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MIND-MATTER FOR ANIMALS MATTERS

Science and the Denial of Animal Consciousness

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Abstract

Animal people are usually confident that Cartesianism is something of the past and that modern science clearly establishes that animals are sentient beings.

But actually the scientific status of sentience is anything but firmly established. Not only is the subjective point of view absent from current science; it is precluded by construction from our fundamental realms of knowledge. Physics — the mother-science once we reject Cartesian dualism — is currently unable to include sentience in its account of the world.

A large part of the philosophy of mind describes a mindless mind, from which subjectivity — feeling, *qualia* — has been stripped, leaving only in place functional relations. This situation paves the way for discourses in which sentience seems to escape the realm of knowledge to fall into that of private beliefs, which individuals can choose as freely as their religion. This is a real obstacle to having animal sentience taken seriously; as such it has been largely underestimated.

We believe it necessary for the movement for animals to understand that it cannot bypass the “mind-matter” problem. We must not allow the existence and relevance of animal sentience to be denied in the name of science.

One path we are contemplating is a “Declaration on Sentience” in which scientists and other thinkers would subscribe to the following assertion: sentience is an objective reality of the world and belongs to the realm of science.

Despite the current intractability of the “mind-matter” problem, we do have something on our side. Although we cannot prove the reality of sentience, we can show it impossible for anyone to disbelieve in it — just as no one can really disbelieve in the reality of the physical world. We thus have enough reasons to reject the main ways in which sentience is denied or dismissed in many realms of current philosophy or science. These reasons are based on our own situation as sentient and deliberative beings.

For the main currents of philosophy — and for common morality — sentience is a necessary condition for a being to be a moral patient (for utilitarianism it is also a sufficient condition). The vividness with which we are conscious of a being's emotions determines the amount of attention we will give her. A decisive factor for bringing humans to treat other animals ethically is thus the unrestricted recognition of their possession of a mental life, of the fact that they think, desire, feel and so on. The movement for animals is confident in the support it can obtain in this respect from both modern science and modern philosophy: the Cartesian body/soul dualism is almost unanimously rejected, and no one nowadays defends outright the animal-machine doctrine.

What is the basis of this confidence in the solidity of our knowledge of sentience? It is the idea that common sense, supplemented with scientific data, no longer leaves any doubt about the reality of consciousness. In a sense, this view is justified. We do have an intuitive knowledge of the existence of sentience in others, even if our confidence in asserting its presence dwindles as we move to beings very different from ourselves, such as mussels and jellyfish. The starting point of our knowledge and beliefs about sentience is the personal experience we have of it, i.e. the fact that we ourselves have feelings. Our attribution of a mental life to others is based on analogy, on the physical and behavioral similarities between those beings and ourselves. In this respect, regarding both the physiological and the behavioral levels, the development of the different branches of science undeniably brings considerable support to the assertion of animal sentience. Three branches are particularly significant:

- The theory of evolution has evidenced the kinship of all animals (including humans), providing an explanation for both their physical and mental similarities¹
- Ethology, with methods that grow ever closer to those of human psychology and sociology, has gathered data on individual and collective behaviors of animals, including cultural behaviors.
- Neurobiology has established an ever more precise mapping between parts of the brain and faculties of perception, emotion or action, and has developed comparisons between the nervous systems of animals of different species.

¹ Darwin himself describes in detail (in *The Descent of Man*) the emotions that we find among animals, arguing that not only are they capable of pleasure and pain but also of fear, diffidence, timidity, boredom, curiosity, the desire for approval, astonishment, a taste for lively impressions, love and a sense of beauty. He recognizes in them mental capacities such as attention, memory, imagination, reason, and the formation of general concepts.

All of this is true; nonetheless, the favorable consequences of these scientific results for the animals remain uncertain, for two reasons that have to do with the question of knowledge itself:

1. The first reason is due to the uncertain status generally ascribed to ethics. Science and ethics are generally perceived as being radically different in nature. Science uncovers objective truths, such that are true for all and hold whether or not anyone comes to know them. To ethics on the other hand is often ascribed a lower status. The validity of ethical prescriptions tends to be seen as purely relative, dependent on the subject who defends them. Ethical assertions, as opposed to scientific assertions, are not seen as objective, as having a truth value, beyond the different and incompatible beliefs of different persons about what is right and wrong. Because each ethical prescription is phrased as a universal prescription, and different subjects utter different and incompatible ethical prescriptions, many people fall back on a relativistic point of view. This situation contrasts with the attitude generally accepted concerning science, where the existence of different and incompatible theories is usually seen as an indication of the fact that the truth, necessarily single, simply remains to be discovered.

2. The second reason is that the phenomenon of consciousness is very poorly accounted for at the fundamental levels of our knowledge. Not only is sentience absent from the accounts they give of the world: it is precluded by construction, or, at best, “included” as a *fake consciousness* or a *superfluous consciousness*. This void is a permanent threat to the recognition of animal sentience, the existence of which either is flatly denied, or seen as an undecidable and meaningless issue — this last position being often tantamount to its outright denial when it comes to the practical treatment of animals. Alternatively, animal sentience is seen as a non-scientific issue, and hence expelled, much like ethics, from the realm of truth, of objectivity, and confined to that of “personal beliefs”. This situation is one effect of our incapacity to correctly deal with the articulation between the mental and non-mental aspects of reality.

The mind-matter problem remains currently unsolved and appears in many ways inextricable. Does that leave us completely helpless? In this article, we argue that this is not the case. We believe that there are arguments that allow us to refuse the main ways in which consciousness is conjured away in certain branches of philosophy and of science. We have the means to assert that the manner these

branches deal with sentience can be really accepted by no one. It is important to bring this point to attention, even if we are unable to propose any viable alternative: by gaining recognition for the shortcomings of these theories, we can prevent the disingenuous use of their unsatisfactory treatment of sentience — a treatment that is actually unsatisfactory and unacceptable to anyone — for the purpose of brushing aside all serious consideration for animal sentience.

The reasons we are about to put forward in order to reject as unacceptable the manner sentience is currently dealt with in certain scientific and philosophical approaches are not a demonstration. Our conclusions are not deduced from known facts by way of rules of logic. But that does not make our argument weak. It can be summed up in the following way: It follows from our condition as sentient, deliberative beings that we have a certain set of *inescapable beliefs*. The way we are in the world makes it the case that we necessarily hold certain things to be true. Consequently, any theory that is incompatible with these inescapable beliefs cannot be accepted by us as science, as true assertions about the world.

