issue – the explanation of which might prove revealing – but it is not one that can be pursued further in this paper. Brains work by passage of information among hierarchical assemblages of neurons. Perhaps sentience evolved with a slight change, by chance, in organization that resulted in a small assemblage of cells 'recognizing' patterns of activity of the previously insentient brain design.

Envisaged in this way, sentience may indeed depend upon a specific form of neuronal organization that either is present or not, but it may have started with changes that involved very few cells in the first instance. This leads on to the subject of this paper, which is the distribution of the capacity for sentience in the animal kingdom. It is appropriate to begin this with a brief review of the animal kingdom and of who or what is and is not currently included within it.

What is an animal?

The Amsterdam Summit agreement in June 1997 that provision should be made in the Treaty of Rome '… to ensure improved protection and respect for the welfare of animals as sentient beings' recognizes the crucial moral implication of sentience. Sentient beings have feelings and thus the capacity for pleasure and suffering. This agreement is an expression of society's stance that, in view of this capacity, it is morally important to consider the welfare of sentient beings in all our interactions with them.

However, the wording 'welfare *of animals as sentient beings*' implies that all animals are sentient and, in referring only to animals, implies that only animals are. It assumes that the distribution of sentience among all organisms maps exactly onto the distribution of animals among all organisms. (One senses from the wording here and in many other pieces of legislation that a strong grounding in phylogeny has not traditionally been seen as a key part of the legislators' toolkit.) These implicit assumptions could have been avoided by agreeing, instead, to ensure improved protection and respect 'for the welfare of sentient beings' or 'for the welfare of sentient animals'. These alternatives would have been preferable, in my opinion, since they make possession of sentience, rather than type of organism, the crucial issue. Are all animals sentient? Are only animals sentient?

The animal species are a relatively small subset (1–2 million) of the estimated 30 million living species. They are characterized by being multicellular, by not having cell walls and by being heterotrophic – that is, they eat other life forms or their organic products. Animals cannot synthesize organic matter from inorganic components. Most of the organisms large enough to be seen with the naked eye are members of the animal, the plant or the fungi kingdoms, but these are a small part of the whole diversity of life, which, it now seems, comprises dozens of types as different from one another as are plants, animals and fungi (Dawkins, 2004).

There is good evidence that life on earth was well underway 3.5 billion years ago. Our ancestors became multicellular around 900 million years ago, quite some time after we shared our last common ancestors with plants and fungi, about 1.2 and 1.1 billion years ago, respectively (Dawkins, 2004). We have a multitude of more distant relatives outside the animal kingdom that are animal-like in some respects, in that that they move around and feed on other organisms – and which were in fact classified as animals until very recently. However, the classification of animals has been undergoing radical revisions in recent years, partly as a result of emerging genetic evidence, and the taxonomists have moved some of the goal posts. Unicellular organisms such as amoebae, euglenids, flagellates and ciliates are no longer counted as animals. 'Animals' used to include three groups: Protozoa – single-celled animals; Parazoa – the sponges; and Metazoa – multicellular animals with differentiated bodies. The sponges, which have been promoted to the Metazoa, remain in, but the protozoans are out.

The kingdom Animalia (also called Metazoa) is divided into some 33 phyla (see Table 2.1). There is a remarkably diverse range of body designs and lifestyles within this kingdom and a very great range in complexity. One of the apparently simplest animals, the water-dwelling placozoan *Trichoplax adhaerens*, is a tiny flat irregularly shaped, three-cell-thick mat. It has only four types of cells, in contrast to the more than 250 types in humans. There are many ways in which complexity could be measured among animals, but on the basis of the genome, it would be reasonable to suggest that the vertebrates are at the complex end of the scale (Dawkins, 2004). In terms of complexity of brain design and function and of associated behavioural complexity, *Homo sapiens* may top the bill. The human brain has some 100 billion neurons and 100,000 billion synapses, so the potential number of ways it can be configured – the ways in which its neurons can be linked up – is staggeringly vast (Churchland, 1996).

Our own phylum, Chordata, containing about 45,000 species in more than 100 orders (see Table 2.2), is a relatively small one. By contrast, there are approaching a million species in the phylum Arthropoda. Our closest relatives outside our own phylum are the Ambulacrarians, which include the sea urchins and starfish. Our last common ancestor with these – which was probably small and worm shaped – lived about 570 million years ago (Table 2.3). A little further back in time, our most recent shared ancestor (also small and worm-like) with the protostomes, the large group of phyla which include the arthropods (e.g. insects, spiders, centipedes, crabs and lobsters); the nematodes and acanthacephalans (some of which are commonly responsible for parasitic diseases in mammals and birds); and the molluscs (such as snails, shellfish and octopus), lived about 590 million years ago (Dawkins, 2004).

