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THE HUMANE SOCIETY OF THE UNITED STATES

THE QUESTION OF ANIMAL AWARENESS

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INTRODUCTION

The problem of animal awareness lies at the interface of science and philosophy. As a starting point for the study of phenomena such as awareness, mind, consciousness, etc., we hardly have any reference other than our *own* human experience and in the context of a non-dualistic ontology this can be justified. In philosophy and psychology it appears to be very difficult to give direct operational definitions of terms such as consciousness, etc. So we might expect this to be even more difficult in the study of animals. A detailed knowledge of animals and their behaviour is necessary in order to be able to say something about their subjective experiences, and to prevent us from excessively projecting human experience on animals.

Descriptive terms dealing with the nature of animal awareness, like intelligence, consciousness, etc., are normative as well (Hodos 1982), and therefore the study of animal awareness has wide-ranging moral implications for our own conduct towards animals (Griffin 1981a; Midgley 1981); some of the reluctance in recognizing the question of animal awareness as legitimate and "scientific" might be explained this way. The question of animal awareness implies the question of the human-animal relationship.

DEFINITIONS

Terms such as awareness, self-awareness, self-consciousness, etc., indicate that there is a gradual scale of awareness rather than distinct "states" of awareness. Each species, and each individual

animal within a species, can display different elements of awareness at different times. Roughly speaking, though, the development from lower to higher animals will coincide with an increasing degree of awareness. And, as higher degrees of (self-) awareness are achieved, the more basic forms remain present and functional; they are recapitulated in the development of young individual mammals.

First of all, there is the level of the "un-conscious" or pre-conscious for bodily, e.g. physiological processes, or the maintenance of homeostasis in general. This level is present in all living beings. In conscious life, as opposed to unconscious life, the most basic property seems to be awareness: "a feeling of causal relationship with the external world" (Whitehead, cited by Griffin 1977). This feeling, according to Whitehead, implies discrimination of the quality of the environment (harmful or beneficial) and a sense of location. Down to the lowest forms of life, there are signs of this sort of awareness, be it ever so vague and unspecified. Directly linked to this is the concept of self-hood: "all animals have attained self-hood, since they exist, have a will to survive, and have also needs and interests" (Fox 1983a).

Accepting the idea that perception is basically an "emotional" phenomenon, a "feeling," as Whitehead argues, awareness as defined above is not necessarily equivalent to *mental capacity*. Awareness might be accompanied with the experience of some form of mental images; but by mental capacity is meant the ability to abstract information from external reality in such a way that the dependence of the individual on the environment decreases. "Mind" in this context is more than just the presence of mental images (Gallup 1982, personal communication); it is the capacity to "*use*" these images in a flexible, adaptive way (Griffin 1981b).

Hodos (1982), in a recent review of the concept of intelligence, defines intelligence as a qualitative characterization of an organism's behavioural responses to pressures from the environment, rather than as a "specific intellectual faculty." Being intelligent implies the ability to fulfill purposes, but Hodos' definition stresses the fact that, e.g., a rabbit's purpose might be very different from human purposes.

Along with a growing ability to abstract information about external reality and manipulate the environment instead of being manipulated, a sense of individuality develops as well. Thorpe (1966) refers to self-awareness as individual recognition, of self and others, as a "self." Self-awareness, more than awareness, is the "understanding that I can be the object of another's attentions" (Clark 1981), the ability to see the "self" as another "other" in the environment. While the world in a primary state of self-hood is predominantly subjective, without discrimination between self and other (Fox 1982), the presence of self-awareness in an animal implies its ability to have a relationship

with its own body and with its environment, culminating in the experience of an "I" that is not identical with its body nor with its environment. "Self-awareness is the animal's ability to abstract and to form a conceptual framework of its environment, so that it can perceive itself and its actions in relation to the environment" (Wood-Gush 1981).

