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Science, Knowledge, and Animal Minds

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# V\*—SCIENCE, KNOWLEDGE, AND ANIMAL MINDS

by Dale Jamieson

ABSTRACT In recent years both philosophers and scientists have been sceptical about the existence of animal minds. This is in distinction to Hume who claimed that ‘...no truth appears to me more evident, than that beasts are endow’d with thought and reason as well as men’. I argue that Hume is correct about the epistemological salience of our ordinary practices of ascribing mental states to animals. The reluctance of contemporary philosophers and scientists to embrace the view that animals have minds is primarily a fact about their philosophy and science rather than a fact about animals. The recognition of this fact is the beginning of any serious effort to develop a science of cognitive ethology.

## I

David Hume is remembered by many philosophers as the great sceptic who called into question causality, necessity, and even the existence of the self. It is striking, then, that Hume writes that

...no truth appears to me more evident, than that beasts are endow’d with thought and reason as well as men.<sup>1</sup>

He goes on to ascribe to animals such idea-mediated indirect passions as pride and love as well as such direct passions as desire, contentment and fear. Hume also attributes anger, grief, and courage to animals and writes that

’Tis evident, that *sympathy*, or the communication of passions, takes place among animals, no less than among men.<sup>2</sup>

Since Hume writes that the object of love must be a person and that animals can love their conspecifics, he goes so far as to imply that animals are persons.<sup>3</sup>

1. David Hume, *A Treatise of Human Nature*, ed. by L. A. Selby-Bigge (Oxford: At the Clarendon Press, 1888), 176.

2. *Ibid.*, 398.

3. *Ibid.*, 329, 397. For discussion of these passages and Hume’s view of animals generally, see Annette C. Baier’s ‘Knowing Our Place in the Animal World’, *Ethics and Animals*, Harlan B. Miller and William H. Williams, eds. (Clifton NJ: The Humana Press, 1983), 61–77. See also Denis Arnold, ‘Hume on the Moral Difference Between Humans and Other Animals’, *History of Philosophy Quarterly* 12, 3 (July 1995), 303–316.

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Hume's view of animals is dramatically different from that of some other philosophers. Descartes famously believed that animals do not have thought or 'real feeling'.<sup>4</sup> In our own day R. G. Frey holds that animals do not have desires and Donald Davidson teaches that animals do not think.<sup>5</sup> While Peter Carruthers grants that animals have experiences, he strangely claims that all of these experiences are nonconscious.<sup>6</sup>

Scepticism about animal minds is even more prominent in science than in philosophy. The ascription of mental states to animals by Darwin, Romanes and other early evolutionary biologists is commonly viewed these days as embarrassing anthropomorphism that has no place in serious science. Donald Griffin's attempts to resurrect some of their ideas and to formulate a cognitive ethology are frequently viewed as naive, and perhaps even a little crazy.<sup>7</sup> J. S. Kennedy, a leading animal behaviourist, speaks for many when he writes that

...although we cannot be certain that no animals are conscious, we can say that it is most unlikely than any of them are.<sup>8</sup>

Kennedy attacks contemporary advocates of cognitive ethology for promoting what he calls the 'new anthropomorphism', which he regards as damaging science by turning back the clock to the prebehaviourist era.<sup>9</sup> Even many scientists who are sympathetic to the idea of cognitive ethology are wary of ascribing mental states

4. On Descartes's view of animals see Daisie Radner and Michael Radner, *Animal Consciousness* (Buffalo NY: Prometheus Books, 1989); and Margaret Dauler Wilson, 'Animal Ideas', *Proceedings and Addresses of the American Philosophical Association* 69, 2, November, 1995.

5. R. G. Frey, *Interests and Rights: The Case Against Animals* (Oxford: Clarendon Press, 1980); Donald Davidson, 'Thought and Talk', reprinted in his *Truth and Interpretation* (Oxford: Oxford University Press, 1984), 155–70.

6. Peter Carruthers, 'Brute Experience', *Journal of Philosophy* 86 (1989), 258–69; for a reply see Dale Jamieson and Marc Bekoff, 'Carruthers on Nonconscious Experience', *Analysis* 52,1 (January, 1992), 23–7.

7. See N. K. Humphrey's review of Donald R. Griffin, *The Question of Animal Awareness* (New York: The Rockefeller University Press, 1976) which appeared in *Animal Behaviour* 25, 2 (1977), 521–2. For a recent attempt to put cognitive ethology on a firm foundation see Dale Jamieson and Marc Bekoff, 'On Aims and Methods of Cognitive Ethology', reprinted in Marc Bekoff and Dale Jamieson, eds., *Readings in Animal Cognition* (Cambridge MA: The MIT Press, 1995).

8. J. S. Kennedy, *The New Anthropomorphism* (Cambridge: Cambridge University Press, 1992), 31.

9. For an alternative perspective on anthropomorphism see John A. Fisher, 'The Myth of Anthropomorphism', reprinted in Bekoff and Jamieson, *Readings in Animal Cognition* 1995.

to animals. They are happier talking about animal ‘minds’ than animal minds.

It is striking that what the (supposed) sceptic Hume considers evident is thought by many philosophers and scientists to be false or at least controversial. He himself provides a key to understanding this dispute in the sentence succeeding the one quoted at the beginning of this paper.

The arguments are in this case so obvious, that they never escape the most stupid and ignorant.<sup>10</sup>

It is clear that when Hume says that ‘beasts are endow’d with thought and reason’ he means to be reporting common sense beliefs about animals. He has a philosophical point to make—that humans and animals are both part of the natural order—but here he is buttressing his view by calling on beliefs that he thinks are held by even ‘the most stupid and ignorant’. He sees no need for rolling out heavy philosophical or scientific artillery to prove that animals have thought and reason.

Hume is right in thinking that it is quite evident to most people (in our culture anyway) that animals have thought and reason.<sup>11</sup> As in his own day it is typically philosophers and scientists who call this view into question. I will try to show that the reluctance of some philosophers and scientists to embrace the view that animals have minds is primarily a fact about these philosophers and scientists rather than a fact about animals. Our ordinary practices of ascribing mental states to animals are quite defensible. It is the failure to see this that damages science.