After explaining what these unescapable beliefs are, we will show how they are not satisfied by the prevailing or very common conceptions in several branches of knowledge. We will end with an appeal for the animal movement to pay more attention to the mind-matter problem, and to search for ways of approaching it that are favorable to the full recognition of animal sentience.

INESCAPABLE BELIEFS

As conscious beings capable of movement, we are brought to make *choices* as to what *actions* we will perform among those that appear possible to us. For this, we *deliberate* and make *decisions*. We cannot refrain from doing this. As soon as we perceive several paths as open to us, we need reasons to follow one of them rather than the others. This situation is not specific to human beings.

Our situation as sentient, deliberative beings — beings that have to choose their acts — implies for us a certain number of inescapable beliefs: we necessarily believe (1) that there is a right answer to the question “What am I to do?”, (2) that there is a world beyond our own selves, and (3) that our deliberations and decisions determine our acts.

There is a right answer to the question “What am I to do?”.

To deliberate means to search for the right (i.e. correct, true) answer to the question “What am I to do²?”. Ethics can be defined as the theory of the true answer to this question³.

Since several different courses of action appear possible to us, and since it appears that the course that will actually be taken is dependent upon our decision, we cannot avoid asking ourselves “What am I to do?”. To search for the correct answer to this question necessarily implies the assumption that there is such a correct answer, whether we will actually find it or not. Otherwise, it would be meaningless to search for it. And it is impossible for us not to search for it, since we do have to decide what we are to do.

We thus necessarily believe in the reality of an objective truth value for prescriptive assertions, just as we believe in the reality of an objective truth value for the descriptive assertions science deals with. The decisions we take when we are in a situation in which we must decide are not right simply in virtue of their being our decisions; if such was the case, it would be impossible for us to choose. We can regret a decision we have taken, which implies that we believe our choice — our answer to the question “What am I to do?” — to have been wrong, even though it was our answer. We also often feel uncertain about the soundness of the very principles we base our judgements upon. These regrets and doubts imply we attempt to compare our own judgements to other judgements — the objectively correct ones — that we believe exist despite our failure to discover them.

We believe prescriptive assertions to have a truth value, like descriptive assertions. *While it is possible to profess ethical relativism⁴, it is impossible to really believe in it.*

² Or, more correctly, the question should be phrased impersonally: “What is to be done?”. A deliberative being must answer this question, even without having any concept of an “I”. We choose to retain the personal, less awkward formulation in the text.

³ Any subject who is the author of decisions is an ethical being, since that subject produces, and acts upon, a judgement about what is to be done. Even if the level of complexity and abstraction the being is capable of attaining in his or her deliberations varies from one individual to another, this fact should lead us to reconsider the strict distinction that is usually made between moral agents (usually only humans, or a subset thereof) and mere moral patients (other animals).

⁴ Ethical relativism holds that there is no moral truth, no objective right and wrong. Moral judgements emerge from social customs or personal preferences, and there is no single, independent standard by which one can adjudicate between conflicting views about what ought to be done.

There is a world beyond our own selves: a non-mental reality and other minds.

We act because we believe that what we do will change something in the world. The rabbit who runs from the fox towards a burrow believes in the existence of the burrow and in the efficiency of running in getting away from the fox; or, at least, in its efficiency in appeasing his own fear. We believe in the existence of a physical world, at least in the minimal sense of a basis for a causal chain linking our actions to some effect on the feelings of some sentient being — be it only on our own future feelings. We believe in the existence of a non-mental reality and in that of a mental reality, interacting parts of the same world. We believe in causal relations that allow us to affect the other parts of this world through our actions.

Because this conviction is inherent in all sentient, deliberative beings, *we cannot believe solipsism⁵ to be true.*

The only support for solipsism is the fact that our own sentience is the sole thing we have direct knowledge of. This seems to allow the idea that “all that exists is my own mind”. But if we seriously want to build on the principle following which “I can believe to be true only what I feel”, then the only defensible theory is *instant* solipsism. For I experience no more than my *present* feelings. But it is impossible for us to believe that the only thing that exists is our present mind. To deliberate would be pointless if we did not believe in the effect of our decisions and actions at least on our *future* feelings, even though we do not experience these at the moment of the deliberation. We thus necessarily believe in the existence of subjectivities other than our own present mind.

Neither can we believe that it is *in principle* impossible to determine from outside that a being is sentient. In such a case, all ethical behavior would be impossible. We could not search for the right answer to the question “What am I to do?” if we believed from the start that we have no way to discover it. This does not mean that it is always possible to determine with certainty whether or not a given organism is sentient — we know that today we cannot. But we cannot believe the quest for this knowledge to be vain. Furthermore, we have a greater than zero confidence in our present attribution of sentience to the beings that surround us.

⁵ Solipsism is the view that my mental states are the only reality. All objects, people etc. have no independent existence. They are merely dreams created by my own mind.

It should be noted that our future subjectivity relatively to our present subjectivity is in a position just as radically external as is the subjectivity of any other being. It follows that it is not less problematic to believe in our own (future) sentience than in that of someone else. It also follows that, contrary to a common idea, altruism (acting in favour of the future subjectivity of another being) is not less conceivable than egoism (acting in favour of our own future being). If our future feelings can be a true motivation for action, then the same stands for the future feelings of any other being.

Our thoughts influence our acts

The fact that we are faced with choices implies that we must take decisions, and we can do this only if we believe that our decisions influence our actions. Consequently, in our situation as deliberative beings *we cannot hold epiphenomenalism⁶ to be true.*

Those who, under the impression that this doctrine is convincing, attempt to argue in its favour, demonstrate, by their very arguments, that they do not themselves believe in it: for if epiphenomenalism was true, the fact that we believe in it could not in any way lead us argue for it.

To assert that one believes in epiphenomenalism is to put oneself in the same position as that woman who is said to have written to Bertrand Russel that solipsism was such a well-founded doctrine that she was surprised that so few people believed in it⁷.

The unescapable beliefs we have listed above are satisfied neither by our current physics nor by much of our current philosophy of mind.