Self-awareness can become more explicit, and result in still a greater freedom from the environment when self-conscious elements increase; implying the ability to focus attention (Griffin 1981a) or the ability to manipulate ideas (Thorpe 1966). Self-consciousness implies the existence of some sort of introspective ability, the direct experience of the self as self, as a causal agent, not being dominated by sensory brain processes (Thorpe 1966; Sperry 1982). Maybe a clue is that the word "con-scious" comes from the latin verb *scire* meaning "knowing." So "conscious" means "also-knowing": an act performed by a more or less self-conscious being is accompanied by a knowledge of the relativity of the act: its reasons, its purpose, etc. This might be most clearly manifested in the ability to make plans, to act purposefully, or the presence of time-awareness. When consciousness of self increases, then also do the scope of "understanding" and the degree of freedom increase: self-reflectiveness implies the ability to recognize individuality in others due to the fact that other and self are of the same kind (Clark 1981). Moreover it becomes possible to manipulate others (Fox 1982). Capacities like empathy, altruism, intentional deceit, gratitude, etc., are signs of these abilities.

In sum, I propose that any living being has awareness; but an increasing amount of self-awareness entails a splitting of self and other, an ability to discriminate self from not-self, which may be interpreted as the ability to "objectify" (Fox 1982).

In the context of this paragraph it is also important to note that the capacity to suffer could in principle be present well down to the "lower" levels, since awareness is defined as an emotional perception of the quality of the environment to suffering of self-aware beings; yet it indicates that suffering is present not only in self-aware beings.

THE MIND-BODY RELATIONSHIP

The phenomenon of "consciousness," and the existence of an objective "I" has always fascinated man (Lorenz 1963). Is it something that just human beings have, or is the existence of "personality" a universal phenomenon, somehow present in the whole of nature? Different theories have been given to explain the nature of the relationship between "mind" and "body"; within philosophy, it has always been a major topic for study, since it comes so close to the mystery of existence of life itself.

The discussion seems to evolve around two basic perspectives: a dualistic one, in which mind is a separate entity from matter in principle; or a panpsychistic one, which assumes "some sort of psychic element in the ultimate physical particles" (Thorpe 1977).

The dualistic perspective has become very influential since Descartes. In this view, one may regard the mind-body relationship as a two-way causal interaction between mental and physical events (Thorpe 1977). Another form of dualism is the so-called psycho-physical-parellelism theory, in which mental events may be seen as a "side-effect" of physical events (Lorenz 1963).

Since dualism is in essence reductionistic (Thorpe 1977), the question comes up at what point in evolution "mind" came into being and what its adaptive value is in the mechanism of natural selection. Thorpe (1966) stated that "consciousness may have been an evolutionary necessity in that it may have been the only way in which highly complex living organisms could become fully viable." In this way, it would be of great interest to see "whether we can find grounds to think that consciousness is present only above a certain level of neural organization." Thorpe thus seems to follow the widespread intuitive assumption that consciousness is related to complexity of neural organization; and also that it is generated "out of the blue" at a certain point in evolution, through the process of natural selection. Griffin (1981a) also mentions the adaptive value of consciousness for complex animals, in order to cope with changing situations. He goes on, however, arguing that "a sufficiently fertile imagination can almost always find a plausible adaptive advantage for any observed trait," and therefore the argument for the adaptive value of consciousness is not very weighty in the consideration of its existence. Humphrey (1982) expresses his doubt of complexity as a condition for consciousness by saying that our animal ancestors "were no doubt percipient, intelligent, complexily motivated creatures, whose internal control mechanisms were in many respects the equals of our own. But it is to say that they had no way of looking in upon the mechanism. They had clever brains, but blank minds." He proposes social complexity as a reason for the sudden appearance of consciousness.

Arguments against dualistic perspectives are that one can speculate about possible parameters for the generation of consciousness, but these remain scientifically unverifiable, and ultimately the existence of life itself becomes an unexplainable event in a dualistic framework.

"Generally, in the building of a scientifically 'sound' theory, we want the newly apparent property to be explicable in terms of the old,...to be the sum of whatever composes it...So the awareness of a complex organism ought, we feel, to be a similar resultant, and either

atoms are already conscious, or else consciousness is only a misleading label for neural impulse" (Nagel, cited by Clarke 1981). "There must be something positive limiting chance, and something more than mere matter in matter, or Darwinism fails to explain life" (Hartshorne, cited by Birch 1974). Others, however, reject the idea of "panpsychism" as "cheap" and "a radical simplification" (Popper 1974), or because it is not possible to confirm this idea scientifically, and that there is no visible evidence that lower life forms are conscious, as are humans and some higher animals (Thorpe 1977).