## II

In this section I will remind us of some of these practices. But before going on those of us who are philosophers or scientists should take a deep breath and relax some of our concerns about the use of mental language—it’s OK, sometimes anyway, to speak with the vulgar. In particular we should lighten up about the use of some

10. David Hume, *loc. cit.* There is some irony here since Hume was quite aware of the Cartesian denial of animal minds.

11. For evidence that these views have been widely shared in Britain over the last half millennium, see Keith Thomas, *Man and the Natural World: A History of the Modern Sensibility* (New York: Pantheon Books, 1983). For discussion of how animals were viewed in antiquity see Richard Sorabji, *Animal Minds and Human Morals* (Ithaca NY: Cornell University Press, 1993).

highly-charged nouns. It is obvious that most of us believe in animal minds. This does not mean that we believe that animals have Cartesian souls or that their bodies are in some way 'occupied' by some unbreakable substance called 'consciousness'. Some people believe this, but strange views about the mind are not the price of admission for supposing that dogs miss their people, cats like to be fed, and tigers hope to be freed from their cages. We often confidently say that animals have thoughts, beliefs, intentions, desires, attitudes, emotions, feelings, or sensations. Often we claim to know what mental state obtains with respect to a particular creature on a particular occasion. Sometimes we don't even worry about 'content'. Call these practices 'ascribing or attributing mental states to animals'.

We ascribe mental states to animals explicitly and implicitly. Grete (a dog) scratches the door after having just been out. What does she want? We might have a spirited discussion about this, with different views being put forward. Perhaps we reach agreement, perhaps not. But we are co-conspirators in attributing mental states to Grete. Later, without comment or explicit thought, I get Grete's ball out from under the bed because I know that she wants it. I implicitly attribute a mental state to her. In addition to such explicit and implicit attributions, much of our behaviour towards animals simply presupposes that they have minds. We take the intentional stance towards them; more than that, we take the 'affective stance': we relate to them not only as intentional creatures, but also as beings who experience pain and pleasure. Much of our behaviour presupposes that what happens to animals matters to them.

We have these practices not only with companion animals, but also with farm animals and wild animals. Farmers and ranchers often pride themselves on understanding their animals and being able to identify their wants and needs. When we go to zoos or watch nature films we sometimes try to think ourselves into the place of the creatures. Such thought experiments are often rewarded by predictive success or the feeling that some behaviour has been made intelligible.

Even philosophers and scientists who are professionally sceptical about animal minds engage in these everyday practices when interacting with their animals and orally presenting their research. It is when publishing their official views that they purge

mentalistic language from their vocabularies. It is reported that Descartes had a dog, Monsieur Grat, whom he treated with great kindness.<sup>12</sup> Apparently Descartes's philosophy did not prevent him from appreciating the wants of his animal companion.

The fact that we have these everyday practices of ascribing mental states to animals does not mean that every ascription is correct. If someone were to say that Grete is contemplating the concept of an imaginary number he would be wrong. There is no reason to think that Grete has the conceptual equipment for such cogitation, nor that she would be interested in imaginary numbers even if she were able to think about them.

Beyond what seems obviously true or false about animal minds is a large domain of uncertainty, indecision, and indeterminacy. Deep questions about the mind and the application of mental predicates appear in our everyday discourse and reappear in philosophical discussion. Some of these involve large questions about whether there are any such things as minds; and if there are, how they should be understood and conceptualized. Others involve small questions about attributing particular mental states on particular occasions to particular creatures. Is it a tennis ball that Grete wants, any old ball, or just a round object that rolls? Does she have the second-order mental state of believing that I miss Toby (a human) or is she capable of only first-order mental states? Such questions arise with languageless humans and in some cases even with linguistically competent creatures. Debates about the minds of infants can be eerily reminiscent of discussions of animal thought. Moreover, the mental states of some humans remain quite opaque despite our best efforts. I do not always know even what I think about various issues, much less what Newt Gingrich thinks about them. I'm not even always sure that the questions that I raise about the minds of myself and others are sensible ones.

To a great extent these difficulties in attributing mental states are conceptual. They cannot be solved simply by attending closely to behaviour.<sup>13</sup> Since there is a diversity of views about the mind and

12. Radner and Radner, *op. cit.*, 60. I am not aware of any such stories about Malebranche, however.

13. John Dupré argues a similar point in 'The Mental Life of Nonhuman Animals', reprinted in Bekoff and Jamieson, 1996. Later I shall argue that we often see mental states expressed in behaviour, but that it does not follow from this that attending closely to behaviour will rationally compel a confirmed sceptic to believe that an animal is minded.

how it should be conceptualized, it is not surprising that our practices give out at some stage and fail to determine clear answers to difficult questions. This indeterminacy explains why, within limits, questions about the attribution of mental states are irreducibly open.

Thus far we have been discussing questions about the minds of mammals and other animals who are biologically close to us. Conundrums also arise about where various lines should be drawn and about what we should say concerning animals whom we think of as biologically remote. Most people would not hesitate in denying mentality to an amoeba and attributing it to a gorilla.<sup>14</sup> But what about insects? Our initial response might be that a minded bug is out of the question. However there is a literature that suggests that insects and spiders may sensibly be thought of as feeling pain.<sup>15</sup> We may dismiss this possibility as outlandish, change our behaviour, or simply come to think that the world is a stranger place than we had thought. All of these possibilities are open to us.

The fact that we can be wrong in attributing mental states to animals and that we can face unanswerable questions about them should not obscure the fact that we are quite sure that many animals have minds and that on particular occasions we know what is in them. This raises the question of how we come to know what an animal is thinking. This is connected to how we justify particular claims about particular animals on particular occasions, but it should not be confused with the question of how we can justify the entire practice of attributing mental states to animals. (This broad question about the justification of our practices will be addressed in Section III.)

14. But would we be so confident if amoebae were the size of dogs or humans? H. S. Jennings writes 'that if Amoeba were a large animal, so as to come within the everyday experience of human beings, its behavior would at once call forth the attribution to it of states of pleasure and pain, of hunger, desire, and the like, on precisely the same basis as we attribute these things to the dog.' *Behavior of the Lower Organisms* (New York: Columbia University Press, 1906), 336.

15. See, for example, C. H. Eisemann, W. K. Jorgensen, D. J. Merritt, M. J. Rice, B. W. Cribb, P. D. Webb and M. P. Zalucki, 'Do Insects Feel Pain—A Biological View', *Experientia* 40 (1984), 164–7; V. B. Wigglesworth, 'Do Insects Feel Pain', *Antenna* 4 (1980), 8–9; G. Fiorito, 'Is There "Pain" in Invertebrates?', *Behavioral Processes* 12 (1986), 383–8; and Thomas Eisner and Scott Camazine, 'Spider Leg Autotomy Induced by Prey Venom Injection: An Adaptive Response to "Pain"?' , *Proceedings of the National Academy of Science* 80 (1983), 3382–5.