PHYSICS WITHOUT MIND OR WITHOUT REALITY

Physics is just one science among many, but the account it can give — or cannot give — of sentience is of special importance. The reason for this is that once we reject dualism, we must regard all that exists and happens in the world as ultimately physical. This does not imply that all forms of knowledge must be elaborated and expounded in the terms of physics, or that it would be advantageous

⁶ Epiphenomenalism holds that mental facts are caused by physical facts, but have no effects upon any physical facts. Consciousness is an inefficacious by-product of neural events. It plays no causal role in our behavior.

⁷ Several versions of this (true?) story can be found on the Web.

to do so. The study of behavior, psychology, or biology does not require knowledge of the characteristics of all the particles and fields in play in the corresponding phenomena. However, because physics represents a unified description of the same reality that all such phenomena are part of, no fields of knowledge can validly make assertions that are *incompatible* with the truths of physics.

But by construction our current conception of physics is unable to account for sentience in an acceptable manner.

Classical (non quantum) physics⁸

Although classical physics no longer claims to form a correct description of reality, it is still perceived as an ideal model for the way physics should be, both by the general public and by scientists, and even by physicists themselves. This is because, in contrast to quantum mechanics, classical physics appears to give an intelligible picture of the world. But this appearance is false: for classical physics is incapable of giving an account of sentience and of satisfying our inescapable beliefs.

Classical physics describes the world as a set of numbers evolving in time through a fully determinate and calculable evolution function. A good image is that of billiard-ball physics, where the set of numbers is that of the positions and velocities of all the balls. The knowledge of the state of the world at any given time — of the set of all the positions and velocities — is enough to calculate the state at any other point in time in the future or in the past. This is the definition of *Laplacian determinism*⁹, which governs classical (non quantum) physics.

The Laplacian world of classical physics is not compatible with the beliefs we necessarily have as sentient, deliberative, active beings, for several reasons.

We necessarily believe in causality, as a reality of the world. It would make no sense to deliberate about what we are to do, if the outcome of our deliberation was not the *cause* of some change (or non-change) in the world. Since we inescapably do

⁸ For a more thorough account of the problem with classical (Laplacian) physics, see (in French) David Olivier, “Le subjectif est objectif”, in *Les Cahiers antispécistes* #23 (Dec. 2003); full text on the Web site <http://cahiers-antispecistes.org/>

⁹ After Pierre Simon de Laplace (1749-1827), French physicist and mathematician. “An intellect which at any given moment knew all the forces that animate Nature and the mutual positions of the beings that comprise it, if this intellect were vast enough to submit its data to analysis, could condense into a single formula the movement of the greatest bodies of the universe and that of the lightest atom: for such an intellect nothing could be uncertain; and the future just like the past would be present before its eyes.” (in *Essai philosophique sur les probabilités*, 1814).

believe that our deliberations make sense, we also inescapably believe in the reality of causality. But there is no place for causality in a Laplacian world. The states of the world at different times are mutually dependent in the sense that full knowledge of one gives full knowledge of the other (by virtue of the evolution operator), but nothing makes one the *cause* of the other. Strikingly, real-world versions of Laplacian physics are fully time-symmetrical. Time has no arrow, and the dependency relation between two states is the same whatever the temporal ordering of the states.

When we (or another chimpanzee) strike a nut with a stone at moment t_1 in order to cause it to break at a future moment t_2 , we believe our arm movement at t_1 is the *cause* of the nut's breaking at t_2 . We do not believe that the nut's breaking at t_2 caused our striking it at t_1 , even though one might say it necessarily implied it (since the nut broke at t_2 , we necessarily struck it at t_1). Laplacian determinism involves no more than such relations of necessity, which are not causal relations. There are no causal relations in Laplacian determinism.

Neither are there probabilities in a Laplacian world. This implies of all concepts of thermodynamics such as temperature or entropy, which are based on probabilities and/or contrafactuality, that they do not describe realities of the world. Thus the attempts to reintroduce an arrow of time and causality through such notions fail.

In the Laplacian world of classical physics there is no place for feelings (*qualia*). The explanation that classical theory purports to give of every event is complete when it has been expressed in terms of the set of positions and velocities of the particles¹⁰ of the system and of their evolution. There is no need to postulate *sensation*. The succession of events starting with the hand touching the burning plate, through the movements of the particles in the nerves and the brain, and ending with the mouth screaming, is complete without any reference to pain. But we know that it is pain that makes us scream; it is pain that we take into account in our deliberations when deciding how to act. In other words, it is pain that has (negative) ethical value.

The only way Laplacian physics can make way for pain is as an epiphenomenon. Pain would be an *additional* event, something *caused* by the disposition of particles in the brain but unable to cause anything in return — the laws governing those

¹⁰ With the addition of fields; but apparently this does not change the nature of the problem.

particles are enough to explain the screaming. It would happen in a parallel “mental” universe, a universe affected by, but not affecting, the “material” universe. “How do you know that animals really feel pain? Their screams might be mere reflexes!” is a standard response to pro-animal arguments. In effect, we cannot know, if Laplacian physics is true. We cannot know for other animals, but neither can we for humans, or even for ourselves — our memories of pain could not themselves have been caused by real pain. This is not believable, because it would make all deliberations pointless.

If classical physics is necessarily epiphenomenalist regarding sentience, by transitivity the same must be said of neurobiology, insofar as it deals with the physics and chemistry of the brain with no reference to quantum-mechanical aspects¹¹13. Neurobiology has accomplished spectacular progress in mapping regions of the brain and the nervous system to different perceptions, forms of memory, emotions and movements. On this basis it has developed an understanding of the similarities and differences between animals, human and non-human. But insofar as it accepts the classical model of the workings of the brain, it is itself necessarily epiphenomenalist.

Quantum mechanics

Classical physics has been superseded by quantum mechanics. This theory exhibits some results that are properly fantastic, some of which can be seen as indications that something is missing in current science concerning subjectivity. However, quantum mechanics has received to this day no convincing and intelligible interpretation as to what it means about the workings of the world.

On the face of it, the standard formulation of quantum mechanical theory implies that the world evolves in a deterministic fashion, as long as it is not *measured*. If there were no measurements, the world, governed by the sole Schrödinger equation, would be Laplacian. At the moment of measurement, however, the state of the world “jumps” in an indeterministic fashion into a different state, in what is called (for historical reasons) a “wave packet reduction”.

