Book Reviews

Windows on Other Minds

The Question of Animal Awareness. Evolutionary Continuity of Mental Experience. DONALD R. GRIFFIN. Rockefeller University Press, New York, 1976. viii, 136 pp. $8.95.

Donald R. Griffin is an eminent zoologist who has made notable contributions in the study of animal navigation and orientation. This book is not about animal orientation, however, but about animal minds. The author recognizes the fundamental importance of mental processes in animal behavior. He believes that the animal mind has for decades been subject to almost total neglect because research has been dominated by what he calls the reductionist position, represented on the one hand by radical behaviorism, with its emphasis on stimulus, response, and reinforcement, and on the other hand by classical ethology, which emphasizes the relative fixity of behavior, presumably a reflection of "prewired" genetic programs. Although differing in particulars, both approaches "concern themselves only with observable behavior and shun any involvement with possible subjective qualities or mental experiences" (p. 63). Griffin argues that recent research in animal behavior, particularly in orientation, navigation, and social communication, calls into question any position that refuses to acknowledge that animals are capable of mental activity. His aim in this slim volume is to develop the thesis that animals not only have mental experiences but are conscious of having them.

This immediately raises questions of definition: What are mental experience, mind, awareness, consciousness, and so on? Griffin, early in the book, defines *mental experiences* as something every normal person has, in the sense that he "thinks about objects and events that are remote in time and space from the immediate flux of sensations"; *mind* as "something that has such experiences"; *awareness* as the "whole set of interrelated mental images of the flow of events; they may be close at hand in time and space, like a toothache, or enormously remote"; *consciousness* as "the presence of mental images, and their use by an animal to regulate its behavior" (p. 5). These are described as "rough-and-ready *un*sophisticated definitions" (p. 4).

There is no attempt subsequently to sharpen or clarify these working definitions or to articulate them systematically with current developments in the study of animal and human cognition. Instead, the strategy is to review the evidence in a few areas of animal behavior, chiefly orientation, communication in bees, and language acquisition in chimpanzees; to compare the results (though never very closely) with human language; and to conclude ultimately that "insofar as animal communication shares basic properties of human language, the employment of versatile communication systems by animals becomes evidence that they have mental experiences and communicate with conscious intent. The contrary view is supported only by negative evidence, which justifies, at the most, an agnostic position" (pp. 103–104).

If this seems a lame and unsatisfying conclusion it is not because it has been taken out of context, for it is everywhere the same. Thus:

> The evidence that animals employ some sort of internal imagery of their surroundings suggests a need to reconsider the general question of subjective mental experiences in animals [p. 14].

> Applying the same balanced approach to mental experience leads to a cautiously open mind concerning the possibility that both genetic and environmental influences, and interactions between them, may be important in the causation of mental processes, including awareness [p. 62].

> Perhaps animals perform some of the behavior patterns we observe because they enjoy the resulting experience [p. 78].

> Awareness probably confers a significant adaptive advantage by enabling animals to react appropriately to physical, biological, and social events and signals from the surrounding world with which their behavior interacts [p. 104].

What bothers me most about this book is not the cautious tone of these rather inoffensive conclusions, but the fact that so much time is spent building up to them—defending propositions that do not require defense—whereas those issues that are most in need of analysis and explication are scarcely advanced an inch. By now we should need only the briefest reminders that animals have knowledge of their environments, that such information is processed, stored, and retrieved, that animals are sensitive to the consequences of their actions, that they are capable of intentions and expectancies. And there is no need to quibble about the choice of words, so long as it is understood that they are mere labels for general functions that are characteristic of most animal behavior and that the specific properties of these functions (where known) show wide variations within the animal kingdom. The interesting question is not whether such functions exist, for they are clearly implied in the phenomena we call behavior; many, in fact, may be considered formal properties of behaving systems. The interesting questions relate to how they are expressed in different species. What has been their probable evolutionary course? How do they develop in the individual? How do they work? What useful purpose do they serve? Finally, one might hope that some useful distinctions could be drawn between "having a mental experience" (that is, being aware of one's internal state or of the external environment) and "being aware of having such an experience," which (whatever it means) seems much closer to our usual view of consciousness, and must certainly be an emergent property in evolution (which is not to say that it will be found only in man). Although a biologist of Griffin's stature is surely aware of their pertinence (as he indicates in more than one place in the text), he has not explored such questions systematically in relation to the problem of animal awareness at either the substantive or the theoretical level.

He could have gone much further. The problem of animal mind has not been as completely neglected as he believes, and his arguments would have been clearer and more persuasive had they rested on a broader and more thorough examination of the available ideas and findings on animal cognition.

