THE INSIDE AND OUTSIDE ASPECTS OF CONSCIOUSNESS: COMPLEMENTARY APPROACHES TO THE STUDY OF ANIMAL EMOTION

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This paper reviews the debate that is currently taking place in the field of philosophy of mind on different conceptual models of consciousness. More and more philosophers argue that the explanation of subjective phenomena requires two complementary perspectives of understanding, known as the first- and third-person perspectives. The third-person perspective (ie conventional objectivity) accounts for the physical, functional aspects of consciousness, while the first-person perspective addresses the subjective, experiential aspects of consciousness. It is suggested that each of these conceptual perspectives may facilitate a different type of research in the study of animal emotion. Within the conventional, third-person perspective, a growing enthusiasm for issues of animal consciousness has led to sophisticated physical and cognitive models of animal emotion. The potential of the first-person perspective, however, to provide a basis for models of animal subjective experience has remained largely unexplored. The paper concludes with a brief review of the author's recent experimental work on concepts of animal behavioural expression. The high reliability and repeatability of such concepts indicates that the first-person perspective may provide a valid research perspective in its own right.

Keywords: *animal consciousness, animal welfare, cognition, emotion, first-person perspective, subjective experience*

Introduction

An essential characteristic of consciousness is its subjective nature. To say that animals are conscious is to say that they are not purely physical systems as we understand physical systems today, but that they are capable of subjective experience and are generally sentient. The notion of animal consciousness is of obvious importance to the study of animal emotion. Our understanding of animal consciousness will affect our view of what animals can feel, and any problem that we may have in understanding the subjective nature of consciousness is likely to trouble our study of animal emotion.

The aim of this paper is to discuss recent developments in the philosophy of mind which concern the subjective nature of consciousness. More and more philosophers argue that, to gain a proper understanding of subjective phenomena, we need to recognize and reconcile two perspectives of understanding the world. These two perspectives are known as the first- and third-person perspectives (Searle 1992). The third-person perspective corresponds to our conventional notion of objectivity, and is basically uncontroversial. It is the first-person perspective which presents a crucial challenge to the consciousness debate, and with which

philosophers are currently struggling to come to grips (Chalmers 1996). I will review this debate, and consider its implications for the study of animal emotion.

The first- and third-person perspectives

The philosopher Thomas Nagel has played a crucial role in putting the first-/third-person distinction on the map of the modern consciousness debate. Few authors debating this topic fail to refer to his work, particularly his paper *What is it Like to be a Bat?* (1974), or his book *The View from Nowhere* (1986). In these works Nagel outlines the main characteristics of the first- and third-person perspectives, which I will briefly discuss.

The third-person perspective: a centre-less view of the world

In his discussion of third-person objectivity, Nagel (1986 p 57) suggests that:

> An objective standpoint is created by leaving a more subjective, individual, or even just human perspective behind. ... Objectivity allows us to transcend our particular viewpoint and develop an expanded consciousness that takes in the world more fully.

Thus Nagel characterizes objectivity as a method of understanding which strives towards a maximally detached, centre-less, universal view of the world. Typically, Nagel observes, this is a physical view of the world: 'the physical world as it is supposed to be in itself contains no point of view and nothing that can appear only to a particular point of view' (1986 p 15).

This characterization of objectivity may generally appear unproblematic, but an awkward tension arises if it is applied to the explanation of the subjective experiences of individual organisms. As Nagel says (see above), third-person objectivity is designed to leave individual subjective perspectives *behind*, and it is difficult to see how, from such a position, one could provide a satisfactory account of those perspectives. From a maximally detached point of view, consciousness ceases to be a perspective and is dissociated from its subjective nature. It becomes just another part of the physical world, another bit of the machinery. Essentially, a third-person perspective investigates the (evolutionary) function of consciousness in a purely physical context.