Some people think that the way we come to know what an animal is thinking is quite different from the way in which we come to know what a human is thinking. Call this the Asymmetry View (AV). Although the AV can take different forms, its adherents typically say that while humans tell us what is on their minds we must infer what is on the minds of animals, and that the former route to knowledge of other minds is much more reliable than the latter.

First consider this view of how we know what is on the minds of animals: call it the Inferential View (IV).<sup>16</sup> The IV holds that all knowledge-claims about animal minds are based on probabilistic inferences to hidden mental states from observations of behaviour. For example, on this view my claim that Grete wants to play is an inference about Grete's mental state drawn on the basis of her behaviour. Behaviour is what is presented to us; inner mental states may be associated with behaviour, but whether or not they are (in general or on a particular occasion) is a matter of inference.

It is easy to see how the IV can lead naturally to scepticism about animal minds. If mental states float free of behaviour in this way, then we can never be sure that they exist. Grete could be empty-headed now or always. She and all of her friends could be mindless Cartesian automata. We can speculate or infer that they are not, but the heavy-duty machinery of reliable knowledge production cannot be brought to bear on the issue. No wonder people who hold the IV use shudder quotes when they talk about animal minds.<sup>17</sup>

The IV is based on the assumption that rather than seeing Grete, a cheetah or an elephant what I see when I look at an animal is a behaving body. This body may or may not be animated in some way or another by a mind. Whether it is or not is what is in question. But it may reasonably be argued that this is not a fair account of what goes on when I look at animals. Grete, the real object of my

16. Many scientists hold the IV, including some who are friendly to the idea of animal minds. For example, both Donald R. Griffin, *Animal Minds* (Chicago: University of Chicago Press, 1992) and J. S. Kennedy, *op. cit.* appear to hold this view, as does Bertrand Russell in *The Analysis of Mind* (London: Unwin, Hyman Limited, 1921), 27.

17. David Sanford has pointed out in conversation that various aspects of the IV are logically distinct. For example, the view that mental states are inferred from behaviour does not imply that they are inner or hidden; the view that mental states are inner does not imply that they are hidden or inferred; and so on. Despite the logical independence of these views, they tend to hang together as part of a broadly Cartesian picture of mind. At any rate the view I am considering involves the conjunction of at least these three propositions.



perception, has been displaced by a philosophical monster—the idea of a behaving body.<sup>18</sup> This is what needlessly ‘problematizes’ the question of animal minds. If mental states are hidden entities whose existence can only be inferred from behaviour, then we should be quite mystified much of the time about what and whether an animal is thinking. But it is mainly scientists and philosophers who are mystified, not ‘the most stupid and ignorant’. Unless there is a more compelling account available, the most plausible explanation is that philosophers and scientists have been seduced by their own ideology and concepts. It is the ‘stupid and ignorant’ who have it right.

In addition to this epistemological point a further reason for rejecting the IV, already hinted at, is that it fails to be true to the phenomenology of our experience of animal minds. Sometimes we are uncertain about what is on an animal’s mind and on those occasions we may try out an inference. But in many cases our knowledge of what an animal is thinking seems immediate and noninferential. We experience an animal’s behaviour not as a set of premises that support an inference, but as expressing the animal’s mental state. When my dog Ludwig was running in the woods and stepped into a leghold trap, I heard in his howl that he was in pain. The irritated meow of my (late) cat *Sassafras* expressed her hunger and displeasure at me for not feeding her sooner. When a caged gorilla in a zoo throws faeces at the gawkers there is little question about what is on his mind—not because the behaviour implies a particular mental state ascription, but because our seeing the behaviour in context as an expression of boredom and anger is virtually irresistible.

It may be objected that our failure to have the phenomenology of inference means little. In recent years we have become increasingly sceptical of phenomenology and gotten used to the idea that mental processes may involve lots of nonconscious inferring, computing, rule-following and so on.<sup>19</sup> Whatever is true of these claims it is useful to distinguish two senses of ‘inference’.

18. This point is an extension of claims made by Douglas C. Long and John Cook that scepticism about other human minds often gets going by substituting the philosophical concept of a human body for the everyday notion of a human being. See Douglas C. Long, ‘The Philosophical Concept of the Human Body’, *Philosophical Review* 73, 3 (July, 1964); and John Cook, ‘Human Beings’, in *Studies in the Philosophy of Wittgenstein*, P. Winch (ed.), (London: Routledge and Kegan Paul, 1969), 117–51.

In the broad sense an inference may involve a wide range of transitions between states. In the narrow sense an inference is a transition that is made on the basis of reasons. When I deny the IV I am denying that our knowledge-claims about animal minds are typically matters of inference in the narrow sense.

One reason for hanging on to the IV is that the alternative may be viewed as even less plausible. It might be thought that if our knowledge of animal minds is not an inference from behaviour then it must be a matter of perception—and it is certainly not that. I am not sure that perception and inference exhaust the alternatives but, understood in a certain way, I don't think that it is out of the question to suppose that some of our knowledge of human and animal minds is perceptual.<sup>20</sup>

It is very difficult to set firm limits on what counts as perceptual knowledge. We can see stars now even though they may have gone out of existence millions of years before. We can see Susan even though she is a religious Muslim and her body is completely covered. We see Jake on his way to work, even though only the dust kicked up by his truck is visible. On the other hand seeing the

19. For example David Marr writes that 'the true heart of visual perception is the inference from the structure of an image about the structure of the real world outside' (*Vision* [San Francisco: Freeman, 1982], 68). For an argument that transitions between representations in the visual system do not constitute inferences see Tim Crane, 'The Nonconceptual Content of Experience', in Tim Crane (ed.), *The Contents of Experience* (Cambridge: Cambridge University Press, 1992), 136–157.

