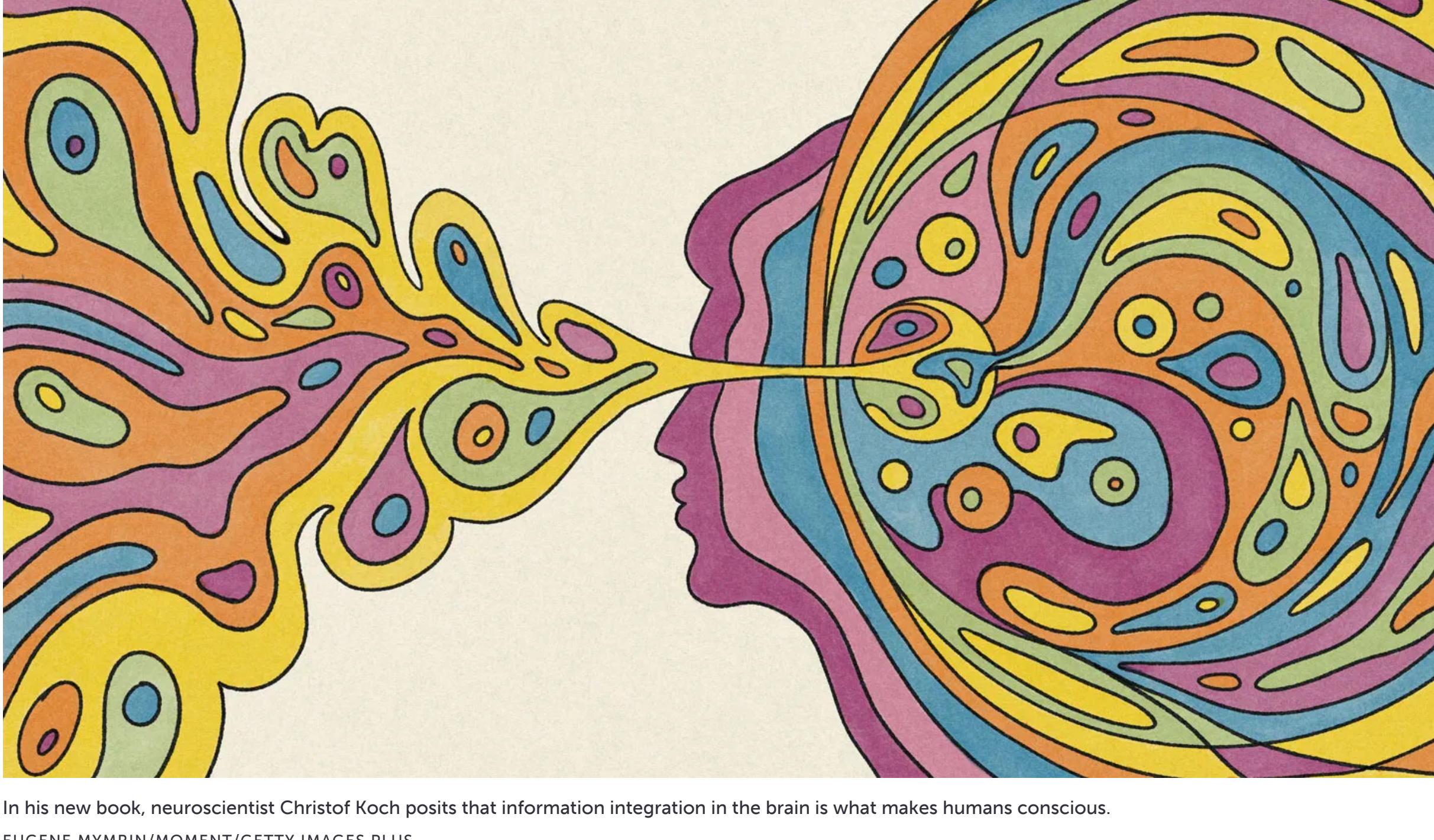


REVIEWS

NEUROSCIENCE

‘Then I Am Myself the World’ ponders what it means to be conscious

The book tackles how consciousness arises in the brain and whether AI will ever be self-aware