The functional question is without doubt important and at the core of the puzzle that most scientists seek to solve. However, the crucial point which Nagel makes is that explanations of consciousness from a third-person perspective are incomplete. We may wish to leave subjective perspectives behind to achieve a position of detached objectivity, but it remains a fact of life that subjective perspectives exist; the world is full of human and animal individuals who act, feel and think. To question this, and insist that all that is given with certainty is the detached, objective point of view of organisms as complex physical systems (Dennett 1991), is to attribute objectivity with unwarranted autonomy. It is to neglect that 'observation is always someone's observation; ... it is always from a point of view' (Searle 1992 p 99). We are all subjective centres in the world, and so the world is not in fact centre-less. Thus, Nagel argues (1986 p 727), 'there are things about the world and life and ourselves that cannot be adequately understood from a maximally objective standpoint. ... Reality is not just objective reality'. To achieve a full, complete understanding of the world, we need not only a 'centre-less' perspective of understanding, but also a perspective which is 'centre-based'. This, essentially, is what the first-person perspective provides: a perspective of understanding which recognizes that humans and animals are subjective centres of life,

and subjective centres of knowledge. The crucial question is whether or not there is a place for such a perspective in science, and of what use it could be.

The first-person perspective: a centre-based view of the world

An increasing number of scholars are debating the role of the first-person perspective in the scientific understanding of the world. This debate is, however, frequently confused by differences in interpretation with regard to the precise nature of the first-person perspective. Philosophers by-and-large appear to fall into two groups, and I will briefly discuss the views of each group.

One group of philosophers interprets the first-person perspective in terms of knowledge and information processing, an essentially cognitive approach. This group includes, for example, Daniel Dennett (1991), Max Velmans (1991), Peter Carruthers (1996), David Chalmers (1996), and other cognitive philosophers (although not all cognitive philosophers take an interest in the first-person perspective). This approach conceives of the first-person perspective in terms similar to the third-person perspective, in that both perspectives are essentially concerned with the acquisition of knowledge (Chalmers 1996). However, philosophers in this group regard the first-person perspective as a special type of knowledge, a subjective, private, introspective knowledge which can only be accessed by an individual from the 'inside'. For example, to experience pain in this view is to perceive one's physiological pain mechanisms 'internally': a perspective in principle unavailable to the outside observer (Velmans 1991). However, notwithstanding the private nature of our inner perceptions, we can describe and report them to others (Dennett 1991). Animals can also report their perceptions, but non-verbally, through a variety of instrumental and operant conditioning procedures (Nicol 1996). Such verbal or non-verbal reports allow outside investigators to compare and integrate 'inside' information with other forms of knowledge.

Philosophers in this group differ of course in important ways, notably in their views of the relationship between cognition and consciousness. At one end of the spectrum, Dennett (1991) argues that consciousness *is* cognition: that first-person perceptions can fully and adequately be explained in the third-person terms of brain science. At the other end, Velmans (1991) emphasizes the irreducible complementarity of consciousness and cognition and corresponding first- and third-person perspectives, while Chalmers (1996) seeks to unify the two perspectives in terms of information theory. This is not the place to discuss such differences: what matters here is that philosophers in this category interpret the first-person perspective as a form of 'inside' processing of the physical world. Most do not, as noted above, regard such 'inside' processing as fundamentally different *in kind* from 'outside', third-person processing. They accept that introspective knowledge may provide privileged access to certain aspects of the world, but ultimately see it as just another source of information about the physical universe. Thus philosophers in this group tend not to concede Nagel's claim that objective reality is incomplete. For them, the centre-less, physical view of reality is absolutely fundamental, and cannot be incomplete; it has to encompass everything.

The other group of philosophers, however, do not see it this way. This group includes, for example, Mary Midgley (1998), Hilary Rose (1999), Vicky Hearne (1986), Nicolas Humphrey (2000), philosophers within the continental phenomenological tradition (eg Merleau-Ponty [1962]; Abram [1996]), and scholars of Wittgenstein's work, such as Peter Hacker (1993) and Anthony Rudd (1998). To these philosophers, reality is more than centre-less reality: together with Nagel (1986), they contend that a method which leaves subjective perspectives behind cannot account for everything there is to know about consciousness.