20. The following philosophers have endorsed some version of the view that some of our knowledge of other human minds is perceptual: Fred Dretske, *Seeing and Knowing* (London: Routledge and Kegan Paul, 1969), 183–9; Michael Luntley, *Language, Logic and Experience* (La Salle IL: Open Court, 1988), 222; John McDowell, 'Criteria, Defeasibility, and Knowledge', *Proceedings of the British Academy* 68 (1983), 455–79; Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. by C. Smith (London: Routledge & Kegan Paul, 1962), 346–365; Max Scheler, *The Nature of Sympathy*, trans. by P. Heath (London: Routledge and Kegan Paul, 1954), 10, and Ludwig Wittgenstein, *Remarks on the Philosophy of Psychology*, vol. 2, ed. by G. H. Wright and H. Nyman, trans. by C. G. Luckhardt and M. A. E. Aue (Oxford: Basil Blackwell, 1980), 100. According to Dagfinn Føllesdal, Husserl also belongs in this camp (see Føllesdal's 'Husserl's Notion of Intentionality', in John Macnamara and Gonzalo E. Reyes (eds.), *The Logical Foundations of Cognition* (New York: Oxford University Press), 300–301). A similar view has also been defended by the following psychologists: Simon Baron-Cohen, *Mindblindness: An Essay on Autism and the Theory of Mind* (Cambridge MA: The MIT Press, 1995), and Peter Hobson, 'Concerning Knowledge of Mental States', *British Journal of Medical Psychology* 63 (1990), 205. The *gestalt* psychologist Hans Werner claimed that we perceive the 'inner life' of both humans and 'higher animals' in his *Comparative Psychology of Mental Development* (Chicago IL: Follett, 1948), 69, 76; and the classical ethologist A. Kortlandt claimed that we see the viciousness or friendliness of a dog just as we see colour ('Cosmologie der Dieren Een Nieuw Veld van Onderzoek', *Overdruk ait Vakblad noor Biologen*, Vier-en-Dertigste, No. 1 (January 1954), 1–14; unpublished English translation available from the author).

Auckland airport is not seeing New Zealand. Seeing someone's heart exposed for surgery is not seeing his body. Seeing a flea-ridden dog doesn't count as seeing fleas. Contemplation of these examples and others should show how difficult it is to give an account of what is and what is not seen.<sup>21</sup> Ditto for the other senses.

In everyday life we often use perceptual language in talking about our knowledge of other minds. I have already given some examples of this in the case of animals. In the case of humans we say that we see when people are happy, sad, or disappointed. As Wittgenstein remind us, “‘We see emotion.’—As opposed to what?—We do not see facial contortions and make inferences from them’.”<sup>22</sup> It seems that there is a *prima facie* case for supposing that we can sometimes see that people and animals are in particular mental states. However, it might be objected that we should not take such language at face-value. Our knowledge of other minds cannot be perceptual, it might be said, because mistakes in the ascription of mental states are not perceptual mistakes. I thought that Toby was upset but she was only pretending. Grete looked hungry but she was just being greedy. In both cases I am mistaken but in neither case have my senses failed me. What I see is the same whether Toby is upset or pretending, whether Grete is hungry or greedy. Since Toby's and Grete's mental states are underdetermined by what I see, any knowledge I have of their mental states is not perceptual knowledge.

One response is to deny that such problematical cases can ever arise.<sup>23</sup> The story might go like this. What I see when Grete is hungry is not the same as what I see when she is greedy. To believe otherwise is to assume that a visual experience that is a ‘mere

21. Many of these examples are drawn from Paul Ziff, *Understanding Understanding* (Ithaca NY: Cornell University Press, 1970), Chapter 7. See also Norwood Russell Hanson, *Patterns of Discovery* (Cambridge: Cambridge University Press, 1958), Chapter 1; and Paul M. Churchland, ‘Perceptual Plasticity and Theoretical Neutrality: A Reply to Jerry Fodor’, reprinted in *A Neurocomputational Perspective: The Nature of Mind and the Structure of Science* (Cambridge MA: The MIT Press, 1992), 255–79.

22. Zettel, Section 225.

23. This response is discussed sympathetically in John McDowell, *op. cit.* as part of an attempt to understand some remarks of Wittgenstein's, but it is not clear whether McDowell himself endorses this view. J. L. Austin was also inclined toward such a response, but granted that ‘there may be cases in which “delusive and veridical experiences” really are “qualitatively indistinguishable”’ (*Sense and Sensibilia* [New York: Oxford University Press, 1962], 52). These issues are usefully discussed by Alan Millar in ‘The Idea of Experience’, *Proceedings of the Aristotelian Society*, 96 (1996), 75–90.

appearance' can be qualitatively identical with a visual experience that reveals a fact. But a visual experience that is fact-revealing is thereby qualitatively different from one that is a 'mere appearance'. So we should reject the initial description of the problem cases as ones in which we are presented with qualitatively identical appearances.<sup>24</sup>

This line may be correct as a matter of metaphysics but it doesn't help with our epistemological problem. Once I know that Toby is pretending I may come to think of her behaviour as having been quite different from what it is when she is upset. But this ability to 'retrofit' my judgements doesn't help me to sort out the cases upfront. When I'm looking at Grete and Toby, it may appear to me that they behave in exactly the same way in cases in which I am right and cases in which I am wrong. It may seem that my senses have done their job but I've still made a mistake. Therefore, it may be thought, my mistakes in these cases are not perceptual ones.

However, totting up the blame for mistakes is not as easy as it may seem. Different explanations can be given for the same mistake at different times, to different audiences, depending on our purposes. I may say to my mother that I see the North Star, but when grilled by an astronomer I may be more discreet in reporting what I saw. Generally if the possibility of error becomes magnified in our minds we begin to think of perceptual claims as inferential ones. Courtroom lawyers are often very good at forcing witnesses to recast claims in this way (e.g. 'Did you actually see my client kick Rodney King or did you draw an inference from the fact that you saw his foot move in the direction of King's head?'). The problem with supposing that the retreat from claiming perceptual to inferential grounding for our assertions is a move towards greater truth and literalness is that there is no natural stopping point for this retreat short of sense-data (if that is a natural stopping point), and most of us no longer believe that we really perceive only shapes and colours and everything else is built up by inference. A better way to look at our epistemic mistakes involves seeing our claims to knowledge as part of a network of beliefs and commitments that

24. For discussion of some similar points regarding authentic artworks and forgeries, see Nelson Goodman, *The Languages of Art* (Indianapolis IN: The Bobbs-Merrill Company, Inc. 1968), Chapter 3.

are informed by theories, attitudes and insights gained from particular experiences. When something goes wrong the blame can be located at various points in the network. For certain purposes we may hold everything else fixed and say that it was perception that misfired. For other purposes we may fix other elements in our cognitive economy and blame inference, or other beliefs or commitments. Of course, not anything goes. Any bad arguments that I may give in this paper are probably not due to perceptual failings. Still, what I am suggesting is that for many mistakes about the minds of animals it seems as natural or unnatural, depending on context or circumstance, to blame perception as inference. For example, I might say 'How stupid of me not to see that the elephant is feeling nasty today; you saw it immediately'. Or I may say 'I guess the elephant is feeling nasty today'.