¹¹ Modern chemistry is, of course, heavily dependent on quantum mechanics, but the quantum-mechanical effects are as much as possible confined to the lower levels, to the explanation of interatomic bonding and levels of molecular energy. The molecules themselves are rarely treated as quantum objects, and their quantum nature plays no role in most applications of chemistry, such as neurobiology.

The measurement is an operation performed by a conscious operator. This would seem to mean that consciousness — our act of perceiving the state of a system — modifies the system in a way no other physical process is capable of. However, this itself is difficult to accept, since the conscious operator him- or herself is just a physical system, which too should be governed by the usual deterministic Schrödinger equation.

The mainstream answer to this contradiction is what is known as the *Copenhagen interpretation* of quantum mechanics. In this view, what is required of a theory in physics is only that it should correctly predict the results of experiments. Underlying is an *operationalist* conception of science: physical entities are *defined* by the operations by means of which they are perceived.

Niels Bohr said¹²:

There is no quantum world. There is only an abstract quantum mechanical description. It is wrong to think that the task of physics is to find out how Nature *is*. Physics concerns what we can *say* about Nature.

The subject of physics is thus reformulated as being the study of the results of measurements. No more references are made to an underlying reality, the existence of which is set in doubt, denied, or deemed undeterminable and thus meaningless. This mainstream interpretation of modern physics does make way for the existence of sentience — but at the price of a form of collective solipsism: the only thing that is deemed to exist, or to matter, is the “intersubjective” agreement between the perceptions of the “observers” — who are implicitly defined as humans¹³, or even, one is tempted to say, as typical quantum physicists!

The operationalist position of the Copenhagen interpretation contrasts with realism, which holds that things exist by themselves, independently from the perception we may have of them. The fact a patient has fever is not defined by the agreement there may be between doctors about the results of certain procedures called “measurements of temperature”.

Our condition as sentient, deliberative beings is such that we inescapably believe

¹² Quoted by Roger G. Newton, *The Truth of Science: Physical Theories and Reality*, Harvard University Press, Cambridge, Mass., 1997, p. 176, according to <http://www.arthurmjackson.com/w2a3.html>.

¹³ In the famous “Schrödinger’s cat” thought experiment, the cat is explicitly not conceived as capable performing a measurement on the system. It is unclear whether this means that the cat has no mind, or has one but not of the right kind, or that the existence of a cat’s mind is meaningless.

in realism, or at least in the existence of some world beyond our own selves, our own immediate perceptions. And it will not do to limit that world to the minds of other humans, as would the “intersubjectivity” approach: there is nothing special about other humans that would make their minds directly perceptible to our own, or that should make their subjective experiences such as pleasure and suffering real and important to us, whereas the subjectivity of non-humans would remain unreal or meaningless. The “intersubjective” approach as it stands is an expression of plain speciesism. And neither can we simply switch for a non-speciesist version of intersubjectivity, since this would require that we know in advance who are the sentient beings in the real world — something that cannot be determined if we do not accept that there is a real world in the first place, and that it should precisely be up to physics to determine.

Thus we cannot believe as true the Copenhagen interpretation of quantum mechanics. Where classical physics described a world devoid of subjectivity, modern physics, in its dominant interpretation, leaves room for (human) subjectivity but empties reality of its substance. Neither of the two can satisfy our inescapable beliefs¹⁴.

PHILOSOPHY OF MIND WITHOUT MIND

Most of contemporary philosophy of mind aims at being scientifically inspired. Mind/body dualism is generally rejected, and, indeed, has become difficult to defend. But modern thought has “solved” the problem of the articulation between the mental and the non-mental by simply getting rid of the mental. It has done so quietly. The boxes labeled “mental” and “non-mental” have been left on the shelves. It is just that the box labeled “mental” has been insidiously emptied of its substance.

Functionalism

Functionalism is the most common theory nowadays among philosophers of mind. This theory says that mental states are constituted by their causal relations to sensory stimulations, other mental states, and behavior. What makes something a

¹⁴ An alternative view of quantum mechanics is worth mentioning. The “many worlds” view holds that the world evolves according to the deterministic Schrödinger equation at all times; there are no “wave packet reductions”. This allows us to maintain a realist interpretation of physics. Unfortunately, it is also a return to Laplacian physics. The many worlds view has several features of much interest to the problem of sentience, but by itself it does no better than classical, Laplacian physics.

mental state does not depend on its constitution, but rather on the role it plays in the system of which it is a part, in the same way as what makes an object a carburetor or an eye does not depend on what it is made of or the way it was built, but on its function in a motor or an organism.

Functionalism has been much inspired by reflections relative to computer science, and also somewhat by the theory of evolution. It has become the dominant theory, because while remaining among the “materialist” (i.e. non mystical) doctrines, it appears immune to the criticism addressed to previous doctrines, particularly to behaviorism¹⁵.

Behaviorism was marked by a rejection of any reference to psychology, reducing the analysis of behavior to rigid relations between inputs (stimuli) and outputs (movements). This approach is nowadays unanimously rejected. Modern authors have added flexibility and intermediate stages between the input and the output. In contrast to behaviorists, functionalists use mental words such as “desires”, “beliefs” or “intentions”. However, they do so in a way that implies that these words do not refer to anything by themselves. They are just labels on certain points in the network of interdependencies that lead from input to output, and are defined exclusively through the relations they entertain with other points. Thus, the desire “not to get wet” can be understood as an element which, in conjunction with other elements such as the sensory input “seeing falling drops” and the belief “I am outside” leads to the action “opening an umbrella”. A functionalist does not posit a sensation as a mental state that exists by itself. A certain element X is defined as a sensation only because it has certain relations with other elements in an explanatory chain, and there is nothing more to it than its having such relations.

Thus functionalism is actually a form of neo-behaviorism: the path from the sensory input to the motor output has been purged of any reference to subjectivity (emotions, sensations, preferences and so on experienced by a sentient individual). The words that, in everyday language, refer to *qualia*¹⁶ are present in functionalist texts, but the realities they refer to have been eliminated. Sentient experience *per se* has been disposed of, as a reality of the world existing independently of the

¹⁵ It also answers some objections made to identity theory. (The identity theory of mind holds that states and processes of the mind are identical to states and processes of the brain.)

¹⁶ The term *qualia* (singular, *quale*) refers to the introspectively accessible, phenomenal aspect of our mental lives. It is used to stand for the subjective character of conscious experience, the way it feels to have mental states such as pain, seeing blue, smelling coffee, being angry, etc.

relations it can have with other events.