Thus, there is in this view more to consciousness than knowledge acquisition and information processing. The essence of the subjective perspective, as Nagel (1974, 1986) argues, is that there is something 'it is like to *be*' us, we are the sentient centres of our lives. We move in the world, with our bodies, and the crucial point is that it is *our* body, we are its subjective centre (Humphrey 2000). This is a philosophical point about the nature of experience, and there is no reason why it would not also hold for animals, as Nagel makes clear when he says: 'I want to know what it is like for a *bat* to be a bat' (1974 p 394). So bats too are the centres of their life; there is something it is like for them to move about and engage in behaviour typical of their species.

Philosophers in this group thus conceive of the subjective perspective in terms of dynamic and sentient being in the world. To experience pain in this view is an act which we perform *with* our physiological pain pathways; we hurt, we tense up, we have the pain – we do not just perceive it as an inside event (Merleau-Ponty 1962; Hacker 1993). As an act, sentient 'being in the world' is not essentially of a private nature. Humans and animals simply live as subjective centres, and communicate that way (Hearne 1986; Abram 1996). And so, in a very straightforward sense, the first-person perspective is public; it is how we live. Of course, both humans and animals frequently misunderstand each other, but that does not mean they stop seeing each other as sentient beings. Again, Nagel is clear about this: 'the point of view in question is not one accessible only to a single individual ... one person can say of another what the quality of the other's experience is' (1974 p 396; see also Mounce [1992]).

Philosophers in this group, too, differ in important ways, notably in their views of the relationship between the lived first-person perspective and the scientific third-person perspective. For example, Humphrey (2000) seeks to accommodate the notion of lived experience within third-person models of the brain (Humphrey 2000): however, Midgley (1998) and Rose (1999) argue that the abstract physical language of third-person models of the brain is so incongruous with the historical and social context of lived experience that this makes little sense. They contend that the third-person approach is just one aspect of lived experience, to be considered on an equal footing with other conceptual approaches.

I cannot do justice to such differences here. What matters at this point is that philosophers in this group regard the first-person perspective in essentially dynamic terms; they emphasize that the whole, active, expressive organism provides the conceptual basis for understanding 'what it is like' to be that organism. Such a perspective would not compete with a third-person conception of organisms as complex physical systems but complement it, to answer questions of experience rather than of physical organization. There seems to be no a priori reason why first-person descriptions of animals as expressive beings could not be reliable and repeatable, and be amenable to scientific analysis. What is needed is the same as has been done for a cognitive approach, ie the development of a dependable methodology which provides concepts of animal behavioural expression with scientific context and credibility in their own right.

Thus, I have outlined three perspectives of understanding (the third-person perspective and two interpretations of the first-person perspective), which shed light on different aspects of consciousness and allow us to ask different questions about it. I will briefly indicate the implications of each of these perspectives for the study of animal emotion.

Approaches to the study of animal emotion

A: Third-person perspective

This seeks to explain consciousness/emotion in a physical context, using physical language. As noted above, research in this category primarily concerns the function of emotions in the organization and evolution of brain and behaviour. With the development of increasingly sophisticated technologies, this area of research is thriving, and examples are numerous (eg Panksepp [1992]; Damasio [1996]; Kendrick [1997]).

B: First-person perspective (interpreted within a wider third-person context of knowledge acquisition)

This sees consciousness/emotion as a form of 'inside' processing of the physical world. Research in this category is primarily concerned with how animals *perceive* their environment. It asks at which level of abstraction animals process environmental information (eg do they have a 'theory of mind'?), and whether they evaluate this information as good or bad. This category essentially reflects a cognitive research perspective. This is not to say that scientists in this group assume that cognitive processing requires consciousness; rather it is to say that scientists working in this perspective use cognitive language to formulate models of consciousness and emotion (eg Duncan & Petherick [1991]; Dawkins [1993]; Duncan [1996]; Nicol [1996]).