Another reason for objecting to the idea that we sometimes have perceptual knowledge of animal minds is that this view may seem to fail to account for the importance of behaviour in making mental attributions. As Sydney Shoemaker claims about the human case,

...while we can be said to observe or perceive facts about another's mental states, we do this *by* observing his behavior (and the circumstances in which it occurs). It is *from* a man's behavior (including his facial expressions) that I see that he is angry.<sup>25</sup>

What Shoemaker says in this passage is true: behaviour is important to mental attributions. Indeed, to say that it is important understates the close linkages between behaviour and mental attributions. What is at issue, however, is not whether behaviour is important to mental attributions but rather the way in which it is important. My claim is that the close connection between observations of behaviour and the attribution of mental states is often perceptual rather than inferential. Behaviour does not typically provide premises for mental attributions; often we see mental states as expressed in behaviour and we see behaviour as confirming our reading of a creature's mind. The fact that behaviour is important to attributions of mental states is indifferent between the inferential and perceptual views.

It is also important to be clear about what constitutes behaviour. One important strand of our conception of humans and many other

25. Sydney Shoemaker, 'The Problem of Other Minds', in J. Feinberg (ed.), *Reason and Responsibility*, Third Edition (Encino CA: Dickenson Publishing Co., 1975), 216.

animals is that we relate to them as animated creatures rather than disembodied Cartesian souls.<sup>26</sup> If we see a creature as minded we see it as behaving, even if it is sitting around not doing much of anything. Gross movements are not always needed for attributing mental states. A listless body will do in many cases.<sup>27</sup>

It may be that our practices of seeing mental states as expressed in behaviour have properties of both perceptual and inferential knowledge and perhaps some unique characteristics of their own.<sup>28</sup> What I insist is that the perceptual model is not so inferior to the inferential model that we should embrace the IV out of embarrassment at the alternative. If I am right about this, no case will yet have been made for the plausibility of the IV as an account of our knowledge of animal minds.

The second part of the AV holds that language is key to our understanding the minds of human beings: they tell us what is on their minds. Call this the Linguistic Thesis (LT). On one interpretation the LT is unobjectionable, perhaps even trivial: In 'the normal case' Toby's uttered sentence expresses what is on her mind. But if the LT is taken as asserting that linguistic expression is essential to knowing the minds of others then it is clearly false.

The 'normal case' may involve saying what is on one's mind but abnormal cases abound. Speakers lie and use tropes. I may not know what is on a speaker's mind by attending to her use of language. I may even form false beliefs as a result. In other cases we possess knowledge of the mental states of others through language-independent modalities. When someone winces at something I say I know that they are displeased. Linguistic behaviour is neither necessary nor sufficient for knowing what is on someone's mind.

26. Here I echo P. F. Strawson: 'We simply react to others as to other *people*. They may puzzle us at times; but that is part of so reacting' (*Skepticism and Naturalism: Some Varieties* (New York: Columbia University Press, 1985), 21). But, perhaps contrary to Strawson, I think that a similar point is also true of our reactions to many nonhuman animals on many occasions, but that there are various strands in our practices with respect to both humans and other animals, not all of which are obviously consistent.

27. Jennifer Hornsby makes a similar point in her 'Physicalist Thinking and Conceptions of Behaviour', in P. Pettit and J. McDowell, eds., *Subject, Thought and Context* (Oxford: Oxford University Press, 1986), 95–115.

28. Sydney Shoemaker has recently argued that although there is a 'stereotype' of sense-perception, not everything we count as sense perception conforms to it. Even so, some of our knowledge of the mental states of others seems to conform to what Shoemaker calls 'the broad perceptual model'. For further discussion see his 'Self-Knowledge and "Inner Sense"', *Philosophy and Phenomenological Research* 54, 2 (June, 1994), 249–314.

For these reasons I reject both parts of the AV as it is typically developed. In my view there is no good reason to believe that there is a difference in kind as to how we come to know the mental states of humans and animals. With respect to both humans and animals, sometimes such knowledge is based on some form of inference, but often it comes from recognizing what is expressed in the behaviour of the organism in question. As I have already suggested, many animals express various mental states through a wide range of behaviour. When dogs want to play they characteristically bow with their heads down and their tails up. When primates want something they often put their hands out and cock their heads to the side. Many animals express surprise with wide open eyes and dropped tails. Understanding both humans and animals involves placing their behaviour in broad interpretive frameworks. We aim to fit their behaviour into a pattern, linguistic or otherwise, to find the 'project' to which it belongs.<sup>29</sup> Different creatures behave in different ways, but the basic task of interpretation remains the same.<sup>30</sup>

Success in interpretation rests on many factors including background knowledge, appreciation of context, specific information about the creature in question, familiarity with his or her way of life, and general knowledge about the relationship between mental states and behaviour.<sup>31</sup> The rather bland fact is that knowing the mental states of others (whether human or animal) requires knowing what things are like around here.

Consider some examples of how interpretation works. Even though in most respects she appears to be behaving normally, I can see that Nina is still depressed after losing her job in the box factory. I know that Ivan, the gorilla who has lived in a shopping

29. In the wake of Sue Savage-Rumbaugh's work with bonobos and Lou Herman's work with dolphins, the linguistic/non-linguistic distinction looks increasingly dubious. At the very least the range and depth of non-linguistic expressions looks richer all the time. See their essays in Bekoff and Jamieson 1995.

30. Gareth Evans discusses the broad, interpretive project involved in attributing psychological states to humans in his *The Varieties of Reference*, John McDowell, ed. (Oxford: Clarendon Press, 1982), 130.

31. See J. L. Austin's comments about the role of familiarity and experience in knowledge claims in his 'Other Minds', in *Philosophical Papers*, second edition, J. O. Urmson and G. J. Warnock, eds. (New York: Oxford University Press, 1970). Dretske, *op. cit.*, 179–190, makes similar points about specialization and its role in perception. John Searle discusses the importance of what he calls 'the network' and 'the background' for understanding intentional states in his *Intentionality: An Essay in Philosophy of Mind* (New York: Cambridge University Press).

mall in Tacoma, Washington for nearly thirty years, is desperately unhappy although at the moment he appears to be coping. If I knew nothing about how depressed humans and unhappy gorillas behave I would not be in a position to make such attributions. Nor would I be able to make them if I had no knowledge of the effects of unemployment on humans and being caged in shopping malls on gorillas.

We are better at reading the minds of creatures who we know well than those who are foreign to us. I can identify Toby's mental states more reliably than those of the President of my College. I know Grete's mind better than that of a random spaniel. I have more confidence about the mental states of a dog than of a koala. Most of us are more confident of our judgements about the mental states of another human than we are about those of most nonhumans. But if we know the animal well and the human not at all, this may not be the case. Many people are better at identifying the mental states of their animal companions than those of an animal control officer.