A parallel can be drawn between this way of proceeding and that of classical physics, which has remained the ideal model in science. For classical physics, the world is a set of numbers fully describing each of its parts at a given point in time, and a set of relations (laws) that allow the description at any other point in time to be deduced. Thus, next to a physics that appears to describe only empty things existing solely by their relation to other empty things, has been constructed a philosophy of mind with the same features¹⁷.

Functionalism allows us to give a mind to non-human animals¹⁸. In this respect it is not speciesist. But this does no good to the animals, because such a “mind” has nothing to do with what we ordinarily mean by the word. What is in play is a redefinition of mind, in such a way that what ends up being analyzed is a concept of consciousness from which all consciousness is expunged. The ability to feel emotions, to give them positive or negative value, has been eliminated by construction. Since the reason why sentient beings care to be in one state rather than another is lacking, we have no reason to give any ethical consideration to beings with such a redefined “mind”.

Computational functionalism

Functionalism deals not with concrete objects, but with relations, independently of their physical basis. A same relation can be “expressed” by a different basis.

¹⁷ Despite its influence, functionalist thought is not the only trend in current philosophy of mind. Actually, philosophers have been the main force criticizing functionalism, precisely because it eliminates sentience, subjective experience.

¹⁸ This is often not the case for another trend in philosophy that also aims at dealing with mind while leaving out feelings and emotions: the attempt to define consciousness by logico-linguistic criteria, in virtue of properties that obtain in the case of propositions concerning consciousness. For instance, it is said that consciousness is such that the truth values of propositions concerning it do not depend on the truth values of subordinate propositions. (The proposition “Mary believes it is 5 o’clock” is true or false independently from its being 5 o’clock.) This school, which centers its reflections on verbal properties, leads some of its members to assert that animals do not think or do not feel because they do not have a language, without which they cannot have concepts. In contrast, Joëlle Proust, a functionalist philosopher, has recently dedicated two works to the issue of animal mind:

- Joëlle Proust, *Comment l’esprit vient aux bêtes. Essai sur la représentation*, Gallimard, 1997.
- Joëlle Proust, *Les animaux pensent-ils ?*, Bayard, 2003.

Many functionalist writings rely heavily on the computer-as-mind analogy, and are inspired by work in artificial intelligence. The brain is conceived of as a computer, and consciousness as a program that runs on the brain.

Do machines think and have feelings? Following the above analogy, it seems difficult to answer negatively: it matters not that an algorithm be implemented in a brain of flesh or in a machine made of metal and silicon. For supporters of *weak artificial intelligence*, a machine, equipped with programs of the right type, simulates thinking; for supporters of *strong artificial intelligence*, they think. We will not dwell upon this distinction¹⁹, for the difficulty is upstream: in the equivalence that is made between mental facts and algorithms²⁰.

An algorithm is an abstract object the existence of which is not tied to any particular time or place. It is difficult to see how it could constitute or elicit, by itself, a feeling or a thought (or the simulation of a feeling or thought).

But it is usually held that it is instead the “execution” of the algorithm that is identical to or elicits thought (or a simulation of thought). The execution consists in applying the algorithm to an initial set of data, or rather to a translation of the data into certain physical states of the machine. The “execution” of the algorithm will then be a finite set of physical events taking place at a precise moment in time. But it is not at all obvious in what way those particular physical events are, in themselves, an execution of that specific algorithm. They could also be described as the execution of any number of other algorithms operating on the same or on another initial set of data. They could also be described without any reference to an algorithm whatsoever.

On the other hand, any physical event or succession of events happening in the world (a falling spoon, boiling water...) can be described as the execution of any arbitrary algorithm operating on any arbitrary set of data. All that is necessary for this is to determine an adequate mapping between the successive physical states

¹⁹ The debate about whether or not it will be some day possible to create sentient artifacts is not at issue here.

²⁰ An algorithm is a finite set of instructions which, given an initial state, will result in a corresponding end-state. For instance, a cooking recipe is an algorithm. In classical (Laplacian) physics, the set of physical laws is an algorithm that allows the computation of the state at any time t_2 knowing the state at another time t_1 . A computer program is an algorithm that tells what specific steps to perform (in what specific order) to carry out a specified task. It can be described as a set of instructions in the form “If the machine is in the state S_a and receives the input I_b , let it go into state S_c while producing the output O_d ”.

and the corresponding values of the data. If the execution of an algorithm was enough to produce (was identical with) consciousness, then consciousness, and all possible *qualia*, would be everywhere, all the time! The conclusion would be an extreme form of panpsychism²¹.

An algorithm is a “recipe” the execution of which happens step by step in an automatic fashion, without any necessity for the material basis that implements it to give it a meaning²². If certain algorithms, or their execution, are or elicit thought or experience, then sentience is redundant. Just as in classical physics, consciousness is either absent or ineffective. In a functionalist perspective, sentience can exist only as an epiphenomenon. But we cannot believe that sentience is an epiphenomenon; we thus cannot believe functionalism to be right.

Our conclusion is thus that by virtue of our condition as sentient, deliberative beings, we cannot accept as true a theory that reduces consciousness to the execution of algorithms²³.

The finalist hijacking of Darwinism²⁴

Functionalism often takes its inspiration not only from computer science but also from the theory of evolution. It is held that one of the features of consciousness, or part of its definition itself, is the *aim* it serves: to favour the reproduction of the organism implementing the “mental program”. Whether or not they are associated with functionalism, certain interpretations of the theory of

²¹ Panpsychism is the view that mind is omnipresent throughout the universe. According to this doctrine, or at least some of its forms, all objects have consciousness: rivers, planets, clocks, molecules... have consciousness.

²² It is this that has brought John Searle to reject approaches that identify the mind with the software and the brain with the hardware, in his famous “Chinese Room” argument: for the computer, he remarks, the objects that are manipulated are not symbols and the rules for the manipulation are not a syntax. The operations that are carried out are perceived as meaningful only from the point of view of conscious subjects, from outside the system.

²³ In opposition to functionalists, Roger Penrose, has developed arguments in the case of mathematical understanding which tend to prove that thought is not reducible to an algorithmic process. See his two books on the subject:

- Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics*, Oxford Press, Oxford, 1989.