Ever since Marian Dawkins (1990) stated without reservation that what counts in animal welfare is the animal's point of view, research in this category has blossomed. Different cognitive approaches to animal welfare now exist, such as, for example, preference testing (Beattie *et al* 1998; Van de Weerd *et al* 1998), the use of operant conditioning techniques (Ladewig & Matthews 1996), studies of spatial memory and knowledge exploitation (Mendl *et al* 1997; Held *et al* 2000), studies of frustration-induced aggression (Haskell *et al* 2000), and studies of individual recognition (Pagel & Dawkins 1997; Burman & Mendl 2000). Preference testing is one example which fits this category well: it asks animals to report their perception of different environments through, as Marian Dawkins (1980) calls it, 'voting with their feet'. Thus the animal's perception of the environment may essentially be private, but through choice behaviour it becomes accessible for investigation.

Given that both these models for the study of animal emotion (A and B) either directly or indirectly reflect a third-person perspective, they fall within what is generally perceived as conventional science. Even though cognitive models of emotion tend to be concerned with 'inside' information processing, most scientists have ceased to regard this as a necessarily non-physical activity. Their working hypothesis is that introspection, theory of mind and other forms of internal processing are based on emergent, 'self-referent' causal properties of the brain which are yet to be identified with certainty. On this basis, physical and cognitive models of emotion frequently merge into complex and sophisticated physical models of the subjective perspective. A good example is provided by Damasio (1996 pp 242-243) in his book *Descartes' Error: Emotion, Reason and the Human Brain*:

> I propose that subjectivity emerges ... when the brain is producing not just images of an object, not just images of organism responses to the object, but a third kind of image, that of an organism in the act of perceiving and responding to an object. I believe the subjective perspective arises out of the content of the third kind of image. The minimal neural device capable of producing subjectivity thus requires early sensory cortices (including the somatosensory), sensory and motor cortical association regions, and subcortical nuclei

(especially thalamus and basal ganglia) with convergence properties capable of acting as third-part ensembles.

Thus, Damasio proposes to conceive of the subjective perspective as a complex, self-related image constructed through convergent activity of different regional neural networks.

Yet, however successful such models may eventually be in providing functional explanations of the subjective perspective, they do not deal with the animal's experience as such, with what the animal actually feels. To explain emotion functionally in terms of neural circuitry does not, as a matter of principle, provide information on the animal's experience. Equally, although an animal's perception of its environment is obviously important for its welfare, this does not concern the animal's experience: a perception is not a feeling (Humphrey 2000). The conceptual structure of physical and/or cognitive models of emotion thus precludes these models from dealing with questions of experience directly. Given this limitation, scientists tend to assume that animal feelings per se fall outwith the domain of scientific observation (Dawkins 1993; Duncan & Fraser 1997).

I believe, however, that this view is unnecessarily restrictive, and does not recognize the full scientific potential of the first-person perspective. The philosophical literature, especially Nagel's writings, indicates that the first-person perspective reflects a conceptual language, a framework for understanding, in its own right. Nagel (1986) clearly explicates that the first- and third-person perspectives do not compete and cannot replace each other, but provide complementary methods for understanding the world. The first-person perspective, independently of the third-person perspective, may provide a conceptual foundation from which access to an animal's experience can be gained more directly than previously thought possible.

C: first-person perspective (interpreted as an independent framework for understanding)
This conceives of consciousness/emotion as a dynamic expression of 'what it is like to be' a particular individual animal in a given situation. Research in this category would focus on the whole behaving animal rather than on fragments of physical movement, and accordingly would describe behaviour as an integrated process expressive of experience (Crist 1996; Goodwin 1999; Sheets-Johnstone 1999).

Research in this category is relatively scarce: however, field scientists who spend large parts of their lives studying individual animals in wild habitats frequently adopt expressive language to interpret their subjects' behaviour. Darwin made extensive use of expressive language in his book *The Expression of the Emotions in Man and Animals* (1998), to describe the terror, rage, affection and joy he observed in animals. Jane Goodall (1986, 1990) has also been a pioneer of this type of research, and in her numerous books provides well-substantiated psychological narratives of the personalities and lives of wild chimpanzees. Other ethologists have made similar efforts to understand and describe the personalities and experiences of individual animals (eg Kiley-Worthington [1987]; Moss [1988]; Bekoff [1998]; King [1999]), while social research confirms that the use of expressive language is a vital and indispensable part of our communication with animals in daily life (Wieder 1980; Sanders 1993).