Cultural differences among humans can make the identification of mental states difficult. Often the inability to read the mental states of other humans is associated with racism. Caucasians sometimes claim to find Asians inscrutable or give highly improbable accounts of what they think (e.g. 'They don't value human life like we do in the West.'). When the Spanish arrived in the Americas they were very bad at reading the behaviour of the indigenous people. There were scholarly arguments about whether the native peoples were degenerate humans, therefore rational animals who could and should be converted; or savage beasts, who could and should be enslaved.<sup>32</sup>

Mental attributions are based on behaviour but they occur against a large and complex set of empirical and conceptual structures. Some of these structures involve knowledge about the natural expressions of mental states and others involve knowledge about relevant conventions. Linguistic behaviour is important in mental attributions to humans because language use and interpretation is so conventionalized that it wrings out indeterminacy and reduces the ground available for supporting sceptical

32. For discussion see Lewis Hanke, *Aristotle and the American Indians: A Study in Race Prejudice in the Modern World* (Bloomington: Indiana University Press, 1959).



challenges. Insofar as there are asymmetries in our knowledge of human and animal minds they are based on our lack of familiarity with animals and the paucity of shared conventions. There is nothing about human language use in itself that underwrites essential differences in our knowledge of human and animal minds.

In this section I have been claiming that we have practices that involve seeing both human and nonhuman members of our community as expressing mental states in their behaviour. This is not to say that our attributions of mental states are always correct or unproblematical, or that it is entirely clear what it is to be a member of our community. What is clear is that most of us live in society with normal adult humans, languageless humans and nonhuman animals. In a great many cases we have no trouble identifying what is going on in the minds of others, whether they are human or nonhuman.

It might be wondered whether everyone in our community is party to these practices. In order to try to answer this question we need to imagine what it would be like to find these practices alien. It is not enough to imagine oneself as an animal torturer. Someone who tortures animals has no trouble reading their minds. What gives him pleasure is knowing that he is causing animals pain. A better example would be someone who is in a certain way autistic. Although it comes in varieties and degrees, it is said that the heart of autism is the inability to read the minds of others.<sup>33</sup> Interestingly, sometimes it is claimed that autistic people find the minds of

33. There is a huge literature on autism. For a variety of views and perspectives see Simon Baron-Cohen, Helen Tager-Flusberg, and Donald Cohen (eds.), *Understanding Other Minds: Perspectives From Autism* (New York: Oxford University Press, 1993). Baron-Cohen has suggested that autistic humans 'may have a purely behavioural notion of the function of the brain, and may even be completely unaware of the distinction between mental and physical entities' ('Precursors to a Theory of Mind: Understanding Attention in Others', in Andrew Whiten (ed.), *Natural Theories of Mind: Evolution, Development and Simulation of Everyday Mindreading* (Oxford: Basil Blackwell, 1991), 233–234). See also his 'Are Autistic Children Behaviourists? An Examination of Their Mental-Physical and Appearance-Reality Distinctions', *Journal of Autism and Developmental Disorders* 19 (1989), 579–600, and his previously cited *Mindblindness*. For further discussions of autism, see for example Alan M. Leslie, 'Pretence, Autism and the Basis of "Theory of Mind"', *The Psychologist* 3 (March 1990), 120–3, and R. Peter Hobson, *op. cit.* For a popular account, see Oliver W. Sacks, *An Anthropologist on Mars: Seven Paradoxical Tales* (New York: Knopf, 1995). For what it is like to be autistic, see Donna Williams, *Nobody Nowhere: The Extraordinary Autobiography of an Autistic* (New York: Avon Books, 1992); and Temple Grandin, *Thinking in Pictures: and Other Reports From My Life with Autism* (New York: Doubleday, 1995).

animals more transparent than those of humans. But imagine a variety of autism that makes opaque the inner lives of animals while leaving those of humans open to view. Dogs, cats, cows, spiders, mice and monkeys would all present an overwhelming challenge to such a person. She might even have trouble with cartoons, nature shows, and *Beethoven, Part II*. It is not easy to imagine what it would be like to be such a person. It is especially difficult to imagine that her inability to read animal behaviour would not spill over to the behaviour of humans as well. What would she make of infants, the infirm, those whose lives are profoundly different from hers? If there were such a person our differences with her would not primarily be philosophical. Rather, they would be psychological: we would say that she is disordered in an important way. Normal people in our culture sometimes see mentality expressed in the behaviour of some animals who are close to them. This is a feature of our practices. A person with whom we do not share these practices is, in an important way, not one of us.

### III

Someone might agree with what I have said thus far but still want to know how our practices can be justified. Perhaps as a matter of fact we do see at least some animal behaviour as expressing mentality. Perhaps someone who did not could be described as disordered. But that is mere name calling. No argument has been given for why we ought to see animal behaviour as expressing mentality rather than as mere bodily movements. Perhaps the correct view is one that in these ignorant times we would describe as disordered.

We should first appreciate just how strong a demand is being made. Particular claims about the minds of animals can be justified or not within the context of our present practices. Many questions are left open and there is a great deal of room for reformers of various persuasions to build upon, revise, or try to revolutionize the practices that we have. But what is now being asked is why we should have these practices at all. We are being asked to defend our whole form of life insofar as it involves ascribing mental states to animals.

There is a question about who has the burden of proof here. The sceptic about animal minds may view himself as saying: 'We have

minds. Do other animals? Prove it to me!'. But a truer account of what he is saying might be this: 'Granted, we believe that other animals have minds. But we could be wrong. Prove to me that we're not.' When the sceptic's challenge is framed in this way it is not clear what would count as meeting it or that we are even obliged to try.<sup>34</sup>

One response to the demand for justification would be to say that none can be given but none is required: our practices with regard to animals are an ineluctable fact about our form of life. J. S. Kennedy, oddly enough a sceptic about animal minds, appears to think that we cannot help but believe in them. He writes that

...anthropomorphic thinking about animal behaviour is built into us. We could not abandon it even if we wished to. Besides, we do not wish to. It is dinned into us culturally from earliest childhood. It has presumably also been 'pre-programmed' into our hereditary make-up by natural selection...<sup>35</sup>

'Anthropomorphic thinking'—Kennedy's term for attributing mental states to animals—is demanded both by our genes and our culture. Yet Kennedy wants us to change our ways.