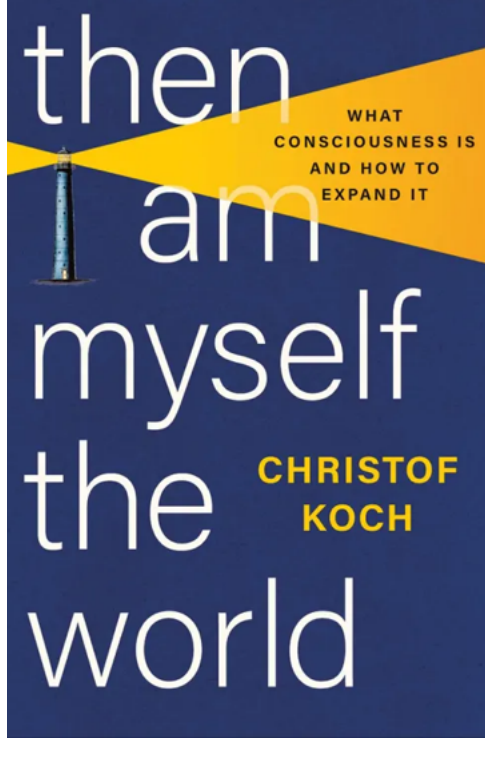


In his new book, neuroscientist Christof Koch posts that information integration in the brain is what makes humans conscious. EUGENE MYMRIN/MOMENT/GETTY IMAGES PLUS



By **Fred Schwaller**

23 HOURS AGO



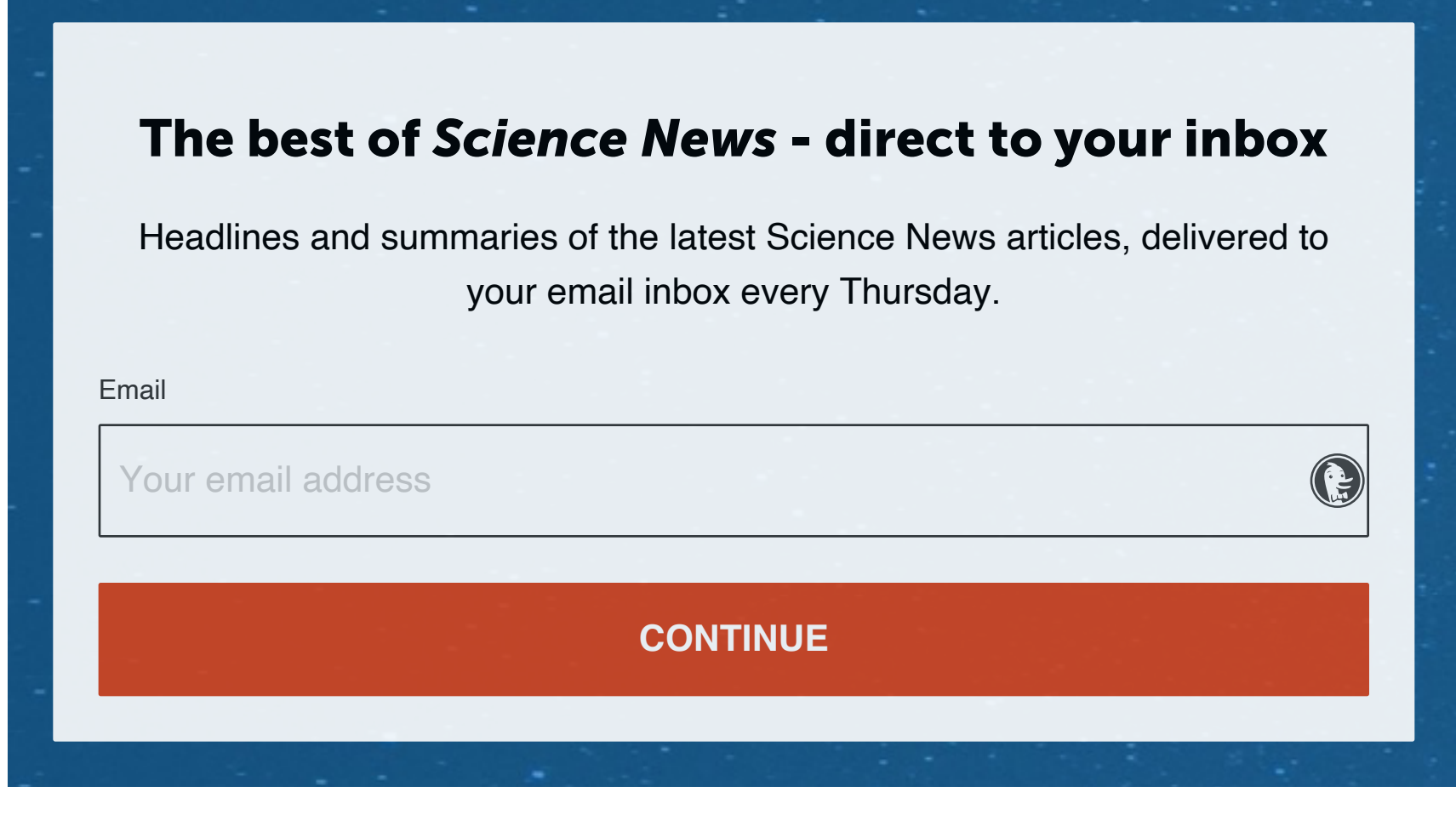
[Then I Am Myself the World](#)

Christof Koch

Basic Books, \$30

The human brain is the most complex information integrator known in the universe. With 86 billion neurons and 100 trillion connections between them, the brain gives us our rich subjective experiences and our capacity for free will — our consciousness.