There is, however, a third perspective possible. It is a concept in some ways resembling panpsychism, yet it is also fundamentally different. Whitehead has developed a theory in which events are at the same time both mental and physical. Thorpe (1977) states that Whitehead is a panpsychist, yet this does not seem the case to me. The idea that all "life-events" are physical and mental *by nature*, does not imply that these events are conscious of this, as panpsychism implies. Nor does the idea that perception and physical energy are emotional in nature, imply that this emotionality is consciously experienced at the lower levels.

A theory which defined the nature of life processes as both physical and mental, in a meaningful interaction, provides a basis for a gradually evolving continuum of mental capacity. The fact that we accept the statement "human beings are conscious" more or less as an axiom (Lorenz 1980), forces us to accept that we most probably share this quality at least *rudimentarily* with most life forms (Fox 1976; Griffin 1981a; Rollin 1981; Lorenz 1980).

To account for the evolution of a rudimentary form of perception of causal relationships, to a conscious experience of self is not easy, and still requires the explanation of "leaps," for example between the occurence of mental images and the use of a real mind, as defined above.

The results of the research on split brains and the nature of consciousness by Nobel-prize winner Roger Sperry (1982) point in the direction of an explanatory concept known as "the emergent principle." It implies that interaction between parts creates a "whole" that has intrinsic qualities of its own which none of the parts possess. In Whitehead's framework, this element of "the whole being more than the sum of the parts" is equivalent to the subjective, "mental" part of events. "The key development is a switch...to a new causal or interactionist interpretation that ascribes to the inner experience an integral causal control role in brain function and behaviour...The whole, besides being 'different from, and greater than the sum of the parts,'... also causally determines the fates of the parts, without interfering with the physical or chemical laws of subentities at their own level.

The events of inner experience as emergent properties of brain processes, become themselves explanatory causal constructs in their own right." (Sperry 1982).

These results are derived from research on human beings, and therefore mainly apply to them. A much wider range of application of the main principles is clearly indicated, however; Sperry himself states that the acceptance of the revised causal view has important implications for scientific views of man and nature. Also he says that his results indicate features about the nature of consciousness and its fundamental relation to "brain processing." Unless we suppose that the general concept of animal consciousness is completely different from human consciousness, which is extremely unlikely (Fox 1976; Midgley 1978; Griffin 1981a), it is only reasonable to apply general principles about "the nature of consciousness" to animals as well, and in a Whiteheadian framework to all evolutionary events in general.

If this is the case, then however simple the nervous mechanism might be, there will always be generated "a whole," some sort of inner experience.

Complexity of nervous structure probably correlates to complexity of inner experience (Fox 1976). The more complex the interaction between parts, which then in turn can serve as a new part, of a new emergent quality, a new "whole." But it would be a mistake to set up a simple hierarchy of values, attributed to different sorts of complexity (Hodos 1982). Rather, all life forms constitute "an integrated, interdependent unified field of being, not a ladder leading to some ultimate goal of perfection." (Fox personal communication 1982).

What an emergent "whole" seems to express is "the being-ness" of a certain animal, e.g., "the dogness" that comes out of the specific neural organization of a dog. This beingness implies consciousness on its own level, on its dog-, or fish-, or whale-level. Each "beingness" has its own, unique qualities to contribute to the overall ecosystem and possesses unique modes of perception and awareness, suitable for the needs of the animal (Hodos 1982).

In conclusion, we can say that man is not alone on earth in his awareness of life around him; all life forms are conscious in their own, unique way, and the capacity to individualize and become self-aware gradually emerges from the lowest levels of perception.

Philosophically speaking, the possibility for real sensitivity and awareness in the animal kingdom is given. Now we must see what the biological study of awareness leads to in the framework of a nondualistic philosophy.