Table 2.1 *The phyla of the animal kingdom*

Kingdom				Phyla	
Mesozoa				Porifera	Sponges
				Placozoa	*Trichoplax adhaerens*
Eumetazoa	Radiata			Cnidaria	Jellyfish, corals, anemones
				Ctenophora	Comb jellies
	Bilateria	Protostomia	Acoelomates	Platyhelminthes	Flatworms
		(>1,000,000 species)		Nemertea	Ribbon worms
			Pseudocoelomates	Rotifera	
				Nematoda	Roundworms
				Acanthocephala	Thorny-headed worms
				and 7 others	
			Eucoelomates	Mollusca	Snails, oysters, octopus
				Annelida	Earthworms
				Arthropoda	Insects, arachnids, crustaceans...
				and 8 others	
		Deuterostomia		Echinodermata	Sea urchins, starfish
		(60,000 species)		Chordata	Squirts, lancelets, vertebrates
				and 4 others	

Table 2.2 *The orders of the phylum Chordata*

Phylum	Class	Order	
Chordata			
Tunicates	Ascidiacea		Sea squirts
Vertebrates	Agnatha		Lampreys, hagfishes
	Chondroichthyes		Sharks
	Osteichthyes	> 20 orders	Bony fish
	Amphibia	Anura	Frogs, toads
		Caudata	Salamanders, newts
		Gymnophiona	Caecilians
	Reptilia	Testudinia	Tortoises, turtles
		Crocodylia	Crocodiles
		Rhynocephalia	Tuatara
		Squamata	Snakes, lizards
	Aves	Anseriformes	Ducks, geese
		Galliformes	Fowl, pheasants
		Passeriformes	Songbirds
		and 25 other orders	
	Mammalia	Primates	Primates
		and 16 other orders of placentals	Other placental mammals
		and 7 orders of Marsupials	Marsupials
		Monotremata	Echidnas, platypus

The animal kingdom is very diverse. Do we have good grounds for assuming that all animals are sentient? Before returning to the difficult question of how we might decide which organisms are or are not sentient, I will briefly outline why I believe the matter to be of great importance.

Table 2.3 *Time since our last common ancestor with various other taxa*

	Time since last common ancestor (million years)
Chimpanzees	6
Macaques	25
Rats, mice, rabbits	75
Marsupials	140
Reptiles, including birds	310
Amphibians	340
Fish	440
Sharks	460
Sea squirts	565
Starfish, anemones	570
Protostomes	590
Jellyfish	
Placozoans	780
Sponges	800
Fungi	1100
Amoeba	
Plants	**1200**

Source: Dawkins, 2004

Why do we need to know which organisms are sentient?

The world currently faces a major challenge. There are over six billion of us humans and the population is still growing very rapidly. For animals of our body size we have biologically unprecedented rates of energy utilization (Kirkwood, 2001). On a small planet with a finite annual productivity of organic matter (food) limited largely by the sunlight falling on it, we are, whether we like it or not, in competition with many other species. It has been calculated that the total terrestrial net primary production each year is 120 billion tonnes of organic matter (equivalent to 400×10^{15}kcal/year) and that 24.2 billion tonnes (i.e. 20 per cent) of this is appropriated by humans (Imhoff et al, 2004). To a remarkable extent, we now influence the apportionment of essential resources amongst the 30 million other species, including the tens of thousands of species that are widely assumed to be sentient. We are thus faced with the challenge of meeting the requirements of the still very rapidly growing human population, whilst protecting, as far as possible, biodiversity and the welfare interests of other sentient species that we use or whose fates depend upon our actions.

Amongst other things, this requires that we make sound inferences and judgements about feelings in other animals: whether or not they have them, their quality – pleasant or unpleasant – and their intensity. In this way, when our interests conflict with theirs, as they will continue inevitably to do, we can attempt to balance these interests wisely and kindly, and to take proper steps to minimize risks to welfare (Kirkwood, 2004b).