If the study of animal behaviour is to mature as a science, the process of liberation from the delusions of anthropomorphism must go on.<sup>36</sup>

Kennedy is bound to be disappointed. If our practices with regard to attributing mental states to animals are determined by our genes and culture, then they are not going to change. And if this is true, no justification for these practices is needed. Demands for justification are moot in the face of the inevitable.

Let us suppose, however, that in some way or another, at some cost however heavy, our practices with regard to animals could be overthrown. What we would have to imagine is that the right-minded succeed in mounting a cultural revolution, in consequence of which we come to see animals as (something like) Cartesian automata. While we would continue to view the behaviour of infants as expressing mindedness we would come to see the

34. This way of framing the sceptic's challenge is suggested by Paul Ziff's account of the 'other minds' sceptic in 'The Simplicity of Other Minds', reprinted in his *Philosophic Turnings* (Ithaca NY: Cornell University Press, 1966).

35. J. Kennedy, *op. cit.*, 4–5.

36. *Loc. cit.*

behaviour of birds and monkeys as akin to the movements of airplanes and wind-up toys. What would motivate the abolition of our practices of ascribing mental states to animals is some philosophical argument that showed that these practices were unjustified. What such an argument would be like is far from clear, but let us suppose that one were available.<sup>37</sup> We would then face a clash between the demands of everyday life and the deliverances of philosophy. Which should win?

It is far from obvious that philosophy should win. To suppose that it should reflects the view that the practices of everyday life require philosophical justifications. But this is a controversial assumption. In fact it is a metaphysical assumption that itself requires justification. It is just as plausible to suppose that everyday practices that have their own internal resources for justifying claims and reforming behaviour require no further justification—that these practices are ultimately legitimated by ‘...showing their worthiness to survive on the testing ground of everyday life’.<sup>38</sup>

Fortunately, however, our everyday practices that involve attributing mental states to animals can be defended. Whether what can be said constitutes a full-scale philosophical justification for them I will not try to say. Nevertheless it is clear to me that quite a lot more can be said on behalf of these practices than against them. Here I will briefly review four kinds of reasons for our having practices that involve ascribing mental states to animals.

37. The philosophical arguments that I have seen for such a conclusion fail. For discussion of some of them see Jamieson and Bekoff, 1992, and Marc Bekoff and Dale Jamieson, ‘Reflective Ethology, Applied Philosophy, and the Moral Status of Animals’, in P. Bateson and P. Klupfer (eds.), *Perspectives in Ethology 9: Human Understanding and Animal Awareness* (New York: Plenum Press, 1991), 1–47.

38. Mark Johnston, ‘Objectivity Refigured: Pragmatism Without Verificationism’, in John Haldane and Crispin Wright (eds.), *Reality, Representation, and Projection* (New York: Oxford University Press, 1993), 85. It would be a different matter if someone claimed to produce an argument that showed that our everyday practices are not only unjustified but plain wrong. Although I am in great sympathy with a view that Mark Johnston calls ‘minimalism’, his conflation of this distinction vitiates his reply to Derek Parfit in ‘Reasons and Reductionism’, *The Philosophical Review* 101,3 (July, 1992), 589–618. Here he defends our everyday practices that involve views of personal identity against Parfit’s strictures. Johnston conflates the claim that our everyday practices stand in need of philosophical justification with the claim that philosophical argument shows that these practices are incorrect. Since I take Parfit as arguing the latter, at least in part, Johnston’s invocation of minimalism fails to defeat Parfit’s arguments. Something more needs to be said to defend our everyday practices against the second sort of assault.

The first reason is that these practices are useful.<sup>39</sup> Part of why even behaviourists find it natural to attribute mental states to animals is that mentalistic language plays a role in anticipating, explaining, and modifying behaviour that could not easily be replaced by the language of learning theory, neuroscience, or anything else that is currently available. That these practices have a payoff is clearly a reason to have them, although people may disagree about the character and strength of this reason.

The second reason for supposing that our practices are justified appeals to similarities between humans and many other animals.<sup>40</sup> Given that we behave in ways that are similar to many other animals and that there is remarkable continuity in the structure of various nervous systems, it is plausible to suppose that if we have mental states so do they. Given these facts about biological continuity and similarity, it would be quite surprising if human psychology in all of its depth and richness were completely unique. Indeed, it would be the biological equivalent of the immaculate conception.

The third reason for supposing that our practices are justified involves scientific theory.<sup>41</sup> That humans have mental lives is a fact that must ultimately yield to evolutionary explanation. Various accounts of the evolution of mind appeal to the sorts of environmental and social problems that our ancestors would have faced. These involve such matters as the pressures of group-living and the need to engage in cooperative hunting and foraging. But the ancestors of many other animals faced similar problems as

39. This is a point that Dan Dennett and Jerry Fodor have made in different ways over the years. For Dennett's view, see *The Intentional Stance* (Cambridge MA: The MIT Press, 1987); for Fodor's, see 'Special Sciences', reprinted in his *Representations: Philosophical Essays on the Foundations of Cognitive Science* (Brighton: The Harvester Press, 1981). Sydney Shoemaker's Informed Agency condition (in his 1975) may provide an explanation of why attributing mental states to animals is useful.

40. This view goes back to Charles Darwin, *The Descent of Man, and Selection in Relation to Sex* (London: Murray, 1871), and *The Variation of Animals and Plants Under Domestication* (New York: Appleton, 1896). For discussion of Darwin's views regarding animals see James Rachels, *Created From Animals: The Moral Implications of Darwinism* (New York: Oxford University Press, 1990). On the similarity argument generally see Roger Crisp, 'Evolution and Psychological Unity', reprinted in Bekoff and Jamieson 1995; and Gareth Matthews, 'Animals and the Unity of Psychology', *Philosophy* 53 (1978), 437–454.

41. Alison Jolly and Nicholas Humphrey have separately given evolutionary accounts of how consciousness might have evolved that appeals particularly to the social demands of life in primate communities. Their early papers are reprinted in Richard Byrne and Andrew Whiten (eds.), *Machiavellian Intelligence: Social Expertise and the Evolution of Intellect in Monkeys, Apes, and Humans* (Oxford: Clarendon Press, 1988).

well. Thus the same evolutionary forces that might have selected minded human ancestors could be expected to have selected minded ancestors of various other animals as well.