In the biological study of awareness, the main indicator for "beingness" would be behaviour, since it represents that aspect of an animal in which all partial aspects, like physiological and hormonal

processes, are integrated; it also includes the subjective, individual evaluation of all these partial aspects. Behaviour, being itself an emergent property, is the nearest indicator of the animal's emergent individual subjectivity and quality of being. In fact, one could say that behaviour is the overt, outward manifestation of inner experience, both being on the same level of emergence.

An animal relates to its environment through its behaviour. It expresses its inner drives, abilities, and experiences in the way it deals with different environmental influences. We, as "human animals," can evaluate different kinds of behaviour by observation and experiments, and try to classify the quality of beingness as "aware," "self-aware," "intelligent," etc. The behavioural data available for this will now be discussed.

THE ANIMAL AND ITS ENVIRONMENT

The great "oneness" between animal and environment, the complete adaptation which makes animals fit right into their specific "niche," has caused some scientists to presume that animals are automata, blindly ruled by environmental circumstances. The other, opposite, way of looking at it is that animals are so perfectly aware of their environment and at one with it, that an almost transcendent unity arises. In this view the essence of animal life lies largely in its relation to the surrounding world, and this notion leads "phenomenological" scientists to say that the subjectivity of an animal lies as it were in its "Umwelt" and a *qualitative* study of the way an animal "meets" its environment is the basis for understanding the animal's experiential world, as well as its ecological function (Kortlandt 1954).

This qualitative beingness of an animal is called its *nature*, or "*telos*" (Midgley 1978; Rollin 1981), implying the unique expression of life that a species represents, and the specificity of needs and purposes of each different species.

D.R. Griffin should receive the credit for having opened the door again to serious scientific investigation into animal awareness with his book *The Question of Animal Awareness* (1981a). With respect to animal learning, one of the most basic properties of animal life, he suggests that the principle of parsimony might be best served by accepting some sort of awareness related to animal learning. Trying to stick to the behaviourist standpoint that animals are black boxes leads to "complex circumlocutions and confusing euphemisms," which are "far less parsimonious than frankly calling a spade a spade and a thought a thought."

The ability to learn is one of the most basic properties of animal life. In his review on animal intelligence, Hodos (1982) states that habi-

tuation "appears to be a universal phenomenon in animal organisms, including protozoans." Also "classical-and operant conditioning have been demonstrated...in those metazoans that possess a central nervous system with axial symmetry." This includes platyhelminthes (e.g., planarians), annelids, arthropods and molluscs. Delayed response as a more complex behaviour has been reported in arthropods and molluscs, and molluscs are also capable of reversal learning, so Hodos reports.

A well-known anecdote that Buytendijk reports is that an octopus is able to distinguish between "touching" and "being touched," which might even indicate the presence of self-awareness: "A good example of a lower animal with highly developed interactions with its environment is the octopus, which has a highly differentiated set of behaviour, much more so than some vertebrates...One could attribute a relatively clear form of consciousness to an octopus...The fact that an octopus has so-called pupil-reactions e.g. in adverse situations, an indication of emotional life in mammals, could imply a high degree of development" (Buytendijk 1963).

Entomologist V.B. Wiggelsworth in a recent article argued that insects might experience visceral pain, as well as pain caused by heat and electric shock (Rollin 1981). From the existing literature it can be argued that the experience of pain as such is not possible without the presence of some sort of purely subjective, inner experience, since the adversity of any stimulus is essentially something which is experienced subjectively.

Given the fact that awareness seems to exist from the "lowest" level of animal life onward, it develops and becomes more complex along with the development of neural complexity, as was stated earlier. But do animals come near to any kind of "higher" awareness at all, any kind of the faculties we consider "intelligent" and self-aware in humans? More than anything else, introspection and the use of symbols are regarded as specific human characteristics, which set man apart from all other living beings (Jeuken 1975).