One of the key pieces of wisdom we require for this concerns the judgement about where the boundaries lie between those organisms that are sentient and those that are not. There are two reasons why this is crucial. First, we often need to intervene in inter-species conflicts; for example, in preventing or treating diseases in vertebrates caused by nematodes or arthropods. And, in these cases, if we are to be humane, the approach we adopt has to take into account whether or not the protagonists are sentient. Secondly, protecting the welfare of sentient organisms from anthropogenic challenges is a massive task and the resources at our disposal are limited. If we cast the net too wide, efforts for welfare will be wasted on non-sentient organisms rather than being focused where they are needed.

We should note in passing here, that we (at least in western cultures) tend traditionally to side with the vertebrates when it comes to vertebrate/invertebrate conflicts. Thus we aim to make life better for sheep by trying to kill *Psoroptes*, the mange mites that cause sheep scab, and for cats and dogs by trying to kill fleas and other parasites, rather than striving to find ways to make life better for the mites and fleas. Likewise, legal protection for animal welfare is often limited, exclusively or almost exclusively, to vertebrates. When dealing with vertebrate/invertebrate conflicts this is not an unreasonable stance; however, it is very hard to make a watertight scientific case that the boundary between the sentient and insentient lies between the vertebrates and the invertebrates (Sherwin, 2001). In all our dealings with them, we have a special responsibility for sentient animals – a responsibility for their feelings. So, which species are sentient and should therefore be given welfare protection?

Which organisms are sentient?

This is a very difficult question. We humans each know that we personally are sentient and we can be certain (can't we?) that the first replicating molecules that began the tree of life 4 billion years ago were not. It follows that somewhere along the way sentience evolved, but we are not at all sure where. It may have been relatively recently and be present only in taxa closely related to us, or it may have evolved much longer ago and be more widespread. It may, like eyes, have arisen independently in various lineages. Scientific opinions have been diverse:

some have argued that sentience is probably limited to humans and some that there is no reason to exclude arthropods and other protostomes. Others have presented cases for placing the line at various intermediate positions in the 'tree of life' between these extremes (see the review by Kirkwood and Hubrecht, 2001). The matter is yet to be resolved. In a recent paper, Griffin and Speck (2004) reviewed 'evidence that increases the probability that many animals experience at least simple levels of consciousness', but observed that it remains possible that if and when an essential consciousness-generating mechanism is found, it might turn out to be something found only in human brains.

Before going on to discuss possible approaches to judging which species are sentient, it is worth reviewing why this presents such difficulties. Many take it as simply blindingly obvious that animals (or at least some of them) are sentient, but many others, throughout history, appear to have very readily accepted philosophical and religious teachings that, with the exception of humans, animals are not sentient (as reviewed by, among others, Rollin, 1989; Wise, 2000; Ryder, 2000). What is the problem? Very briefly, the difficulty is as follows.

It is easy to see why evolution equipped animals with the following:

- locomotory systems that enable them to seek food rather than waiting for it and to enable them to avoid predators;
- sensory systems to permit detection of good things from afar and to give early warning of dangers;
- additional and increasingly sophisticated capacities (e.g. for learning and memory), designs and strategies that increase the chances of feeding and breeding and to reduce the chances of starvation, disease or being preyed upon.

We should expect, therefore, even simple organisms to act as if they had feelings and intentions ('it's too warm here so I'll swim with my cilia towards that cooler spot'). But we should be cautious in assuming that all such behaviour is proof of sentience. We have an inherent tendency to interpret the behaviour of other animals as being based on feelings and intentions of the sort that seem to underlie much of our own behaviour (e.g. Povinelli and Vonk, 2003). It is thanks to our 'projection' of this capacity that *The Simpsons* exist – because we understand and empathize with what these drawings are 'thinking' and 'feeling'. It is not hard to explain why organisms evolved to behave *as if* they were sentient, but it is much more difficult to understand why evolution saw fit to make any animals *actually* sentient. In what way does it help?

It is very difficult to know when, during evolution, our ancestors evolved from 'blind' insentient mechanisms to mechanisms with the first glimmers of sentience – the first feelings of something: light, heat, salt, touch or whatever else it might have been. One might expect that this was such a dramatic and valuable new capacity that it would be associated with some obvious and marked discontinuity between the sentient and their insentient relatives. However, looking across the range of extant species, no clear stepwise change is readily apparent. Perhaps the reason for this is that the solutions to survival problems are likely to 'look' the same in both sentient and non-sentient organisms.

But if this is the case, if it is not obvious which organisms are and are not sentient from their natural behaviour, how might we be able to tell then apart at all?

How can we tell?

