BOOK REVIEWS

Animal Minds: Beyond Cognition to Consciousness

D R Griffin (2001). Published by the University of Chicago Press, 1427 East 60th Street, Chicago, Illinois 60637-2954, USA; http://www.press.uchicago.edu. 356 pp. Paperback (ISBN 0 226 30865 0). Price £17.50.

With the publication of his book *The Question of Animal Awareness* in 1976, Donald Griffin put the quest for animal consciousness back on the academic map. The climate of the previous decades had been to regard consciousness as inaccessible to scientific method, and as irrelevant to the explanation of behaviour. Griffin's unease with this view surfaced when he and colleagues discovered echolocation in bats and gathered evidence that bats retained complex 'echolocated' information in the form of cognitive spatial maps. The discovery that animals can process complex information in sensory dimensions alien to human perception caused a sensation. The philosopher Thomas Nagel visited Griffin's laboratory around this time, and, perhaps not coincidentally, wrote his seminal paper on the nature of consciousness, 'What is it like to be a bat?' (1974). Griffin went on to speculate that "The orderly complexity of cognitive maps in animals suggests, though it does not prove, that some of the time they may consciously think about their orientation" (1981, p 10). Griffin was aware that in various areas of research similar evidence for the versatility and complexity of animal behaviour was growing fast. It became evident to him and many others that the behaviourist paradigm of regarding behaviour exclusively in stimulus–response terms needed to expand to account for the possible existence of internal mental states. In his book he proposed a new field of study, 'cognitive ethology', which he characterised as "the scientific investigation of mental phenomena, including both unconscious and conscious mental states" (2001, p xiv).

Things developed rapidly from there. Cognitive ethology has now shed its controversial nature and become an established and well-respected field of scientific study. Griffin published two further books on animal cognition, *Animal Thinking* (1984) and *Animal Minds* (1992), as well as a revised, updated and expanded edition of *Animal Minds* in 2001. The latter book is the subject of this review; however, it is better considered in the context of the whole series rather than on its own. In all his books Griffin pursues similar goals: the careful and detailed examination of bodies of behavioural and neurophysiological evidence that demonstrate the complexity and versatility of animal behaviour throughout the phylogenetic scale. *Animal Minds* 2001 provides a fascinating review of classical areas of study that have produced ground-breaking results: sign language in apes, Alex the talking parrot, concept formation in pigeons, dance language in honeybees, the engineering of insect and bird nests. These and many other windows on animal intelligence are discussed in chapters with themes such as 'finding food', 'predation', 'tools and special devices', 'construction of artifacts', 'symbolic communication', and 'deception and manipulation'. For all those interested in animals and the organisation of their behaviour this book is worth having for this overview alone. There are still those philosophers and scientists who, when taking part in the consciousness debate, pontificate on all the things that animals (in contrast to humans) 'cannot do'. More often than not these people are simply not sufficiently conversant with the evidence that falsifies their claim. Griffin's books serve the important function of bringing much of that evidence together, so that the debate may be suitably informed rather than based on dogmatic views.

However, notwithstanding its scientific standing, the field of cognitive ethology continues to be dogged by the controversial nature of the consciousness theme. Griffin's main agenda was to advocate the study of conscious animal mental states; significantly, he added the

subtitle *Beyond Cognition to Consciousness* to the 2001 edition of *Animal Minds*. But here he stands apart from many cognitive scientists, who do not tend to give the cognition/consciousness distinction much thought. For them the study of cognition *is* the scientific answer to the consciousness debate, and there is nothing 'extra' left to explain. But Griffin insists that there is an intrinsic link between the capacity for behavioural flexibility and consciousness. Right at the start of *Animal Minds* 2001 he concedes that "nonconscious information processing could *in theory* produce the same end result as conscious thinking" (p 3, Griffin's emphasis). Yet despite this problematic point he considers it unjustifiably narrow-minded to leave consciousness out of the equation: there is the certainty that human beings experience conscious awareness, the certainty of evolutionary continuity, and the two add up to the high likelihood that a considerable number of animal species must be conscious too. Those who find this reasoning inexcusably anthropomorphic are addressed in a chapter on 'Objections and their limitations'. No one ever suggested, Griffin says, that conscious states in animals resemble those of humans. The point is that the biological reality of consciousness cannot (given our own experience) be disputed, and should therefore be included in our scientific hypothesising. To treat this supposition with denial and contempt is not parsimonious, Griffin argues, but dogmatic and irrational, holding scientific progress back.