- Roger Penrose, *Shadows of the Mind: A Search for the Missing Science of Consciousness*, Oxford Press, Oxford, 1994.

²⁴ The issues treated in this section have been developed in greater depth in the book (in French): Yves Bonnardel, David Olivier, James Rachels, Estiva Reus, *Espèces et éthique : Darwin, une (r)évolution à venir*, Tahin-Party, Lyon, 2001 (<http://tahin-party.org/darwin.html>).

evolution encourage in their own way the discounting of sentience.

Darwinism is a scientific theory and, as such, appeals only to efficient causes. It has made the complexity and the transformations of the living world intelligible without being necessarily construed as the implementation of a project, as the execution of a plan; in other words, without teleology. However, it has, from the very start, given birth to a fake copy that obstinately does precisely the contrary. One modern version of this copy has developed along with sociobiology. (It is a deformed version of sociobiology, not a necessary consequence of its methods.) This version appropriates the terms of the theory of evolution and puts them to the service of an adaptationist and finalist interpretation of reality. The expression “selfish genes” borrowed from Richard Dawkins has become a privileged vector of this interpretation both in popular and academic texts.

Adaptationism is the view that any feature possessed by an organism is necessarily in favour of its “fitness”, natural selection having eliminated all features that were useless or unfavorable in regard to this criterion. Together with adaptationism, finalism has made a come-back, not in the guise of a cosmic watch-maker guiding his creatures, but as a multitude of tiny genies manipulating their survival capsule to attain their one and only goal: flooding the universe with copies of themselves. It is a conception of this kind that inspires the “Darwinian” interpretation of ethics put forward by Michael Ruse and Edward Wilson:

(...) human beings function better if they are deceived by their genes into thinking that there is a disinterested objective morality binding upon them, which all should obey²⁵.

(...) we think morally because we are subject to the appropriate epigenetic rules. These predispose us to think that certain courses of action are right and certain courses of action are wrong. The rules certainly do not lock people blindly into certain behaviors. But because they give the illusion of objectivity to morality, they lift us above immediate wants to actions which (unknown to us) ultimately serve our best genetics interests²⁶.

Morals is rather a collective illusion instated by the genes to make us “altruists”. Morality, as such, has no greater status as a justification than has any other adaptation, such as eyes, hands or teeth. It is just something that has biological

²⁵ Ruse Michael and Wilson Edward (1986), “Moral Philosophy as Applied Science”, *Philosophy*, 61, p. 179.

²⁶ Id., p. 180.

value, and nothing more²⁷.

This analysis, as applied here to human morality, should be valid when applied to any feeling or thought liable to influence our actions. It is a position that asserts that all subjects act on the basis of a false consciousness: the true aims of their deeds are unknown to them, not only occasionally, not just because of the inevitable imperfections in their knowledge of reality, but because their consciousness is *necessarily* false: it must be so for the real aim they are serving to be accomplished. The only genuine goal that exists belongs to a system that is beyond them, while the goals they believe to have are only decoys aimed at luring them to act the way “nature”, “genes” or the “laws of evolution” have planned them to.

Can we believe in this position?

In virtue of our condition as sentient, deliberative beings we necessarily deliberate before acting. But we could not do so while believing that our consciousness is systematically false, that we are the victims of an illusion that we are unable to counter. This is particularly true in light of the fact that we do not deliberate only about the best means to attain certain pre-determined goals that we could not help seeing as desirable. The most difficult aspect of a decision is often the search for the right answer to the question “What is it that I should want?”; in other words, it is the determination of the goal itself (such is also the most complex part of ethical theory). We cannot start out on such a quest if we believe that it will necessarily lead us to chimerical goals based on illusory reasons, serving unknown to us aims that we cannot grasp.

Consequently, we cannot believe in the truth of Ruse and Wilson’s theory. These authors claim to have exposed the deceptions of nature and uncovered the hidden goal. But if their theory was correct, it would follow that no one could know it, since ignorance is necessary for the accomplishment of the destiny the genes have assigned to their vehicles. So the mere fact that they put forth their theory proves that it is false.

The modern resurgence of evolutionary ethics does not in itself imply a denial of animal sentience — instead, it asserts its existence. Indirectly, however, it reinforces factors that are contrary to the full recognition of its existence and ethical significance.

²⁷ Ruse Michael (1993), “Une défense de l’éthique évolutionniste”, in Jean-Pierre Changeux (ed.), *Fondements naturels de l’éthique*, Odile Jacob, Paris, p. 59.

In Ruse and Wilson's approach, the fact that subjects experience feelings and take decisions is not denied, nor is the fact that their thoughts influence their actions. Furthermore, these authors uphold the Darwinian continuity between humans and other animals on the mental level.

But because we cannot believe that our own consciousness is perpetually mystified, when we attempt to take such theories seriously, we naturally apply them to others only, throwing doubt on the reality of *their* consciousness. In the present cultural context, the human/non-human divide comes quickly to mind. The concept of a "consciousness" manipulated by a superior will rapidly conflates with age-old images of animals moved by their "instincts" or by the more modern concept of a "program"; in other words, it suggests that the beings provided with such a consciousness are actually just mechanical automata.

This is why it is important to uncover and reject the fake copy of Darwinism, under its many forms. It is important to point out that the novelty of Darwinism, its deformed versions notwithstanding, was precisely in that it made it possible to conceive that life evolved without any preestablished purpose or meaning.

The features of all living beings (among which are sentient beings) have causes. The theory of evolution sheds light on what favours the spreading of certain features, and on how a series of inherited elementary mutations can accumulate to the point of bringing about complex organisms. But the causes — that remain unknown — that have allowed sentience to appear, and those — partially explained by evolutionary theory — that have favoured its transmission, are not in Darwinian theory acts of purposeful agents with the power and the will to dictate the contents of their creatures consciousness in order to attain their own goals.

"Nature", no more than "the genes" or "the evolution", carries a meaning, a will, purposes. Only sentient individuals have such things. It is important to reaffirm the non-finalist character of Darwinism in order to prevent sentient individuals from being dispossessed of them in favour of such entities. For that unjustified displacement weakens our perception of the reality of the desires and emotions of the sole beings who have them. That is one of the processes that makes it easy to dismiss animal sentience.