GENERAL INTELLIGENT BEHAVIOUR

The ability to make use of symbols is related to a number of other abilities: to use language, to use concepts, to have time-awareness, and to respond adequately to novelty, amongst others. It implies a capacity to abstract from present reality, and in that respect is directly linked to introspection, which is the capacity to regard the self in an abstract, "symbolic" way. Many authors connect introspection with social communication (Humphrey 1978; Midgley 1978; Griffin 1981a;

Thorpe 1966), or with intention-behaviour and imitation (Rollin 1981; Midgley 1978). These are mostly the topics dealt with by authors who discuss animal awareness. They support their point of view with evidence coming from either the little amount of systematic research being done in this field, or from anecdotes of "natural," "spontaneous" behaviour. A few relevant examples of this evidence will be given shortly.

Griffin (1981a) states that "Black, McMullan, Robinson, and others have distinguished animal communication systems from human language on the ground that the former are rigid responses to external or internal stimuli, which...be definitely specified, whereas human language is spontaneous, creative and unpredictable." The animal's ability to communicate may be less rigid, however, since studies of animal behaviour have shown that animals are also capable of spontaneous, creative and unpredictable behaviour. For example, Markowitz (1982), in his book on behavioural enrichment in zoos, reports the highly unique, creative, unpredictable way in which zoo animals would invent solutions and play games. A young elephant, for instance, instead of touching the right panel to set off an electrically regulated reward, would always save water in his trunk, no matter how long before the experimental session the trough was emptied, and smear the water between the response panels, thereby electrically shorting them, so that every response would pay off. (The same elephant walked over to the only arrogant, boasting person in a group of students and stepped deliberately on this person's foot). This story, in which the animal actually manipulates the research project and the researcher, instead of the other way around, can hardly be interpreted otherwise than as a falsification of the argument presented by the three researchers in Griffin's book. It gives evidence of the presence of time-awareness ("I will use this water *later*"), intentionality, conceptual thinking and creativity in handling a completely new situation, and its behaviour therefore is worthy to be labelled consciously self-aware.

All of this also holds for a story that Rollin (1981) reports of a police dog who was trained to hold suspects by the arm unharmed until the officer arrived. When they ran into a robbery being performed by two men, the men broke away and took off in different directions, assuming the dog could not pursue both. The dog chased one of them, disabled his leg, left him, ran after the other and held this man unharmed by his arm, in this way having caught both men, although he never had been trained to attack the leg. Like Fox (1982), Mugford (1981) concludes that the ability to manipulate matters in order to fulfill a need, gives evidence of self-awareness. Many dog owners may be able to give examples of dogs who manipulate their owners. Dolphins, apes (Midgley 1978), wolves (Fox 1974), etc., are able to save

wounded fellows and humans, use and invent tools, and deceive prey in order to catch it. Both Markowitz and Mugford stress the fact that in these situations the animal is in control, rather than the experimenter, and that by humbling himself in this way, the observer might "investigate ways in which animals derive unique solutions, rather than simply measuring their activities in a narrow response largely dictated by the experimenter." (Markowitz 1982). However, there are also *experiments* that indicate some sort of awareness in different animals. Dawkins (1980) describes well-known experiments with pigeons and rats. Beninger and his co-workers trained rats to indicate what behaviour they were performing at the moment a buzzer was sounding. They tried to find a simpler hypothesis than that the rats were actually aware of what they were doing, but failed to do so. This experiment strongly suggests even a kind of conscious awareness in rats. Hernstein and Loveland, and Siegel and Honig, proved by showing numerous slides to pigeons that they are capable of forming what could be described as abstract concepts of almost anything, like water, trees, human beings, etc.; Kohler furthermore found by doing ingenious, well-controlled tests that pigeons can count, or as he put it, "think unnamed numbers," and in doing this, really grasp the concept of numbers, rather than being "Clever Hanses." (Clever Hans was a horse who could do many a mathematical calculation, but later it was discovered that he reacted to subtle indications of his owner, instead of calculating.)

It seems that this evidence, experimental and anecdotal, shows that some animals are fully capable of abstraction and that they can think symbolically in order to express themselves and control their world. What about the "highest" form of symbolic communication, namely language?