Griffin foresees the eventual development of "a truly experimental science of cognitive ethology" (p. 105). Cognitive ethology is not a new or emerging discipline, however. One immediately recalls the names of Yerkes and Köhler, Lashley and Tolman, Hebb and Harlow, from the long roster of individuals who have attempted to deal with the complexities of the animal mind in a dis-

ciplined manner. Moreover, despite Skinner's role as the archbehaviorist, his steadfast insistence that all "mentalistic" terms be renounced, I would unhesitatingly include him among those whose efforts have advanced our ability to deal with the very phenomena that Griffin asserts have fallen under reductionist taboos. Griffin recognizes the need "to avoid both of two obviously fallacious extremes: (1) the postulation of complex mental activities (such as horses capable of long-division) when simpler ones are consistent with the observed behavior of the animal . . . and (2) the conventional reductionist position that animals have no mental experiences at all, or that any they may have are hopelessly inaccessible to our investigation" (p. 72). For more than 50 years individuals such as those I mentioned have tried to steer a course between the Scylla of unbridled anthropomorphism and the Charybdis of the Cartesian reflex machine. And by and large they have been successful; more so I think than Griffin understands.

Griffin's failure to appreciate the methods and accomplishments of previous investigations of animal cognition probably accounts for the unique promise he sees in two-way communication, which he views as a kind of royal road to the animal mind. This is evident throughout the book, but most clearly in the final substantive chapter, entitled "A possible window on the minds of animals," where he advocates an approach called *participatory* investigation. By this he means a method that permits one "almost literally speaking, to talk back and forth with a communicating animal" (p. 89).

The inspiration for the method of participatory investigation is taken from recent research on the acquisition of language by chimpanzees, particularly the work of the Gardners. Because Griffin accepts the view that human mental experiences can be approached only through the use of language and introspective reports, he sees communication and "animal introspection" as a way "to detect and examine any mental experiences or conscious intentions that animals may have" (p. 105). He urges that more effort be directed toward developing physical models and social surrogates to permit man to enter more fully into the natural process of social communication with animals.

Griffin seems to miss the essential point in the work of the Gardners, Premack, Rumbaugh, and Fouts. Chimpanzees in nature do not communicate with each other via computer keyboards and displays, or by using plastic chips, or with the gestures of the American Sign Language. Animals, even as man, know more than they can tell. But we can sometimes increase the information they give us by offering technical assistance. The investigators of chimpanzee language acquisition have produced fundamental new information, not by learning to communicate like chimpanzees, but by devising flexible and subtle methods particularly suited to the investigation of cognition in these apes. The essential point is that more has been learned about chimpanzee mental processes through such methods than these animals could possibly have conveyed to each other (or to man) using their natural systems of communication.

It does not diminish their originality or importance to say that the cornerstone of these achievements is methodological, rather than conceptual. And they are built on old foundations. The idea that the investigator is in communication with his animal subjects is not new. In studies of animal cognition it is virtually essential that one be able to pose a "question" and elicit an interpretable response. The scientist "asks" the monkey to select a red object from an array of novel objects it has never seen before, after first showing it a sample of the correct color; or he moves a circle of pinecones from around the entrance of the digger wasp's burrow to a new location and "asks" whether she will home on the original site or the translocated configuration. Certainly such procedures allow us to discover something important about the animal's experiential world. I see no evidence in this of shared language or participatory investigation, to say nothing of animal introspection. And how much of our considerable knowledge of the cognitive abilities of the preverbal child is based on strictly analogous procedures?

What has been achieved may seem pale in comparison with the vision of sitting down like Dr. Doolittle for an informal and revealing chat with an animal friend. But even if this were possible, how much would necessarily remain unsaid? If we have learned one thing from the many years of effort devoted to the problem, it is that there is no "window" that will allow us to gaze directly on another mind, even that of another human being, and to see its workings clearly and to see them whole. Mind, after all, lacks "thing quality"; it is but a construct, hardly more than a label, really, for complex processes and functions that we are still far short of understanding in any creature, including ourselves. We have learned what is perhaps the hardest lesson of all: There is no royal road to mind; we are forced to approach along the only paths that are open to us, through the tortuous byways of analysis, inference, hypothesis, and reconstruction. That animals are aware can scarcely be questioned. The hows and whys and wherefores will occupy scientists for many years to come.

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The Science of Values

Values in Education and Society. NORMAN T. FEATHER. Free Press (Macmillan), New York, and Collier Macmillan, London, 1975. xvi, 350 pp. $14.95.

A few decades ago scientists were sure of themselves. Increasing scientific knowledge was almost synonymous with enhancing the good of mankind. Then, increasingly, scientists began to fear the possible use of their discoveries. Psychologists as scientists were late to join the circle of fear. After all, their science was the one that could deal scientifically both with fear and with the human beings in whose hands the potentially dreadful applications of science lay. The confident hope that many psychologists felt in the 1950's has given way to increasing concern, especially in areas such as social psychology, where the study of men's motives, values, and actions is seen by some to be bogged down in an antiquated set of simplistic assumptions borrowed from a philosophy of science of a bygone age.

A central intellectual problem of our time is whether the study of man's behavior can help resolve conflicting values of groups that can lead to the destruction of all mankind. Can the influence of values on behavior be clarified to a point, for instance, where the increasing knowledge of genetics can be used for the good of mankind? In short, the value of science is questionable without an adequate science of values.

The science of values received a shot in the arm recently with the development of a new technique for measuring values. Milton Rokeach, a man well known for his work on attitudes and values and *The Open and Closed Mind* (1960), has given us a technique that is short and simple. His evidence suggests that it is tapping