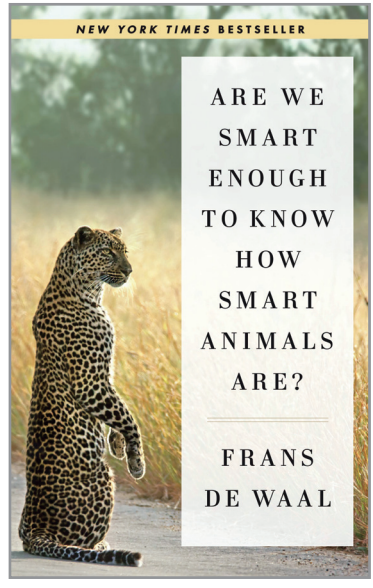
Are We Smart Enough to Know How Smart Animals Are?

Author: Frans de Waal (b. 1948)
Publisher: Norton (New York). Illustrated. 352 pp.
Type of work: Nature

In Are We Smart Enough to Know How Smart Animals Are? *Frans de Waal explores the complex subject of animal intelligence, presenting compelling evidence that many animals are far smarter than humans might think.*



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For centuries, human scientists, philosophers, and artists have pondered what it is, exactly, that separates humankind from all other animals. Intelligence has long played a key role in many definitions of what it means to be human: Humans, such pronouncements proclaim, are highly intelligent beings, whereas animals are not. The behavior of animals such as chimpanzees, elephants, and crows, however, provides strong evidence that such assumptions are incorrect. Studying those animals and more, generations of researchers have worked to determine not only if animals are intelligent but also precisely how intelligent they are, seeking to answer such questions with a variety of experimental strategies and through a vast range of scientific viewpoints. In *Are We Smart Enough to Know How Smart Animals Are?* biologist and primatologist Frans de Waal presents a broad overview of the evolving study of animal intelligence, tracing the understanding of animals' intellectual potential from the nineteenth century to the twenty-first and providing compelling examples of animal intelligence at work. De Waal, who serves as Charles Howard Candler Professor of Primate Behavior at Emory University, has devoted his career to studying animals, particularly apes. Supported by the findings of his own studies and those of his fellow researchers, de Waal suggests that when it comes to animal intelligence, many humans have been asking the wrong questions.

De Waal begins *Are We Smart Enough to Know How Smart Animals Are?* with a choice quote from pioneering naturalist Charles Darwin's 1871 *Descent of Man*: "The difference in mind between man and the higher animals, great as it is, certainly is one of degree and not of kind." This epigraph serves a dual purpose in the book's prologue. First, it aptly sets the stage for de Waal's argument, as it establishes that the brains of humans are not entirely different organs than those of animals. Second, it calls attention to just how much the scientific understanding of animal intelligence changed after Darwin's time. In the prologue, de Waal explains that during much of the

twentieth century, it was considered unscientific to argue that animals had the capacity to perform intentional acts, plan for the future, or express emotions. Instead, the bulk of animal researchers considered animals to be fueled either by the desire to receive rewards rather than punishments or by instincts alone. He describes such points of view as mechanistic in nature, in contrast with the nineteenth-century view that was more accepting of the ideas of animal intelligence and emotion. De Waal makes it clear that the concept expressed in the prologue's epigraph will shape his discussion of animal intelligence throughout the book: "We're not comparing two separate categories of intelligence, therefore, but rather are considering variation within a single one."

The first chapter, "Magic Wells," begins with a discussion of a concept known as the *Umwelt*. That word, meaning "surrounding world" in German, was used by early twentieth-century biologist Jakob von Uexküll to refer to an animal's point of view—that is, the way in which a specific animal perceives and relates to the world around it. De Waal notes that while humankind's ability to perceive the world as animals do is limited, it is essential to consider an animal's *Umwelt* when assessing that animal's intelligence. It is true that animals do not possess many of the abilities that humans do. However, such animals have no need for those abilities and instead may have unique abilities that humans do not possess. Assessing an animal's cognition based on whether it can complete tasks in which humans specialize, such as counting, is an incorrect approach in de Waal's view.