LANGUAGE

There is no consensus about the real nature of language, let alone the difference between man and animals in this respect. Chomsky (cited by Griffin 1981a), argues that "the unboundness of human speech, as an expression of limitless thought, is an entirely different matter (from animal communication), because of the freedom from stimulus control and the appropriateness to new situations." Griffin comments that animal communication is not that rigid at all, nor is human language endless in its scope. Midgley (1978) considers speech as a further development of "creative, expressive, communicative power," and nothing all by itself. Fox (1976) relates speech to the controlling and predicting function of the rational mind, which does not diminish the consciousness and deep emotional experiences that the in-

tuitive mind can have, without speaking a word. Animals can very well have such an intuitive kind of mentality. In this line, Rollin (1981) argues, while discussing the "private language argument" developed by Wittgenstein, that animals might have to rely far more on direct experience for learning than on words, or that they might express their universal statements (all strangers are dangerous) by their behaviour instead of words, but that this does not imply that animals are not rational beings; rational being defined as the ability to do the right thing at a certain moment, choosing between different possibilities (Rollin 1981; Midgley 1978). In any case, the fact that the possession of a communication system is a widespread property rather than a specific human trait, might be demonstrated by the ability of the chimpanzees trained by the Gardners (Griffin 1981a) to express themselves in a language-like way with gestures, and acquire the "vocabulary" of a young human child.

Also, dolphins have been shown to be able to communicate certain instructions to a mate purely by sound, while they could not see each other (Fichtelius and Sjölander 1972).

Monkeys are known to have different warning calls for predators in the air or on the ground (Seyfarth 1982). The explicit use of variation in sound for communication, with which apparently detailed and precise information can be passed on, comes very close to what we call "language."

SOCIAL ORGANIZATION

Rather than attributing self-awareness only to language-using species, many authors discuss the likelihood, and the need, for self-awareness in all *socially organized species*. Social animals, dependent on each other for survival, must understand the other animals and their mental state in order to act adequately (Humphrey 1978); or must be able to recognize other individuals in relation to themselves in order to maintain a hierarchy, as in the case of domestic pigs, cattle and chickens (Bryant 1972), or to live in families or clans (Thorpe 1966). Fox (1974) describes altruistic behaviour in wolf clans: wolves that go hunting bring back food for the cubs and the "babysitters" that remained behind.

In the growing up of young animals, play and imitation are of great importance. The great ability of young (and older) animals to play indicates their need for the capacity to be aware of self and others, the need to be able to react to new situations and make decisions; play facilitates the development of these capacities. But apart from the functional meaning of play, it implies that animals are spontaneous,

creative and sentient beings, individuals who are fully able to enjoy themselves.

While it is sometimes suggested that it is a proof of an animal's "dumbness" that it imitates a researcher, instead of "consciously" performing acts, authors like Thorpe, Midgley and Fox refer to play and imitation as crucial for healthy development in the more complex social animals, and as a clear indication of the animal's ability to engage in creative, highly communicative action. The "teaching" of the art of survival by parents to their offspring could even be seen as a beginning of culture (Fox 1976). Bonner (1980) devotes a whole book to "culture" in animal species.

Roughly speaking, the presence of "animal awareness" in its many forms has been discussed by going into the phenomena of learning behaviour, general intelligent behaviour, communicative behaviour and social behaviour.

Now that the question "can animals think?" has been discussed, an equal amount could be written on the question "can animals feel?" However, I will not attempt it, since many of the same principles that apply to awareness, apply to the existence of emotions, and the two are intimately, perhaps inseparably, linked together in animal behaviour.

ANIMAL FEELINGS

As a fact of life, feelings must be rudimentarily present in all life forms, as Whitehead philosophically indicated. Basic emotions like fear, aggression, frustration, and satisfaction are directly related to internal motivational states (Wiepkema 1982) and are essential for the survival of the animal (Dawkins 1977; Murphy 1978; van Putten 1981). For instance, fear in the predator–prey relationship is very essential. Considerable research on fear in the domestic chicken has been done by researchers like Hughes and Murphy (Murphy 1978).* The fact that these "instincts" have a biological function, and in that respect might be predictable, does not in the least imply the absence of an actual emotional experience (Clark 1981; Dawkins 1977; van Rooyen 1981). As the selfhood of animals develops into greater degrees of self-awareness it will be accompanied by a greater capacity for individual, conscious emotion. This is especially evident in social animals, who often form life-long bonds with mates or clans (Fox 1976). Well-known examples are swans, geese and ducks who choose a partner for the rest of their lives. Lorenz (1980) describes the signs of grief shown by a goose