Despite the success of such projects, the use of expressive language to describe animal behaviour is still regarded with distrust by many scientists, for fear of unwarranted anthropomorphism and the loss of scientific credibility (see Kennedy [1992]). However, the assumption that expressive concepts are anthropomorphic (and hence unreliable) derives

from the belief that the subjective experience of animals is not open to empirical observation. As explained above, this assumption typically reflects a third-person perspective of understanding, and does not consider the first-person perspective in its own right. The very rationale of an independent, first-person approach is that in describing animals as expressive beings, their experience *does* become accessible for investigation. Careful observation of an animal's behavioural expression (is it nervous, is it relaxed?) should *de*crease, not increase, the risk of projecting human fears and preferences. The description of animal expressive repertoires throughout the evolutionary continuum could generate information about the evolution of emotion, and help prevent the postulation of arbitrary 'cut-off' points. Thus to dismiss concepts of behavioural expression as anthropomorphic begs the point, and hampers progress. As Fisher (1991 p 51) suggests: 'the charge of anthropomorphism ... tries to inhibit consideration of positions that ought to be evaluated in a more open-minded and empirical manner'.

The goal of my own research over the years has been to search for ways of incorporating a first-person concept of animals as the subjective centres of their lives into models of animal welfare (Wemelsfelder 1993a, b, 1997, 1999). This has led to the development of an experimental methodology for the assessment of animal behavioural expression (Wemelsfelder *et al* 2000, unpublished data). I will briefly review this work.

Towards a scientific methodology for the assessment of animal behavioural expressions

A first step in the development of any methodology is to evaluate the reliability of its descriptors, and of the ensuing measurements. The aim of my research in recent years has therefore been to test the inter- and intra-observer reliability of descriptions of behavioural expression in young female growing pigs (Wemelsfelder *et al* 2000, unpublished data). We recruited groups of naive, untrained observers, and instructed them to observe individual pigs in interaction with a human being. It was important that observers were biased as little as possible by the experimenter in their descriptions, so at no point were they given or shown any pre-fixed categories for scoring behaviour. Instead, observers were asked to spontaneously and integratively assess how each pig behaved: i) they were asked not to focus on any specific types of movement, but to observe the way in which a pig attended to and interacted with the environment, ie its general *style* of behaviour; and ii) they were asked (after an observation period had ended) to summarize their observations in terms which in their view best captured the overall behavioural expression of the pig. Thus observers created their own vocabularies (with sometimes up to 40 terms), which mostly consisted of behavioural adjectives such as confident, calm, friendly, anxious, tense or hostile. In the second phase of the experiment, observers were asked to use these personal vocabularies as rating scales, to quantitatively score the behavioural expressions of each individual pig.

This experimental procedure was followed in several experiments. Pigs were presented to observers in live situations, and also on video, to test the repeatability of observer assessments. We used observers with different professional and personal backgrounds (eg academic students, pig farmers, veterinarians and animal protectionists), to investigate whether these backgrounds influenced their choice of terms or their scores. Given that observers all created their own terminologies, the statistical analysis of the data was faced with the absence of fixed variables. We were fortunate, therefore, to learn that a statistical method capable of dealing with this problem existed, and had been well established, in food science (Generalized Procrustes Analysis [GPA], see Oreskovitch *et al* [1991]). We adapted this method for use with our animal work, and were then able to determine the degree of

agreement within and between the different observer groups, without in any way manipulating or grouping the data ourselves (see Wemelsfelder *et al* [2000] for results of a first exploratory experiment and a detailed explanation of GPA). Analysis of data showed a highly significant observer agreement in all different experiments, both in observers' choices of terms, and in the scores they attributed to individual pigs with these terms. Observers could also all repeat their attribution of scores from video with consistent accuracy (Wemelsfelder *et al,* unpublished data).