De Waal also cautions that researchers must keep in mind that the absence of a particular capacity in experiments is not sufficient evidence that the animal in question does not have that capacity. "If we fail to find a capacity in a given species, our first thought ought to be 'Did we overlook something?'" he writes. "And the second should be 'Did our test fit the species?'" To illustrate this point, de Waal explains that gibbons, tree-dwelling apes from Southeast Asia, were once believed to be much less intelligent than apes such as chimpanzees, as they repeatedly failed tests involving the use of tools. However, research carried out by American primatologist Benjamin Beck revealed that gibbons are physically incapable of picking up objects from flat surfaces and rarely interact with anything at the level of the ground. When Beck redesigned the tests to take the animals' *Umwelt* into account, the gibbons passed without any difficulties. In light of such events, de Waal argues that researchers must be careful to consider the physical capabilities and habitats, among other characteristics, of animals prior to testing their intelligence.

Over the course of the book's nine chapters, de Waal discusses not only the differing schools of thought on animal intelligence but also some of the myriad ways such intelligence manifests. In the second chapter, "A Tale of Two Schools," he outlines the differences between the fields of ethology, a subset of biology, and behaviorism, a subset of psychology. During de Waal's early days as a student, the behaviorist view of animals was dominant, and from early on he objected to that field's understanding of animals as governed primarily by incentives and disincentives. He further developed an objection to the ways in which behaviorist researchers carried out experiments and interpreted their results. "The difference between behaviorism and ethology," he writes, "has always been one of human-controlled versus natural behavior."

(Courtesy of Catherine Marin)

Frans de Waal is the Charles Howard Candler Professor of Primate Behavior at Emory University and the author of numerous books, including Good Natured *(1996) and* The Bonobo and the Atheist *(2013).*

Indeed, while many of the assessments of animal intelligence that de Waal discusses throughout the book are controlled by humans in the sense that human researchers are constructing artificial scenarios for the animals in question, he especially highlights intelligent behaviors, such as the use of tools, that occur among animals both in zoos or preserves and in the wild. In the chapter "Social Skills," de Waal looks at the ways in which social intelligence manifests itself among animals such as chimpanzees. He recounts an incident in which an elderly male chimpanzee known as Yeroen aligned himself socially with a younger male and, through various confrontations and strategic choices in regard to grooming, succeeded in deposing the alpha male and elevating the young challenger to the top of the chimpanzee hierarchy. This series of events occurred in a zoo; however, de Waal notes that a similar event, in which an older male orchestrated the social ascent of a specific young challenger, had also been observed among chimpanzee's living in the wild. These particular examples serve multiple purposes in de Waal's narrative: First, they illustrate that demonstrations of intelligence occur in the wild as well as in zoos and laboratories. Second, by describing Yeroen's essentially political maneuver, he calls attention to the chimpanzee's ability to understand how others in the social hierarchy relate to each other and to consider future events, abilities that de Waal argues are far more common among animals than many earlier researchers were willing to consider.

As a work presenting a broad overview of not only the developments in animal intelligence research but also the concept of animal intelligence as a whole, *Are We Smart Enough to Know How Smart Animals Are?* is not, by definition, an in-depth look at any one animal or form of study. Rather, de Waal provides extensive support for his core arguments in the form of numerous specific examples. Many of his enlightening anecdotes concern primates, which he has devoted much of his career to studying. This is likely unsurprising to the lay reader, as the relative intelligence of primates is firmly cemented in the American public consciousness. De Waal's anecdotes about elephants and dolphins are likewise perhaps to be expected, considering the similar public perception of such animals. Despite his own career leanings, however, de Waal does not focus solely on primates or other animal species widely perceived as intelligent. Instead, he expands the reader's understanding of intelligence, citing examples of intelligent actions by less commonly discussed animals, from octopuses to crows. In one particularly memorable example, de Waal recounts the story of a crow named Betty, who in a 2002 study carried out at England's Oxford University demonstrated