*See also *Fear in Animals and Man*, 1979. W. Sluckin (ed). New York: Van Nostrand Reinhold,—Ed.

when it looses its mate; for instance its eyes become dull, its muscles weaken and the goose lets its head hang down, just as people do, so Lorenz comments. He states that higher mammals and birds have emotional experiences completely similar to ours, representative of the basic structure of all experiences for man and animal alike (Lorenz 1980; see also Midgley 1978). Self-awareness of the emotional state is shown by the chimpanzee Lucy, who possessed learned gesture-language; during a session, when her foster mother went away, she ran to a window and signed to herself: "cry me, me cry" (Midgley 1978). She was also able to appreciate jokes, and imitate them for her own amusement.

Emotions can also lead to empathetic (altruistic) action, such as cases where dogs save little children, and dolphins support a sick or injured companion. Emotions must also underly the "psychic" tracking of dogs who travel hundreds of miles to find their owners who moved to a place, unknown (!) before the dog's arrival (Fox 1976). Because of the similarity in emotional make-up, animals have many of the same psychological illnesses and abnormalities as humans, e.g. anorexia and depression, which in higher animals can occur as a result of sudden environmental changes, such as captivity and isolation from peers, mate or parent (Fox 1971). Carter (1982), for example, presents evidence which indicates strongly that many causes of death for dolphins in captivity are psycho-physiological, the shock of captivity being the cause for a loss of resistance to disease. Sometimes psychoneurotic illness can be the result of captivity or loss of a mate. This is also the basis for the very extensive research that is being done on animals in laboratories, using them as models for human disorders. Research to find new drugs to relieve anxiety is often done on mice and rats (Goodman and Gilman 1975; McKegney 1982). The experiments of Suomi and Harlow on the development of depression as a result of maternal deprivation are also well known. They developed "a monkey model of human anaclictic depression, since...the resulting behaviours are seemingly identical for monkey and human infants alike" (Midgley 1981). Because of this correspondence in structure and behaviour Midgley is right, I think, when she criticizes such experiments from an ethical point of view.

Midgley (1978) comments that "to be disposed to make the gestures, you must also be capable of the emotions in order for them to be convincing and truly reciprocal;" "behaviour is only possible for a creature with an inward dimension, with its own real perception of the world." (Clark 1981). However, the mind is a private thing, as so many scientists comment (Griffin 1981a), for humans and animals alike; and so the gap remains, however much research and interpretation we are prepared to do. At least humans can speak and explain their thoughts and feelings. But animals cannot; or can they?

Lorenz (1963, 1980) states that the similarity of experience, the direct comparability of one's own experience with that of others is beyond proof, in that it is so evident that we cannot *not* believe it. This extends at least to higher vertebrates. Karl Buhler, according to Lorenz, refers to this as "*du-evidenz,*" a necessary axiom of life. It is not up to science to establish the framework of communication and recognition of behaviour, or have "heady metaphysical doubt" about the similarity of experience of man and man, and man and animal, since science itself depends on this mutual understanding (Clark 1981). He goes on to say that "we do not see merely material motions (of an animal) but rather the embodiment of character and feeling in a material mode." To make use of the so-called analogy-postulate to assume animal awareness (Sambraus 1981) might not be direct enough. The fact that we really *do* see the embodiment of character and feelings in behaviour (Clark 1981; Midgley 1978; Fox 1983b) makes it not only justified to describe "material entities in mentalistic terms" (Clark 1981) but we have no right to *withhold* those terms to describe animal behaviour (Rollin 1982, personal communication). "Stones cannot be bored, or cross, or joyful, but dogs and pigs and cattle can" (Clark 1981).