Finally, attributing mental states to creatures is part of an outlook that recognizes them as morally significant. The relations between having a mind and being an object of moral concern are logically quite complex, but they are psychologically very strong. While favourable moral attitudes towards animals may not in themselves justify the ascription of mental states to animals, the existence of such feelings may lead us to see various facts about an animal as constituting or supporting such attributions. In addition there are all sorts of good reasons from the perspective of diverse moral theories for embracing a moral outlook that takes animals seriously.<sup>42</sup> Some philosophers may balk at the idea that our morality should play any role at all in shaping our view of the mind, but that view requires justification and it seems to me to rest on dubious foundationalist views about the relations between various areas of philosophical inquiry, as well as on the possibility of clearly distinguishing the descriptive from the normative.<sup>43</sup>

These reasons for attributing mental states to animals might constitute a justification if one is needed. If we wanted to give a name to this justification we might call it 'inference to the best explanation'. However it is important not to confuse this inferential defence of our practices taken as a whole with an inferential defence of particular claims about the mental states of particular animals on particular occasions. When I say that Grete is lonely I am not ordinarily making an inference on her bodily movements. What I am suggesting here is that our practices of ascribing mental states to animals, taken as a whole, serve to unify our moral sensibilities, our scientific understandings, and our practical

42. The literature on this subject is now overwhelming. My 'Ethics and Animals: A Brief Review', *Journal of Agricultural and Environmental Ethics* 6, Special Supplement 1 (1993), 15–20, is a concise introduction. Also for an overview see David DeGrazia, *Taking Animals Seriously: Mental Life and Moral Status* (New York: Cambridge University Press, 1996).

43. Ancestors of this paragraph have produced quizzical looks and sceptical questions on every occasion on which I have presented this paper (Peter Singer and Michael Smith have been the most quizzical or sceptical). I hope this version puts these concerns to rest but 'the induction is depressing'. See also David Papineau, *Philosophical Naturalism* (Oxford: Blackwell, 1993), 126–127.

concerns. If a justification for our practices is required, this ought to do it.

However the voice of the sceptic is not so easily stilled. Couldn't we be wrong about animals having minds? Yes, we could be wrong, but so what? We could be wrong about all sorts of things. The sceptic wants to seduce us into taking the epistemological stance towards animal minds.<sup>44</sup> But from here all sorts of things are in question—other human minds, causality, substance, personal identity, to name just a few. There may be philosophical reasons for taking this stance on particular occasions, but it should not be allowed to cast doubt on our commitment to animal minds. Nor should this kind of scepticism be permitted to infect science. For the purposes of everyday life and science we should rebuff the sceptic. He can take his stance and go dance with the philosophers.

#### IV

For reasons of space my concluding remarks will be relatively brief.<sup>45</sup> I have already suggested that what I have called the AV inhibits the scientific study of animal minds. We are now in a better position to see why. When scientists assume that what we observe is bodily movements and then worry about whether any inference to internal mental states is justified, they wrap themselves in the garb of hard-headed empiricism. But really they are recommending a disorder as a methodological stance. The inferential view of animal minds is part of a normative objectifying program that demands that we see animals in a way that is difficult for us to fulfil and one that we ought to reject.

It is striking to compare the successes of cognitive psychology with the sloganeering of cognitive ethology. Many ethologists still work with behaviourist and reductionist assumptions. They feel that cognitive language is a temptation to resist rather than a theoretical vocabulary to deploy. Their preference is for evolutionary or neurophysiological explanations, which they typically view as replacing cognitive ones. But a cognitive

44. John Searle discusses the epistemological stance in his 'Animal Minds', P. French, T. Uehling, and H. Wettstein, eds., *Midwest Studies in Philosophy Volume 19: Philosophical Naturalism* (Notre Dame IN: University of Notre Dame Press, 1994), 206–219.

45. Some of the themes in this section have been further elaborated in Jamieson and Bekoff, 'On Aims and Methods...'

approach to animals divides up the world in different ways than these other approaches. It makes different generalizations possible and provides different kinds of explanations. I would even say that cognitive approaches help us to appreciate animals from their own points of view.

Cognitive psychologists, on the other hand, do not worry about the problem of other minds. They take for granted that they are studying cognitive creatures and design experiments that try to shed light on the cognitive capacities they presume to exist. This is the path that should be followed by cognitive ethologists: Rather than getting in a twist about whether animals have minds, instead design experiments that study the cognitive capacities of animals.<sup>46</sup> Ultimately the tenability of various scientific views about animal minds will be demonstrated by the fruitfulness of the research. It may be that the best cognitive vocabulary for humans or other animals will depart from folk psychological concepts. Perhaps at the 'end of neuroscience' mentality will have been explained away. Our everyday practices of attributing mental states to animals is where cognitive ethology should begin, not where it should end. But whatever the future may hold, a science of animal minds cannot get going without presupposing that it has an object of study.

Having said this, it is important to recognize that the tenability of our everyday practices of ascribing mental states to animals does not rest on the possibility of a science of animal minds. In the present intellectual climate it is tempting to suppose that we should believe only in what can be vindicated by scientific methods. This may even be thought to follow from the role that science plays in our culture as the provider of reliable knowledge. But although science may be a high-class producer of quality cognitive products, there is little reason to believe that it has a monopoly on them. In order to suppose that, we would need to be convinced that the only form of knowledge is scientific knowledge. Not only is this unproven, but it seems to me to be false. Furthermore, as I have suggested, ascribing mental states to animals is an important part

46. Some of the best cognitive ethologists are beginning to do this. See the work collected in D. Cummins and C. Allen, eds., *The Evolution of Mind*, forthcoming from Oxford University Press.



of our moral outlook. The persistence of this moral outlook does not depend on the possibility of a science of animal minds.

In this essay I have claimed that many of us know that many animals are in various mental states on various occasions and that there can be a science that studies these states. Even if I am wrong about the latter claim, the former claim is not thereby undermined. The conception of animals as minded creatures, encoded and expressed in our everyday practices, is currently too well entrenched for scepticism to overcome. The recognition of this fact is the beginning of any serious investigation of animal minds.<sup>47</sup>

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47. This essay began life as a contribution to the Cornell Workshop on Comparative Cognition. Subsequent versions were presented at the Pacific Division of the American Philosophical Association, Duke University, the University of Colorado, Monash University, La Trobe University, and the University of Melbourne. I was helped by those who took part in these discussions; especially Colin Allen, Marc Bekoff, Carl Ginet, Kristina MacRae, Paul Moriarity and Sydney Shoemaker. Comments by Elizabeth Fricker, Douglas C. Long, Margaret Dauler Wilson and Steven Yalowitz on various versions of the manuscript also occasioned revisions. My greatest debt is to John A. Fisher with whom I have discussed these issues for many years. I remain painfully aware of how much more there is to say about these matters and how much better it should be said.