These results indicate that the description of animal behaviour as an expressive process is based on commonly perceived and systematically applied criteria. The high internal validity of these descriptions indicates that they are not based on haphazard guesswork, but on dependable empirical grounds. As a methodology, the use of expressive concepts works: independently of their background, observers use these concepts in a generally reliable and repeatable way. However, this is not to say that mistakes cannot be made. Observers, individually or collectively, may fail to notice or misinterpret certain behavioural expressions. This is likely to happen when a study does not accommodate the dynamic nature of behavioural expression, and observers are shown static or incomplete images of animals (as in the famous case of the 'grinning' chimpanzee [Foley 1935]), or are given only verbal descriptions of sequences of behaviour (Mitchell & Ham 1997). Mistakes are also likely to occur when observers are not sufficiently familiar with an individual animal or a certain species, or do not study the animal in sufficient detail or for a sufficiently long period of time. For example, a zoo animal dozing for long hours in a corner may superficially be characterized as apathetic, when actually it is quite content (or vice versa). However, if in any of these cases observers had closely studied the dynamic details of the animal's behaviour and posture, they may well have come to an accurate judgement of the animal's state (Hebb 1946; see Wemelsfelder [1997] for more detailed discussion).

It may in the first instance be harder to correctly appraise the behavioural expressions of species which are distant from us on the phylogenetic scale. However, by spending plenty of time with geese, fish or bees, and by observing their behaviour under a wide variety of circumstances, these animals' expressions may gain transparency in increasing detail (eg Lorenz [1975]). Gradually, an understanding of what it is like to be these animals will grow. This understanding may well remain incomplete, but that is not to say that it is indirect, or arbitrary. After all, the danger of misinterpretation is equally of concern for more conventional methods of measurement. Extensive experience is needed to discriminate meaningful categories of behaviour and use these categories reliably. Is the animal feeding, exploring or trying to escape, is it playing or attacking? These behaviours may be easy to discern in some species but not in others. Yet the difficulty of distinguishing behavioural categories does not make the use of these categories indirect; it means that their use is an acquired skill. The same can be said of categories of animal behavioural expression (Hacker 1993). The experimental work discussed here indicates that observers, when appropriately instructed, can use these categories effectively: this skill can, if necessary, be further refined through practice and training in behavioural observation.

Some critics, however, insist that regardless of how effectively concepts of animal behavioural expression can be applied, such concepts are based on human perception and interpretation, and therefore cannot reliably reflect an animal's state. However, this seems an objection too broad to be meaningful. Human concepts are applied throughout animal science to good effect. The concept of 'coping' originates in human stress theory (Lazarus 1966; Ursin *et al* 1978), but has been widely used in models of animal behaviour and welfare (Broom 1988; Mendl & Deag 1995). Consumer demand theory was developed in human

economics, but has successfully been applied to the study of animal welfare (Dawkins 1990). The validity of these concepts has been that they have opened up new areas of thought, and given rise to meaningful and effective experimental models of animal welfare. Concepts of animal behavioural expression could function in the same way. In describing behaviour as an integrated and expressive process, these concepts facilitate the study of animal experience, and make the formulation of relevant hypotheses possible. Data generated this way can be correlated to other behavioural and physiological data, and thus the biological relevance of these data will gradually emerge. It is such research that will clarify the validity of this approach for animal welfare, and it seems premature to dismiss it on the presumption that it shows insurmountable human bias. Certainly it is just one way of making the first-person perspective work: other approaches to regarding behaviour as an expressive process are possible, and should also be explored.

Conclusion and animal welfare implications

This paper has discussed three different conceptual approaches to the study of animal consciousness and emotion. These approaches are each valid in their own right, and complement each other in the study of the physical, cognitive and experiential aspects of animal behaviour and welfare. Reconciling the inside and outside aspects of consciousness and emotion should thus create a rich and differentiated background for the investigation of problems of animal welfare. As Mary Midgley (1998) so succinctly said: 'we live in one world, but a big one'.

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