But whither lies scientific progress? How does one reliably identify the difference between conscious and unconscious mental states? Griffin spends little effort defining conscious awareness in any precise way, nor does he develop a particular philosophical position as to what consciousness is. In different contexts he speaks of it in different, sometimes contradictory ways, and it took me a while to grasp how he actually sees consciousness for himself. Conscious processes, he argues, are accompanied by a certain immediate awareness, a deliberateness, an introspective quality, a freedom to choose to act in this or that way. This is what Griffin means when he talks of 'thinking': the ability to respond to perceived stimuli in an insightful, premeditated, rather than automated, zombie-like way. Griffin does not believe in any kind of dualistic non-physical spirit, but he does believe that conscious animals experience some sense of self-identity or 'I' that endows them with foresight and control. Thus formulated it is easy to see why, for Griffin, consciousness and flexibility of behaviour are intrinsically linked. However the potential for confusion at this point is high. A cognitivist would conceive of high levels of behavioural control as an indication of higher-order cognitive representation; that is, representation of the environment that includes the efficacy of the animal's bodily self. Crucially, the cognitivist would see no need to consider that such representations might not be automated or not be subject to procedural rules. Certainly cognitivists accept that higher-order representation leads to greater flexibility, and may even speak of 'consciousness' in this case, but this is not the fundamental, non-automated property of organisation that Griffin has in mind. Cognitivists tend to hesitatingly attribute higher-order cognition to a select few mammals, while Griffin does not hesitate to attribute it to bees. Both parties claim to base their views on evidence and rigorous scientific reasoning; and so confusion is rife.

The essential difference between the 'cognition' and the 'consciousness' approach seems to lie in their starting-points of inference: the former bottom-up, the latter top-down. Griffin defends his stance on honeybees thus: "The principal basis for our inferences about subjective, conscious thoughts and feelings in humans is the communicative behaviour of our companions. And here we find that certain insects also communicate simple but symbolic information about matters that are of crucial importance in their lives, and they even reach group decisions on the basis of such communicative behaviour. As I have suggested

throughout this book, it seems both logical and reasonable to apply the same procedures that we apply with our human companions and infer that the weaver ants and honeybees are consciously thinking and feeling something approximating the information they are communicating. Only by assuming an absolute human–animal dichotomy does it make scientific sense to reject this type of inference" (2001, p 210). Ethologist Marian Dawkins (1993) on the other hand (although she is sympathetic to Griffin's approach in many ways), comes to the opposite conclusion on the basis of the exact same evidence: "The end result is a colony decision about what is the best nest site in the area that is achieved with an efficiency and accuracy to be envied by humans attempting to reach decisions by consensus politics. It also looks, on the face of it, so complex that a 'mind' rationally thinking about the best thing to do must be behind it. But it is not. Each step could be just an automatic response requiring no thought at all. Simple rules of thumb, assembled by natural selection into activation at the right time ... are all that is required to explain these examples of bee behaviour. ... Bees, like conjurers, should make us sceptical of what happens in front of our eyes" (pp 95–96).

These two quotations, it seems to me, perfectly sum up the animal consciousness dilemma. Dawkins critically questions her own position by asking: "Are we to say anything that can be explained by a rule of thumb cannot have consciousness behind it? ... Does understanding how something works ... abolish 'mind'?" (p 96). Griffin's answer to these questions would be an emphatic 'no'. Unravelling the subsequent steps of the bees' communicative procedures does not necessarily imply that their behaviour is governed by automated rules of thumb. Indeed this *could* be the case, but we do not know that it is. His point is that as long as we do not fully understand how the mind/body mechanics work, there is no justification for shutting out animals that behave intelligently from the conscious domain. Why should we be sceptical of what happens in front of our eyes? The great value of Griffin's books lies in the informed persistence with which this question is posed. Resolving the cognition/consciousness impasse will need deeper philosophical reflection on the merits of different explanatory perspectives than Griffin provides; as suggested above, the discussion of behavioural evidence alone is not enough. However, Griffin's call for incorporating the possibility of conscious awareness into models of animal behaviour stands proudly in its own right. To be thus inspired, if you have not already done so, read this book.

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