In an overall perspective, we might say that animals are alive, and present in their beingness, for anyone who wants to see and meet them on their own ground. What their minds, or inner experiences are like, is largely expressed in their behaviour in intimate interaction with the environment, including other individuals. Olfactory and auditory senses might play as great a role in this interaction as the highly valued visual senses (Fox 1976). Although it seems to bother many scientists that many of the abilities ascribed to animals are also attributable to machines, the nature of the machine is given to it by man, and the parts are equally as independent or durable as the whole; when an animal dies, however, the whole body dies, which again shows the causality of the whole, and the fundamental selfhood of a whole organism (Rollin 1981).

We, as human beings, share different traits with different species (Midgley 1978) and are especially close to the more complex social animals such as dogs, elephants, dolphins, and apes, in that those seem to have a highly developed self-awareness and even self-reflectiveness. Besides, we are able to communicate with them, to a great extent, as one individual to another.

Human beings belong to the "*Umwelt*" of an animal, just as animals belong to ours. It is in the *meeting* of individual and *Umwelt*, of man and animal, that mutual understanding and appreciation grows (Kortlandt 1954). There is no separation between our position as observer and as partner in the relationship and in this context it can be

seen how our understanding of animals has a direct moral impact on our actions.

The fact that it is justifiable to describe animal behaviour in empathetic terms does not imply at all that "scientific" inquiry in the form of systematic observation would not be necessary and useful. It is important in order to discover the nature of different animal species, and systematically investigate different assumptions about their nature, needs, and interests.

The most instructive and direct way to learn about animals is by observing their *spontaneous* behaviour under conditions where they have total freedom to express themselves to their fullest potential (Midgley 1978; Markowitz 1982). "Despite the difficulties, field work with gorillas, chimpanzees, orangutans, and wolves demonstrates that the most realistic observations and assessments on wild animals are those made in the natural environment" (Carter 1982). For other animals, for example dogs and cats, a man-made environment can provide an adequate situation in which a personal bond between observer and animal might well be a very valuable way of testing and understanding an animal (Mugford 1981; Fox 1983b).

Working in the experimental environment of a laboratory the danger is great that the knowledge which is produced "is hardly a wholesome source of learning, since it is based on abnormally conditioned animals" (Carter 1982). The most important thing is to ask the *right* question, so that the animal can show us its abilities. A negative answer to a test, like Gallup's mirror-tests, might be our fault: we did not ask the correct question for that particular species (Rees, Wolfle 1982, personal communication).

The capacities of an animal to feel and be aware are not static states by themselves, but abilities that are constantly expressed and developed in interaction among animal, man and environment.

CONSEQUENCES FOR THE FIELD OF ANIMAL WELFARE

A being who is aware of his environment, and can react emotionally to external situations, is also able to suffer. Every level of "beingness" has its own purpose and needs, and its own qualitative link with its environment; the thwarting of those needs matters to an animal, and most animals will struggle to survive if in danger. The whole notion of the nature, or telos, of an animal implies that it will suffer if a certain level of "fulfillment" of its behavioural possibilities is not reached. In relation to animals in present intensive production systems, Humphrey (1981) points out the importance of realizing that domestic animals have become "dull" and unresponsive not because they

are dumb and stupid but because we have made them that way by depriving them of stimuli which would enable them to develop a proper sense of selfhood.

The suggestion that domestic animals do not miss what they do not know is rejected because the concept of animal awareness implies that animals actually *experience* suffering in some conscious way. The absence of human-like self-consciousness might even increase the intensity of animal suffering: most animals cannot foresee whether their situation will improve or not, nor realize other factors which make their suffering relative. Because of this lack of knowledge, all that may exist for them is a feeling of suffering.

An animal, whether a "lower" or a "higher" one, is a qualitative, sentient being. To affect its environment is to affect the quality of its existence, and its individual well-being.

Current intensive production systems have affected what used to be the natural environment of farm animals tremendously. The demand for efficiency and production more and more became the guiding factor in designing and creating living environments for the animals. As a result, environmental diversity has been reduced to its absolute minimum. The reaction of animals, dependent on the environment as they are for their development and health, to this deprivation, will be detailed later in Section IV of this book (*Animal Management*, Wemelsfelder).

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