

DONALD R. GRIFFIN, THE QUESTION OF ANIMAL AWARENESS: EVOLUTIONARY CONTINUITY OF MENTAL EXPERIENCE (NEW YORK: THE ROCKEFELLER UNIVERSITY PRESS), 133 pp., 1976.

In this excellent review of research concerning animal awareness, Donald Griffin, professor of animal behavior at The Rockefeller University, argues that animals can think and experience the same kind of mental processes and sensations that humans experience. In order to clarify the issue of consciousness in animals he begins with a set of working definitions: Thinking about objects and events that are remote in time and space from the immediate flux of sensations constitutes "mental experiences." These experiences include not only images, but also feelings, desires, hopes, fears, and a wide range of sensations such as pain, hunger, rage, and affection. An "intention" involves mental images of future events in which the intender pictures himself as a participant, and "consciousness" refers to the presence of mental images and their use by

animals to regulate their own behavior (p. 5). The term 'awareness' is used to signify an entire set of interrelated mental images and experiences. He suggests that we regard mental experiences, whatever their actual nature, as closely linked to neurophysiological processes within the brain.

Griffin covers a range of philosophical and psychological theories that deny to animals any significant mental experiences. Our thinking about animals has been dominated by behavioristic and linguistic traditions in psychology. Given this framework mental concepts such as consciousness and awareness become useless to the scientific investigation of both humans and animals. He points out that the denial of mental experiences to animals has almost become an act of faith, usually supported by arguments connecting mental acts and thinking to language and true language to humans only. Animals are said to lack abstract or conceptual thought. Hampshire, for example, argues that it "would be senseless to attribute to an animal a memory that distinguished the order of events in the past, and it would be senseless to attribute to it an expectation of an order of events in the future. It does not have the concepts of order, or any concepts at all." Linguists generally regard animal communication as rigid and mechanically predictable, whereas human speech is not. Washoe and other chimpanzees are denied true minds either on the ground that they merely mimic the sign language of the deaf or that they have been taught this language by human trainers.

Griffin contends that contrary to popular opinion, the extension and refinement of two-way communication between ethologists and animals will lead to a science of cognitive ethology. He cites several studies of the communication and behavior of bees, bats, and chimpanzees. Communication signals have included at least an announcement that the sender is of a given species, sex, and appropriate age, and is in one of a relatively few basic behavioral states such as readiness for fighting or fleeing. Chimpanzees have

learned to use large vocabularies of gestures or manually manipulated symbols to communicate complex messages. Griffin points out that studies tend to show that apes are capable of intentionally conveying or withholding information from their companions. Griffin's own work with bats indicates that when flying through thoroughly familiar surroundings, many bats rely heavily on spatial memory rather than echolocation, a behavior pattern that suggests conscious self-awareness.

The "dance speech" of honeybees turns out to be much more complex and flexible than generally assumed. There is no escape from the conclusion, says Griffin, that "in the special situation when swarming bees are in serious need of a new location in which the colony can continue its existence, the bees exchange information about the location and suitability of potential hive location. . . . Only after many hours of such exchanges of information, involving dozens of bees, and only when the dances of virtually all the scouts indicate the same hive site, does the swarm as a whole fly off to it. This consensus results from communicative interactions between individual bees which alternately 'speak' and 'listen.' But this impressive analogy to human linguistic exchanges is not even mentioned by most behavioral scientists" (p. 23).

Griffin admits that complexity of communication does not provide convincing evidence for the existence of mental experiences. However, combined with neurophysiological similarities to humans it does provide sufficient grounds for denying the uniqueness and superiority of human beings. It has, for example, been shown that the minor hemisphere of the human brain resembles an animal brain. The subordinate hemisphere carries out many mental functions considered to be conscious, but lacks the ability to report them in words. According to Griffin, such discoveries add to the evidence for physiological continuity between humans and animals in brain function and suggest a continuity in mental experiences: "To the extent that basic properties of neurons, synapses,

and neuroendocrine mechanisms are similar, we might expect to find comparably similar mental experiences" (p. 70).

Griffin points out that biological evolution is universally accepted by behavioral scientists as a historical fact. Animals are used in research as "models" for medical and behavioral investigations on the implicit assumption that principles discovered in this way can be extrapolated to our own species. This type of research would not be productive if animals and humans differ in kind: "If, for example, human learning were believed to be radically different in kind from that available for analysis in other animals, no one would even suggest applying to questions of human education what has been learned by studying rats, pigeons, or monkeys. . . . To argue that language is unique to man and, therefore, no matter how complex animal communication turns out to be, it cannot possibly be continuous with human language, is indefensibly circular" (p. 57).

Griffin correctly notes that one must be cautious in describing animal behavior in terms of mental experiences. We do not have evidence for the identity of animal experience and human experience. The use of mental terminology to describe animal behavior does not imply identity with human mental experience, but does signify a degree of similarity to it. He concludes that the degree of similarity or difference is an appropriate question for future investigation. Griffin has given us a lively and controversial book which merits critical attention by those interested in ethology.

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