



An Immense World
DISCUSSION GUIDE
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AUTHOR BIOGRAPHY



Ed Yong is a science journalist who reports for The Atlantic. He is based in Washington, DC.

For his coverage of the COVID-19 pandemic, he won *the Pulitzer Prize* in explanatory journalism; *the George Polk Award* for science reporting; *the Victor Cohn Prize* for medical science reporting, *the Neil and Susan Sheehan Award* for investigative journalism; *the John P. McGovern Award* from the American Medical Writers' Association; and *the AAAS Kavli Science Journalism Award* for in-depth reporting.

He is the author of two New York Times bestsellers—*AN IMMENSE WORLD*, about the extraordinary sensory worlds of other animals; and *I CONTAIN MULTITUDES*, about the amazing partnerships between animals and microbes.

Prior to joining the Atlantic, Ed's writing also featured in National Geographic, the New Yorker, Wired, the New York Times, Nature, New Scientist, Scientific American, and other publications. He regularly does talks and interviews, and his TED talk on mind-controlling parasites has been watched by over 1.9 million people.

Ed cares deeply about accurate and nuanced reporting, clear and vivid storytelling, and social equality. He writes about everything that is or was once alive, from the quirky world of animal behavior to the equally quirky lives of scientists, from the microbes that secretly rule the world to the species that are blinking out of it, from the people who are working to make science more reliable to those who are using it to craft policies. His stories span 3.7 billion years, from the origin of life itself to the COVID-19 pandemic. He is married to Liz Neeley, founder of Liminal Creations, and is parent to Typo, a corgi. He has a Chatham Island black robin named after him.

[Author website.](#)

DISCUSSION QUESTIONS

1. At the beginning of the book it mentions the idea that this it's not about one animal being better than another, but about diversity and "animals as animals." Do you agree with this? And if so did your opinion change? Are there any animals that especially amazed you while you were reading?

2. Throughout the book, there is a lot of talk about misconceptions we have about animals due to our lack of understanding of their senses, were there any misconceptions that surprised you and did learning about them broaden your view on animals?
3. How has reading the book and learning about animals influenced your relationships with the more “mundane” animals of the world, such as a spider or a mouse?
4. What kind of language does Yong use? Is it objective and dispassionate? Or passionate and earnest? Is it biased, inflammatory, sarcastic? Does the language help or undercut the his premise?
5. Talk about specific passages that struck you as significant—or interesting, profound, amusing, illuminating, disturbing, sad...? What was memorable?
6. How did Yong’s voice or opinions shape your understanding of this subject?
7. Was *An Immense World* fun to read, or was it a little dry? Did Yong need to "spice it up" or "tone it down"? How could he have managed that?
8. What do you think of Yong’s dog Typo who appeared throughout the book. Do you think the addition of them was a good influence on the book? Were they interesting or did Typo feel like they bogged down the book?
9. What made *An Immense World* different than other books on this or of similar subject? Do you think it is better or worse than other books on the same matter?

BOOK REVIEWS

Booklist

In *I Contain Multitudes* (2016), science writer Yong exquisitely explored the teeniest domains of life, microbiomes. Now he sets his sights on sensory biology and animal behavior. *Umwelt* is the term used to describe the distinctive sensory experience of any particular creature. The “sensecapes” of different animals can be dominated not just by vision, smell, taste, touch, or sound but also heat, flow, and even magnetoreception. The menagerie of critters and their unique perceptual abilities Yong examines here include the platypus with a bill that detects electric fields, sand scorpions that rely on surface vibrations to hunt prey, the echolocation prowess of bats and dolphins, the ultrafast vision of killer flies, and the outstanding olfaction of elephants. The facts are frequently astonishing. For example, the majority of insects appear to be deaf. Pain is referred to as the “unwanted sense,” and naked mole-rats are relatively impervious to some types of it. Yong’s writing is empathetic, impeccably researched, imaginative, and entertaining. The tongue of a slithering rattlesnake “turns the world into both map and menu” whereas catfish are depicted as Daliesque “swimming tongues.” Yong worries about humanity’s “ecological sins,” as sensory pollution—noise, night lighting, chemicals—is ubiquitous. Yong’s scientific curiosity and concern for the natural world are contagious. This is “sense”-ational reading.

