

**Animal Minds: Beyond Cognition to Consciousness** (revised and expanded edition). Donald R. Griffin. Chicago: The University of Chicago Press, 2001, 352 pages, \$27.50 hardcover.

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The pigeons poked their heads through an opening in the wooden box where they were confined and looked at two wooden cubes. On the faces of the cubes visible to the bird were glued colored photographs clipped from an illustrated magazine. When the bird pecked at a positive picture containing people, the cube was pulled away, uncovering a shallow well containing a kernel of corn; pecking negative cubes with miscellaneous pictures of geometric shapes, machinery, landscape, furniture, or animals yielded no food. Each positive picture was presented until the pigeon had made five consecutive correct choices, and then two new picture cubes were presented. After somewhere between 3 and 17 such problems had been solved, the pigeons very seldom pecked at cubes with negative pictures that contained no human figures. Then in critical tests, wholly novel pairs of pictures of the same general sort were presented, and the pigeons performed almost perfectly. (p. 143)

In this experiment, designed for monkeys, pigeons were taught to discriminate between different types of pictures — they appeared to conceptualize and categorize images. Beaver also appear to be conscious of both what they are doing, and why:

... two beaver confined in an enclosure where the water level of a 3.5 X 2.5 m pool 1.6 m deep was regulated by an outlet pipe equipped with a cap perforated by three holes 8 mm in diameter through which the water escaped. After about two weeks the beaver began to plug these three holes with "[quoting G. Pilleri] peeled twigs which had been gnawed off obliquely at both ends by the beavers and whittled down in such a way that they exactly fitted the holes . . . . The performance was repeated several times, always at night, after we had removed the sticks in the morning and restored the water in the pool to its normal level. Every night the beavers made new calibrated stocks and blocked up the holes. [Finally they] changed their technique. In addition to the sticks they used grass and whole piles of leaves mixed with mud." (p. 101)

Donald R. Griffin has been compiling empirical evidence on animal cognition since the 1970s. His newest revised and expanded edition of *Animal Minds: Beyond*

*Cognition to Consciousness*, includes extensive evidence of animal behavior. From tiny insects through crustaceans, fish, birds, and on to mammals, Griffin documents observed animal behavior with intent to shed light on the minds of diverse species.

Griffin is conservative, noting at the outset — and many times throughout this work — that the minds of other animals are decidedly less well endowed than the minds of human beings. He allows that perhaps no other species shares the reflective consciousness (thinking about thinking, or thinking about feeling) that we humans exhibit (pp. 7–8). Griffin's goal is modest: he strives to demonstrate, through a wide presentation of meticulous observations of animal behavior, the presence of *perceptual* consciousness — thinking consciously about something.

At the outset Griffin clearly states his intent to demonstrate through animal behavior that it is more plausible than not that other species share perceptual consciousness with human beings. He uses two prominent methods of persuasion:

1. Griffin argues that crediting other species with conscious thought is the most “parsimonious and reasonable interpretation” of these behaviors. In light of observed animal behavior, any explanation denying animal consciousness stretches credulity.

2. Griffin highlights the tremendous adaptive advantages of conscious thought, indicating the likelihood of perceptual consciousness in non-human animals. Conscious animals “enjoy the advantage of being able to think about alternative actions and select behavior they believe will get them what they want or help them avoid what they dislike or fear” (p. 3). He concludes: “thinking about the probable outcome of various possible actions must be very useful in a wide variety of situations in which animals must make choices that have important effects on their survival and reproduction” (p. 252).

In the second chapter Griffin presents dissenting opinions, and responds to those objections. Throughout *Animal Minds* Griffin holds a particularly strong line against behaviorism, because this school of thought approaches non-human animals as if they were “mindless robots” (p. 29). He accuses behaviorists of ignoring all evidence due to their reluctance to entertain the possibility that other animals might think (p. 35), and of repressing the study of animal minds (p. 4). Griffin finds behaviorists “impaled on the horns of a dilemma. Either they must deny the importance of human consciousness, or they must accept its importance but hold that no other species can be conscious to a significant degree” (p. 253). Skepticism with regard to other animals puts behaviorists in a tight spot where humans are concerned, and Griffin argues that evolutionary continuity combined with a plethora of well-documented animal behaviors are enough to tip the scales firmly in the direction of acknowledging the existence of animal consciousness.

Griffin explores non-human animal behavior through three channels: animals in novel situations, physiological evidence of brain functioning, and animal communication. He asserts that novel situations demonstrate that other animals “do not behave in rigid, stereotyped ways that are genetically predetermined” (p. 216); they also “think about alternative actions and select behavior” (p. 3). Chapters 3 through 7 present and discuss animal behavior in novel situations, highlighting the quest for food, construction of nests and food-traps, and the use of tools and unusual devices (such as wooden pegs beaver created to plug drain holes in a pen). From these many examples Griffin concludes that the “versatility with which many animals adjust their behavior appropriately when confronted with novel challenges” suggests conscious thought (p. 12). Griffin asserts that pigeons can learn in

novel and unusual situations, and that conceptualization does not appear to be uniquely human (p. 147).

