



Sensory Exotica: A World beyond Human Experience

By Howard C. Hughes

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Winner, category of Biological Sciences, 1999 Professional/Scholarly Publishing Annual Awards Competition presented by the Association of American Publishers, Inc.

Certain insects and animals such as bees, birds, bats, fish, and dolphins possess senses that lie far beyond the realm of human experience. Examples include echolocation, internal navigation systems, and systems based on bioelectricity. In this book Howard C. Hughes tells the story of these "exotic" senses. He tells not only what has been discovered but how it was discovered—including historical misinterpretations of animal perception that we now view with amusement.

The book is divided into four parts: biosonar, biological compasses, electroperception, and chemical communication. Although it is filled with fascinating descriptions of animal sensitivities—the sonar system of a bat, for example, rivals that of the most sophisticated human-made devices—the author's goal is to explain the anatomical and physiological principles that underlie them. Knowledge of these mechanisms has practical applications in areas as diverse as marine navigation, the biomedical sciences, and nontoxic pest control. It can also help us to obtain a deeper understanding of more familiar sensory systems and the brain in general. Written in an entertaining, accessible style, the book recounts a tale of wonder that continues today—for who knows what sensory marvels still await discovery or what kind of creatures will provide the insights?

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Editorial Review

From Publishers Weekly

What's it like to be a bat or a bee? In one sense, we can never know; in another, we can find out by studying the extraordinary perceptual systems by which these and other animals process the world. Bats' sonar lets them discover their prey, their cave-mates and their caves in the pitch-dark. Dolphins use similar sonar systems to discover obstacles, food and one another in the nearly lightless ocean: they even alter their frequencies (like cell phone users) to avoid interference. And chemical communication systems regulate sex in moths, rats, pigs and, probably, people: pigs hunt truffles so well because the valuable fungus contains a pig sex hormone. Hughes, a professor of psychology at Dartmouth, describes not only how these sixth and seventh senses work, but how scientists found out about them. An Italian in the 1790s struck out the eyes of bats (who navigated just fine afterwards); a Swiss surgeon plugged their ears (they got lost). Despite these tests, zoologists until the 1930s believed that bats used not hearing, but some special sense of touch. Most dolphin sonar research, by contrast, requires some measure of dolphin cooperation. Hughes's forays into animal sensoria require that he explain concepts from acoustics, anatomy, neurology, physiology and animal behavior; he does so cleanly and well, though his style can get condescending or gee-whizzish. ("What did [a researcher] see? Well, as already indicated, he saw... ") Nevertheless, readers with any interest in animal biology will want to track this book down--even if they have to use sonar. 124 b&w photos and illustrations. (Jan.)

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From Library Journal

Bats use their own sonar systems to navigate and to catch prey while in flight; so do dolphins and other marine mammals. Hughes (psychology, Dartmouth Coll.) has written a clear and well-illustrated but sometimes overly chatty book, aimed at a general audience, about these and other sensory systems. He thoroughly and clearly covers biosonar (a.k.a. echolocation) and electroreception in various species of fish, and he touches on the magnetic and solar biological compasses found in some birds and insects. And although the last four short chapters (on pheromones and chemoreception) seem to have been added later, this is, overall, a well-written and informative introduction to these systems; recommended for public libraries. A Patrick J. Wall, University City P.L., MO
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From Scientific American

Can a dog sense in advance that its owner is about to have an epileptic seizure? A dog described in a recent news report does that, evidently by detecting certain chemicals associated with the onset of a seizure. It is an example of a sensory capability beyond the human range. Many animals can sense things that people are unaware of or sense weakly. Such animals are the subject of the story recounted by Hughes, who is a professor of psychology at Dartmouth College. He describes sonar in bats and dolphins, biological compasses (based on the sun or stars or geomagnetism) in birds and insects, electricity sensing in fish, and pheromones (chemical signals) in insects and apparently in people. And he takes pains to pin down the mechanism of the sensory capability in each case. "We don't yet have all the answers," he says, "but at least we are learning how to ask the right questions."

EDITORS OF SCIENTIFIC AMERICAN

Users Review

From reader reviews:

Natalie Hernandez:

Why don't make it to become your habit? Right now, try to prepare your time to do the important take action, like looking for your favorite publication and reading a guide. Beside you can solve your long lasting problem; you can add your knowledge by the book entitled Sensory Exotica: A World beyond Human Experience. Try to the actual book Sensory Exotica: A World beyond Human Experience as your friend. It means that it can to get your friend when you feel alone and beside those of course make you smarter than previously. Yeah, it is very fortunated for yourself. The book makes you a lot more confidence because you can know everything by the book. So , we need to make new experience in addition to knowledge with this book.

Frank Johnson:

The reason? Because this Sensory Exotica: A World beyond Human Experience is an unordinary book that the inside of the book waiting for you to snap the item but latter it will zap you with the secret the idea inside. Reading this book close to it was fantastic author who else write the book in such amazing way makes the content within easier to understand, entertaining way but still convey the meaning entirely. So , it is good for you for not hesitating having this anymore or you going to regret it. This amazing book will give you a lot of advantages than the other book possess such as help improving your proficiency and your critical thinking approach. So , still want to hesitate having that book? If I were you I will go to the publication store hurriedly.

Ariane Gray:

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