It would be very helpful in addressing this question to know the answers to two others: What evolutionary advantage does sentience confer? And what neural mechanisms does it depend upon? The answer to the first, perhaps surprisingly, remains elusive. I do not propose to review the extensive literature on this subject here. Christof Koch and Francis Crick (Koch, 2004), in line with a number of previous authorities, have proposed that consciousness may have evolved as a flexible way of tackling complex and novel situations, the solutions to which would otherwise have required a very large number of fixed subroutines. They hypothesize that: 'The function of consciousness is to summarize the current state of the world' (and of the organism itself in it) 'in a compact representation and make this "executive summary" accessible to the planning stages of the brain . . . . The content of this summary is the content of consciousness.' This has a very plausible ring to it (and is in line with the prevalent thinking on the subject, see Griffin and Speck, 2004), but it does not help much in distinguishing between the sentient and insentient at this stage.

Regarding the second question – concerning the neural basis of sentience – remarkable progress has been made in exploring the functioning of the mammalian brain in recent years and how it may generate feelings (see reviews by Ledoux, 1998; Rolls, 1999; Damasio, 1999, 2003; Glynn, 1999; Edelman and Tonini, 2000; Koch, 2004). However, whilst it has been clearly established that some parts of the brain are essential for aspects of conscious awareness in humans, knowledge of the structure and functioning of the simplest neuronal assemblage necessary to support consciousness is not yet at the stage at which it can provide a basis for critical evaluation of the occurrence of similar assemblages in other species.

There are two approaches to determining, or rather to providing, a firm basis for inferring sentience: behavioural and neurological. Some examples are outlined below.

Behavioural approaches

To be sentient is to have the capacity to be aware of something – to have something in mind. One approach to detecting sentience is to find ways to get animals to report or reveal what they have in mind (since revealing what you have in mind confirms that you have one). Koch (2004) has proposed, for example, that sophisticated actions that require retention of information over seconds (between receipt of the information and the start of the response) might be quite a robust practical test for consciousness in animals.

One approach to asking animals what they have in mind is that used by Inman and Shettleworth (1999) and by Hampton (2001) to enquire of pigeons and macaques, respectively, whether or not they ‘know’ when they remember an image they had recently been shown (the macaques ‘said’ they could). Of course, this particular approach aims to test for consciousness of memory, and would not tell us about consciousness of other phenomena such as feelings of fear or pain.

Another compelling demonstration of an animal directly reporting what it is conscious of comes from investigations of blindsight. Humans with blindsight, a condition in which there is loss of sight in part of the visual field, continue to be able to deal appropriately with visual information in this part of the field (Weiskrantz, 1997). Effectively their minds are blind but their bodies can see to some extent, using visual processing systems that are not consciously accessible. These people can, if asked, correctly point to a source of light, for example, whilst being able to see nothing. Cowey and Stoerig (1995) discovered that, after learning the test methods, macaques with blindsight could likewise respond appropriately to visual stimuli whilst reporting, by pressing a pad, that they did not see the stimulus. Some of the other ingenious approaches to devising ways to enable animals to reveal whether or not they have the capacity for consciousness have been reviewed recently by Griffin and Speck (2004).

Neurological approaches

If, in future, the minimum neural correlates of consciousness in humans are determined and the aspects of their structure and function relating to consciousness come to be comprehended, then it may be possible, equipped with this knowledge, to identify similar mechanisms in other species. It will not be enough merely to determine the neural correlates of consciousness in humans and then to see which species do or do not have corresponding brain regions, because the structure of central nervous systems varies greatly within the animal kingdom. Even within the vertebrates there is great diversity. Concluding their heroic volumes on the comparative anatomy of the central nervous systems of vertebrates, Nieuwenhuys et al (1998) comment: ‘Looking back on this whole endeavour, spanning as it does more than two decades of work, we are struck by a combination of frustration and wonder... It would be satisfying to conclude with some clever and subtle principle that made sense of all that has gone before, to reveal the secret of brain structure and its organization. Instead we are left with a sense of awe at the myriad complexity of it all.’

The complexity is indeed awesome. However, unless we have an understanding of the design of circuitry required for consciousness, we will not be able to ascertain which species do or do not have it. It may be quite a while before knowledge has advanced to the point at which this approach can be applied, but remarkable progress has been made in pursuit of the neuronal correlates of consciousness in recent years.