The physiological evidence of brain functioning is presented in Chapter 8: "no specific part of the human brain, nor any specific process, has yet been shown to be active when and only when a person is conscious" (p. 149). Griffin presents information on brain physiology from several experiments, including "blindsight" and "binocular rivalry" (pp. 161–163). He gives particular attention to the former, which seems to enable researchers to distinguish when a monkey appears to be conscious of a certain visual pattern, and when it is clearly not (p. 161). While Griffin notes that studies in this area are much needed, he concludes, "the same cortical areas are active when human subjects are, and when monkeys appear to be, conscious of what they see" (p. 163). As with cases of animal behavior in novel situations (and animal communication), Griffin finds evidence of evolutionary continuity between human beings and other animals in the physiology of brain functioning.

Chapters 9 through 12 focus on communication. Griffin explains that animal communication can provide "objective, verifiable data on animal feelings and thoughts" (p. 165). He spends considerable time discussing the communication apparent in honeybee dances. People tend to share a "widespread conviction that all insect behavior is rigidly stereotyped" (p. 259), but Griffin presents evidence of insect communication that strongly suggests conscious thought. Inside of a dark hive, using the sun as a reference point represented by aspects of dance, honeybees symbolically communicate the discovery of food, and the direction and distance to the new food source.

*Animal Minds* also presents evidence suggesting that various lesser-known insects, as well as crustaceans, birds, and mammals, intentionally engage in *deceptive* communications, and Griffin includes a separate chapter on apes and dolphins, mammals that have been used in extensive and decidedly astonishing communication studies. But perhaps the most fascinating communicative accomplishment is that of the parrot, Alex, trained by Irene Pepperberg. Alex learned to use human language to answer questions about the simple properties of objects: color, shape, and material (pp. 180–186).

Two final chapters discuss the importance of studying the minds of other animals, focusing on three areas of significance: philosophical, ethical, and scientific. Griffin includes a brief overview of philosophical speculation on animal consciousness. Philosophers tend to view the problem of whether or not non-human animals have consciousness as no more or less problematic than the question of human consciousness. In the words of Daniel Dennett, whom Griffin quotes, ". . . denying consciousness to the toad opens up to a slippery slope. Surely bats are open to the same counterargument, and . . . ultimately human beings" (p. 263). Most philosophers agree that we cannot even be sure of our own consciousness, let alone that of other species.

Griffin's survey of the ethical importance of animal consciousness is short, and limited to a discussion of issues involved in granting non-human animals ethical consideration. He discusses the anxiety that many feel about acknowledging animal consciousness. People fear that such inclusion would endanger morality as we know it: if we grant Great Apes moral status, then what about the rest of the primates, cattle, kangaroos, and cockatoos? A more inclusive ethic would jeopardize our self-assigned, exclusive moral status and the many benefits that follow, forcing us to alter our current way of life, and requiring us to forego many advantages we gain by

exploiting the lives of other animals. But those who favor radically revising current ethics in light of the likelihood of animal consciousness offer a compelling counter-argument: if we withhold moral protection from other animals simply because we cannot *demonstrate* that they are conscious, what are the implications for human beings — for newborn babes, the comatose, and seriously mentally disadvantaged? Denying moral protection to individuals *just because we cannot prove that they possess consciousness* is at least as problematic as *granting* moral protection to non-human animals in light of strong evidence suggesting that they possess consciousness.

While Griffin offers no answers, he notes that observing animal behavior provides “helpful information and understanding that can lead to better-informed decisions” in the field of ethics (p. 269). But Griffin’s many fascinating accounts of animal behavior, largely gained through animal experimentation that entailed manipulation, deprivation, and even the disabling of dependent and powerless subjects (no doubt killed when the experiment was completed), lend tacit acceptance to exploiting non-human animals for human benefit. Griffin’s inclusion of such scientific accounts *without comment* belies serious consideration of ethical issues outlined in *Animal Minds*.

The final chapter focuses on the scientific importance of exploring animal consciousness. While Griffin admits that there is no conclusive proof that other species have consciousness, neither can we prove Darwin’s theory of evolution. Griffin holds that accumulated evidence lends great weight to both Darwin’s theory of evolution and to his own assertion of consciousness in non-human animals.

While Griffin states that he has only set out to demonstrate *perceptual* consciousness, as the book nears conclusion, having established a strong likelihood of perceptual consciousness in non-human animals, he then suggests that *reflective* consciousness, necessary for self-awareness, is likely to be amongst the many mental attributes we share with other species.

If we grant that some animals are capable of perceptual consciousness, we need next to consider what range of objects and events they can consciously perceive. Unless this range is extremely narrow, the animal’s own body and its own actions must fall within the scope of its perceptual consciousness . . . .

There is no part of the universe that is closer and more important to an animal than its own body. If animals are capable of perceptual awareness, denying them some level of self-awareness would seem to be an arbitrary and unjustified restriction. (p. 274)

Non-human primates, both chimps and orangutans, correctly identify their own image. Other species, including birds, demonstrate awareness of an observer’s perception, also indicating self-awareness. While Griffin’s work in *Animal Minds* seeks only to demonstrate that *perceptual* consciousness in other species is more likely than not, he concludes with a much greater claim: once we acknowledge the existence of perceptual consciousness, acknowledging some degree of *reflective* consciousness cannot be far behind.

Science, Griffin believes, like ethics, cannot be whole without insight into the minds of non-human animals. Darwin’s work indicates that exploring animal consciousness is essential to understanding not just pigeons and beaver, but ourselves, and our not-so-very distinct place in the universe.