MIND-MATTER FOR ANIMALS MATTERS

A large body of knowledge relative to sentience is already available (concerning nervous systems, behavior, etc.). Its value cannot be overestimated. However, we

today have no idea how to deal with sentience in physical terms. A substantial part of the studies of mind deal with consciousness by redefining it in a manner that strips it of what makes it conscious (subjective experience) or by dismissing it as an illusion.

Up to now, the menace that this situation represents for the efforts to better the situation of animals has not been correctly appreciated. Consequently, too little efforts have been made to counter it.

Science against animal sentience?

Both current physics and current biology are heavy with latent epiphenomenalism. The superfluous sentience they imply is easily translated into non-sentience whenever non human animals are concerned.

The themes this article deals with may seem to concern only abstract and confidential issues of philosophy or of science. But they bear upon factors that favor the everyday denial of animal suffering, including studies by “animal welfare” experts that called upon to found decisions concerning the treatment of animals. As an example, the following excerpt is from a page on foie gras on the website of the INRA (French National Institute for Agronomical Research), as an answer to the question “Does the act of *gavage* [force-feeding] cause pain?”:

Because of the stimuli that can be linked to it (repeated daily insertion of the feeding-tube into the esophagus, distention of the walls of the esophagus and of the proventricule, risk of erosion of the mucus membranes, liver steatosis inducing a compression of the viscera), the act of gavage is seen as a *prima facie* cause of suffering and pain. **But first of all, it is implicit that the use of these notions is inappropriate for animals because they imply a psychological element, and that it is consequently preferable to replace them by the concept of nociception.** In the case of gavage, the analysis of the signals that might correspond, at the level of the the upper digestive tract and of the nervous system, to a visceral nociception (such as inflammation, extravasation, activation of genes) do not allow us to come to a conclusion about their activation²⁸.

²⁸ From an article published on the website of the INRA on Dec. 15, 2004: <http://wcentre.tours.inra.fr/sra/internet/resultats/actuels/foiegras.htm>. Our emphasis. For an in-depth critical analysis of the studies conducted by French researchers on the welfare of birds force-fed for foie gras production, see: Antoine Comiti with the collaboration of Estiva Reus, *L'INRA au secours du foie gras - Enquête sur une expertise publique sous contrôle de l'industrie*, Éditions Sentience, Lyon, 2006 (<http://stopgavage.com/inra/index.php>).

This excerpt is typical of a vast body of literature (produced by scientists and animal husbandry professionals) that speaks of animal welfare in empty space. From the very start, the subject-matter is dismissed by the assertion that in the case of animals it is inappropriate to use concepts that have any psychological implications.

An enquiry was conducted in 1996-97 by Florence Burgat among researchers specialized in the conditions in which farm animals are reared²⁹. It was a period in which researchers were being asked to reorient their attention towards animal welfare, as a response to a growing “social request” concerning that issue. Several of them clearly expressed their reluctance to working on a subject that they felt was not within the compass of technicians and scientists, declaring for instance: “Behavioral aspects are not objectifiable and we are used to working with measurable data” (p. 119); “The sow cannot move, perhaps she feels well, perhaps she doesn’t, you cannot tell” (p. 120); “There is no such thing as an ideal environment, all that there is is the way a given individual adapts to a given environment” (p. 120); “Welfare is not at all a subject for research; instead, adaptation definitely is” (p. 122); “Welfare is not a scientific subject” (p. 122). It is true that the reactions of these researchers can in part be explained by the institutional context: taking into consideration animal welfare upsets their habits because, for years, the quality of their work has been judged only by its contribution to the productivity and profitability of farming methods. However, it is remarkable that these same researchers were more willing to express emotion or disapproval about the living conditions of farm animals when they were allowed to add that they were expressing no more than “personal feelings” or “a moral point of view”, and not speaking “as scientists”, as if it went without saying that sentience was not part of the scientific (i.e. objective) field of knowledge.

It is disturbing to find that sentience is routinely construed as a non-scientific, non-objective issue. Such an assertion is both false and fraught with serious consequences. This situation leaves room for discourses in which sentience seems to escape from the realm of knowledge to fall into that of private belief, which individuals can choose as freely as they do their religion.

Furthermore, concerning animal sentience, it is false to say that it is a subject

²⁹ The report of this enquiry is in Florence Burgat, *Les animaux d'élevage ont-ils droit au bien-être ?*, INRA Éditions, Paris, 2001, p. 105-133.

where people spontaneously exhibit a great variety of contrary opinions. The truth is that everyone knows that ducks, rabbits, cows and so on are sentient. But humans have contrived over the millennia many mental tricks to weaken their perception of this fact. These tricks enable barbarity to take place against animals on a frightful scale: they offer us an escape when we are faced with reproaches from others or from our own conscience. A kind of social custom has thus been established that requires us to refrain from setting in doubt the lie according to which, in the absence of material proof to the contrary, many people are spontaneously convinced that animals are not sentient (or hardly sentient). A many-sided myth has been built; a myth that states that the direct perception we have of animal sentience is an illusion of common sense, an illusion dismissed by more rigorous examination aimed at letting us grasp truths behind the misleading appearances³⁰. It is a myth that comes in handy every time we abuse and kill.

The fact that science can be called in support of this lie is a real obstacle to efforts to have animal sentience taken seriously; and as such, it has been largely underestimated. In our societies, the name of science holds much authority: to claim that something is not scientific is tantamount to asserting that it is not true.

We must thus find a way to overcome this obstacle without taking an anti-scientific stance, which would be neither necessary nor desirable.

The subjective is objective

We experience feelings. Sentience being precisely this subjective experience, no further proof is needed of its existence. Consciousness is a reality of the world. Since science is knowledge of reality, sentience is within the scope of scientific investigation.

“Is this being sentient or not?” is a question which has an answer. It is not a question devoid of meaning, or one that might be answered one way or the other depending on one’s personal opinions. Singling out and countering all discourses that attempt to play down sentience as an unscientific or meaningless question is a task that we must take up right now; it is one of the challenges we must meet in

³⁰ The most famous example is that of Descartes’ animal-machine. But the set of ideas that imply a denial of animal sentience extends much further than that. There remains much to do to pinpoint them, for many of them are not explicit in their denial. For instance, in ethics, many writers hold that the distinctive feature defining moral patients is not sentience, but some other character X (culture, language, individuality, freedom, self-awareness...) possessed only by a subset of sentient beings. But they often construe the character X in such a way as to make us unable to imagine a being deprived of it as any more than an automaton.

order to bring down the ideological fortress that has been built to insure that the interests of sentient beings be effectively ignored.