It seems highly likely that there is variation among sentient animals in the range of sensory, emotional or cognitive states that can fall within the spotlight of their sentience. We may have the impression that we are consciously aware of most of our external senses, but it has been shown that we can acquire and respond to information received through these routes subconsciously also. For example, there is evidence that we respond to some pheromone chemical signals that we have no awareness of, to images presented too fleetingly to register consciously and, in the case of blindsight patients, to visual stimuli despite blindness (Weiskrantz, 1997). There is evidence that there are two routes by which visual stimuli are processed: a dorsal 'vision-for-action' stream to which there is no conscious access and a ventral 'vision-for-perception' stream that is necessary for conscious vision (Milner and Goodale, 1995). As Koch (2004) points out: although 'common sense suggests that awareness and thought are inseparable and that introspection reveals the content of the mind', we do not, in fact, have access to most of our thought processes. For example, we are not and cannot become aware of the processes of finding words and putting them together in the correct sequence when we speak or of how we coordinate all the movements necessary to catch a ball. Much of what we do is unconscious.

So, if much of the brain is involved with unconscious processes, which parts are involved in the generation of consciousness? The approach pursued by Crick and Kock in their quest to understand the basis of consciousness is to focus on determining the neural correlates of visual consciousness – to determine the essential components (Koch, 2004). What, very briefly, are thought to be the key elements at the present time? Parvisi and Damasio (2001) propose that 'core consciousness (the simplest form of consciousness) occurs when the brain's representation devices generate an imaged, non-verbal account of how the organism's state is affected by the organism's interaction with . . . ' any facet of its environment. They suggest that representations in various brainstem nuclei of the current state of the organism form key input to more rostral brain structures (the cortex) for the generation of more composite representations of its state in relation to the outside world. The brainstem is a key part of the substrate of consciousness in another way also, because it plays an essential role in controlling the overall arousal level of the cortex. Severe damage to the brainstem precludes consciousness. However, a functional brainstem is not enough for consciousness in humans. Koch (2004), reviewing available evidence, suggests that the conscious perception of objects may be associated with electrical activity circulating between particular neuronal populations in the inferior temporal cortex or the medial temporal lobe and the prefrontal cortex. And, likewise, activity between the medial temporal cortex and the frontal eye fields could be the essential neural correlates for seeing motion. He concludes that unless activity in the visual cortex (in the occipital lobe) directly projects to the front part of the cortex, activities in the visual cortex cannot directly enter awareness. Current theories tend to endorse the idea that conscious awareness probably depends upon the activity of recurrent circuits between structures within the brainstem and the somatosensory and cingulate cortices (Damasio, 1999), between the cortex and the thalamus (Churchland, 1996; Edelman and Tonini, 2000) and within the cortex. Edelman (2004) has recently proposed that the point in evolution at which the necessary reciprocal thalamo-cortical connectivity appeared was around the time of the emergence of mammals and birds from reptiles (note, however, that the last common ancestor of birds and mammals was in the early days of reptile evolution, about 310 million years ago, so unless this property emerged twice, it must have had a precursor dating back at least to early reptiles).

It is, however, very early days to speculate about when sentience may have evolved. As emphasized above, until we have a have a much better understanding of the design of circuitry required for consciousness (and/or of what behavioural survival advantages it confers that may be detected), we will not be able to ascertain which species do or do not have it and when it may have arisen. How do we deal with this uncertainty in the meantime?

Living with uncertainty and hopes for the future

We cannot avoid, until such time as there is much greater certainty about which species are sentient, having to make judgements based on the balance of two principles, between which there can be some tension. The first is that since the matter is a morally important one, we should, as far as possible, give animals the benefit of the doubt and treat them as if they are sentient – as if they have the capacity for feelings and thus for suffering. The second is that efforts and resources for animal welfare should be prioritized and focused where they are needed, i.e. for sentient animals. The fact is that, despite the absence of a solid scientific basis for determining sentience, lines have to be drawn. In making such decisions, it is important to be clear about what is proven fact and what is subjective judgement (Sandøe et al, 2004), and of the costs and benefits.

Sentience is the fundamentally, morally important basis upon which concern for animal welfare rests. The animal kingdom is very large and we cannot avoid interacting or competing with many members of it for essential resources (e.g. food or space). We need to make sound judgements about which species are and are not sentient. It is to be hoped that scientific advances in behavioural approaches to determining sentience and/or in determination of the neuronal correlates of consciousness in humans and the presence or absence of functionally equivalent systems in other species will be made in the future.

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