Publisher's Weekly

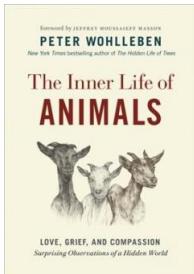
Pulitzer-winning journalist Yong (*I Contain Multitudes*) reveals in this eye-opening survey animals' world through their own perceptions. Every animal is "enclosed within its own unique sensory bubble," he writes, or its own "perceptual world." Yong's tour covers vision (mantis shrimp have "12 photoreceptor classes"), sound (birds, researchers suggest, hear in a similar range as humans but they hear faster), and nociception, the tactile sense that sends danger signals (which is so widespread that it exists among "creatures separated by around 800 million years of evolution"). There are a wealth of other senses outside the standard five: sea turtles have two magnetic senses, electric fish generate currents to "sense their surroundings" as well as to communicate with each other, and the platypus's sensitive bill gives it what scientists think may be "electrotouch." Yong ends with a warning against light and sound pollution, which can confuse and disturb animals' lives, and advocacy that "natural sensescapes" ought to be preserved and restored. He's a strong writer and makes a convincing case against seeing the world as only humans do: "By giving in to our preconceptions, we miss what might be right in front of us. And sometimes what we miss is breathtaking." This is science writing at its best. (*July*)

Kirkus Reviews

In his 1974 essay, "What Is It Like To Be a Bat?" philosopher Thomas Nagel argued that other animals experience a world utterly foreign to us, one nearly impossible to describe. In this follow-up to *I Contain Multitudes*, Yong, a staff reporter for the *Atlantic* who won a Pulitzer in 2021 for his reporting on Covid-19, mostly follows the traditional popular science format (travel the world, interview experts), but he takes a different, realistic, and utterly fascinating approach, emphasizing that every organism perceives only a tiny slice of the world accessible to its senses. A tick searching for blood is exquisitely sensitive to body heat, the touch of hair, and the odor of butyric acid from skin. The tick doesn't willfully ignore the surrounding plants and animals; it doesn't know that they exist. This involves the zoological term *umwelt*, the German word for *environment* that refers to what an animal can sense: its perceptual world. The human *umwelt* includes excellent vision, tolerable hearing, mediocre smell (but better than dog enthusiasts claim), some chemical sensitivity (mostly in the nose and taste buds), a touch of echolocation, and no ability to detect electromagnetic fields. In a dozen chapters, Yong delivers entertaining accounts of how animals both common and exotic sense the world as well as the often bizarre organs that enable them to do so. "There are animals with eyes on their genitals, ears on their knees, noses on their limbs, and tongues all over their skin," writes the author. "Starfish see with the tips of their arms, and sea urchins with their entire bodies. The star-nosed mole feels around with its nose, while the manatee uses its lips." Building on Aristotle's traditional five senses, Yong adds expert accounts of 20th-century discoveries of senses for echoes, electricity, and magnetism as well as perceptions we take for granted, including color, pain, and temperature.

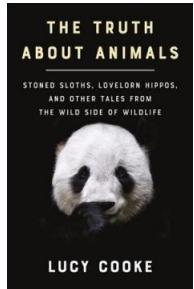
One of the year's best popular natural histories.

READALIKES



***The inner life of animals: love, grief, and compassion ; surprising observations of a hidden world* by Peter Wohlleben**

The best-selling author of *The Hidden Life of Trees* presents a revelatory exploration of the diverse emotional intelligence of animals as demonstrated in vibrant stories about loving pigs, cheating magpies, scheming roosters and more.



***The truth about animals: stoned sloths, lovelorn hippos, and other tales from the wild side of wildlife* by Lucy Cooke**

An uproarious tour of some of the basest instincts and vice-related mysteries of the animal world includes profiles of drunken moose, cheating penguins, lazy worker ants, castrating hippos and porn-peddling Chinese pandas.



***Beyond words: what animals think and feel* by Carl Safina**

Weaving decades of field observations with exciting new discoveries about the brain, Carl Safina's landmark book offers an intimate view of animal behavior to challenge the fixed boundary between humans and nonhuman animals.