It is necessary for the animal movement to realize that it cannot bypass the “mind-matter” problem. Thinkers who are concerned with the animal issue must become familiar with the literature concerning this thorny problem, while keeping in mind the consequences that are at stake for the animals.

We must not allow that in the name of science, or of learned thought in general, the existence and the ethical significance of animal sentience be denied. If science in its current state is unable, as we have argued, to account for the undeniable reality of consciousness, we must explicitly acknowledge this fact as a shortcoming of our knowledge, rather than allowing it to be used to deny reality whenever it comes in handy to defend speciesist discrimination.

We must raise the consciousness and fluency of animal activists on this issue, and find a way for this to influence the way the general public perceives animal consciousness.

One possibility that we are contemplating is the publication of a “Declaration on Sentience” in which scientists and other thinkers would support an assertion such as this:

Sentience is an objective reality of the world. This remains true whatever difficulties our current physics and philosophies of mind may have in accounting for it.

When the shortcomings of our knowledge fuel an attitude of systematic skepticism regarding the mental life of animals in manners that could just as well justify similar skepticism regarding the mental life of humans, what is at play is not scientific caution, but arbitrary discrimination. A sincere quest for knowledge cannot accommodate double standards.

The shortcomings of science must not be used to deny the existence and the ethical implications of animal sentience.

Such a declaration, if it garners enough support, could change the “climate” in which researchers work. The neglect or denial of sentience would no longer be a standard feature of their works, and would come to be seen instead as a shortcoming that should be acknowledged and, sooner or later, corrected.

The wording of the Declaration is such that it may be supported by people with

different opinions about the nature of mind and about the present or future capacity of science to account for it. All that is required of the signatories is a stance on the reality of sentience — of sentience conceived without being artificially stripped of all ethical import — and affirm their rejection of a biased use of science on this count. Though minimalistic, such a stance has far-reaching consequences: no criterion exists that, applied fairly, justifies casting doubt on the sentience of a pig without casting the same doubt on that of a human infant or even of a human adult, step that few researchers would be ready to take. The burden of proof would thus have changed sides: if we take humans (other than ourselves) to be conscious, we must do the same for hens and sheep, so long as no convincing reason to do otherwise has been brought.

Our impression is that has been underestimated how much we may gain by highlighting and investigating this central fact: that animals (humans included) are sentient. If more work is done on this subject, its considerable potentiality will be uncovered. Actually, the issue may well carry the potential to bring about a profound change in the “world-view” of humans, and consequently in their behavior.

The double standard: an example

“In order to determine whether the nervous systems of ducks subjected to force-feeding display signals that may be interpreted in terms of pain, the approach we are developing is that of the neurosciences. Accordingly, the responses we gather correspond to **nociception**, *i.e.* the **sensory modality specific to the processsing of the signals that are triggered by potentially tissue-damaging stimuli**. In reference to the definition given by the International Association for the Study of Pain, the acceptance of the term “pain” has had to be adapted to the animal, since animals, unlike people, cannot tell us what discomforts them. Thus *pain* should be understood as: *an aversive sensory and emotional experience representing an “awareness” by the animal of damage or threat to the integrity of its tissues* (Molony and Kent 1997). Though the introduction of the notion of awareness gives us a way to distinguish nociception (the primary sensorial experience) from pain (the affective experience that comes in addition to the sensory experience), its use may not contribute to conceptual clarity insofar as the elements that define “animal awareness” are far from being unanimously accepted by the scientific community. In no case will the term of “suffering” be used, since it implies a complex mental dimension pertaining almost exclusively to the human species. When, by manner of speaking, we will use the term “pain”, what in fact will be intended is nociception, a notion which has the advantage of referring to a sensory dimension whose neurophysiological correlates can be objectively grasped and dealt with without its emotional dimensions. ”

J. Servièrre, G. Guy, D. Guémené, “Étude de la nociception chez le canard mulard : approche neurophysiologique”, Actes des 4^e Journées de la Recherche sur les Palmipèdes à Foie Gras, Arcachon, 5-6 October 2000, p. 46. (The boldface and italics emphasis are from the original text.)

The above excerpt is from an article belonging to a series of works by French experts sparked by the current reconsideration of force-feeding in European regulations. The stated purpose of these works is to judge whether force-feeding is in fact detrimental to the *well-being* of ducks or whether instead the objections against the practice are baseless.

In the passage we have quoted, these experts declare their own incompetence regarding the task entrusted to them: they were expected to tell us about the pain and suffering that force-feeding does, or does not, provoke; however, they will not allow themselves to speak of pain, or will do so only “by manner of speaking”. The reason they give for this is that their approach is that of neurosciences, and that only neurophysiological correlates such as nociception can be objectively recorded (and, secondarily, because ducks cannot tell us what discomforts them).

It is clear that, *for any being whatever*, “neurophysiological correlates” is all that the neurosciences can record. Speech itself (specifically, the act of reporting what discomforts us) can be described “objectively” only as a set of physiological and physical events (furthermore, not all humans are capable of speech). It is currently impossible for the neuroscientific approach — or for any other scientific approach — *ever* to observe directly “emotional dimensions”; all they can record are their

“correlates”.

But if this structural limitation was good enough a reason to refuse to ascribe emotions to ducks, the same should hold regarding all humans (other than oneself). Despite this, the authors state categorically in the same passage that suffering, a *mental* phenomenon, exists among humans, and are equally confident in asserting its absence in almost all other species. The methodological principle that would have us keep strictly to the conclusions that follow from the neurophysiological data has suddenly vanished.

In other words, the shortcomings of our scientific knowledge justify never venturing to ascribe feelings to animals. They justify systematically bestowing quotation marks on the word “awareness” when applied to animals, in order to mark the doubt that is *de rigueur* about the relevance of that concept in their case. (The authors have gone so far as to add them when they quote Molony & Kent — the quotation marks were not in the original text.) On the other hand, these same shortcomings do not disallow judgements about the emotions that humans do possess, nor about those that animals do not possess.

The above text is thus an example of discourse in which scientific authority is put to the service of ordinary speciesism; a discourse that would be rejected if a significant part of the scientific community supported the principles set forward in the Declaration on Sentience.

* However, this does not keep them from concluding that their experimental work supports the second position.