Despite being a universal human phenomenon, consciousness is notoriously difficult to describe, and scientists still debate how it arises. In *Then I Am Myself the World*, neuroscientist Christof Koch offers the latest entry into the long list of [books attempting to demystify the origins of our inner lives](#) (SN: 1/5/22). While the topic can be a head-scratcher, Koch's adept use of analogies and entertaining anecdotes — complete with his own near-death experience and psychedelic drug trips — make the book a compelling and surprisingly light read.



Koch challenges some common conceptions of consciousness. Take the idea that the brain is like a computer, in which consciousness is software that's programmed into the hardware of our neurons. This concept, he writes, dominates the tech industry and movies alike, where humans are akin to self-aware robots like Rachael in the science fiction film *Blade Runner*. Reducing consciousness to a function, in which a person is a "Turing machine made flesh ... a robot unaware of its programming," leaves Koch cold.

Instead of separate software and hardware, he argues, the brain is the structure of consciousness. Koch draws on integrated information theory, or IIT, a consciousness model first proposed by neuroscientist Giulio Tononi in the early 2000s, to make the case. The mind-bending theory suggests that consciousness is the act of a brain's system of neurons merging sensory, emotional and cognitive information.

Key to understanding IIT is the idea of "causal power." Because networks of neurons integrate information, their electrochemical activity can influence conscious experiences. And consciousness, in turn, can affect brain networks because what we feel or remember impacts these networks in real time (like how being hungry can influence the brain's mood-processing regions to make us feel "hangry.")



Consciousness may not be a uniquely human experience. Other animals and even computers have the potential to be conscious, neuroscientist Christof Koch argues. GLOBALPI/GETTY IMAGES

Because IIT suggests consciousness arises from information integration, Koch argues the experience is not limited to the human brain and is present in other animals. But the interconnectivity of neurons determines the strength of the causal power and thus the organism's level of consciousness. "Take my dog. It doesn't have a well-developed notion of self. It doesn't worry what's going to happen next weekend. But it has states of pain and joy," so it's certainly conscious, Koch told me in an interview. As brains become more complex, the amount of integrated information becomes vastly bigger. So humans, whose brain networks have among the highest known level of interconnectivity, have a more expanded consciousness than a dog, he says.

A provocative conclusion here is that any system that integrates information — including a computer — has the potential to be conscious. The very mechanism of integrating information is experience, Koch explains. So you can measure a system's consciousness by measuring the amount of integrated information within it.

Recently, Koch did just that, calculating the consciousness of AI algorithms. The generative AI ChatGPT, he claims, has an "itsy, bitsy, little bit of consciousness," but experiences the world something much less than a worm with only 300 neurons.

As an AI learns more information and performs more complex tasks, it becomes increasingly sophisticated. But it cannot reach or even simulate human-level consciousness, Koch says. Think of it this way: You can simulate a black hole on a computer, but it doesn't mean you're going to be sucked into a real black hole. If you simulate a human brain in an AI system, it won't be conscious — it's a deepfake, he says.

The underlying hardware explains why. A computer's network of transistors, which regulate the flow of electrical signals within the machine, don't have the causal power necessary to give rise to human-level consciousness, Koch says. Each transistor connects to only a handful of other transistors, whereas one neuron can interact with thousands of others.

Though much of the book explores abstract and philosophical aspects of consciousness, Koch asserts that the topic has real-world value. Detecting basic levels of consciousness in comatose people, for one, could help doctors and family members determine the course of treatment.

Ultimately, *Then I Am Myself the World* contends that the subjective experiences that make us conscious are what transform us and the paths of our lives. Our conscious experiences are real and precious, Koch writes, if nothing more than because "we matter to ourselves."

Buy [Then I Am Myself the World](#) from Bookshop.org. Science News is a *Bookshop.org* affiliate and will earn a commission on purchases made from links in this article.

Questions or comments on this article? E-mail us at feedback@sciencenews.org | Reprints FAQ

We are at a critical time and **supporting science journalism is more important than ever**. *Science News* and our parent organization, the Society for Science, need your help to strengthen scientific literacy and ensure that important societal decisions are made with science in mind.

Please [subscribe to Science News](#) and **add \$16** to expand science literacy and understanding.

Related Stories



‘Feeling & Knowing’ explores the origin and evolution of consciousness

By JP O'Malley • January 5, 2022



The heart plays a hidden role in our mental health

By Laura Sanders • May 16, 2024



Plants don't have feelings and aren't conscious, a biologist argues

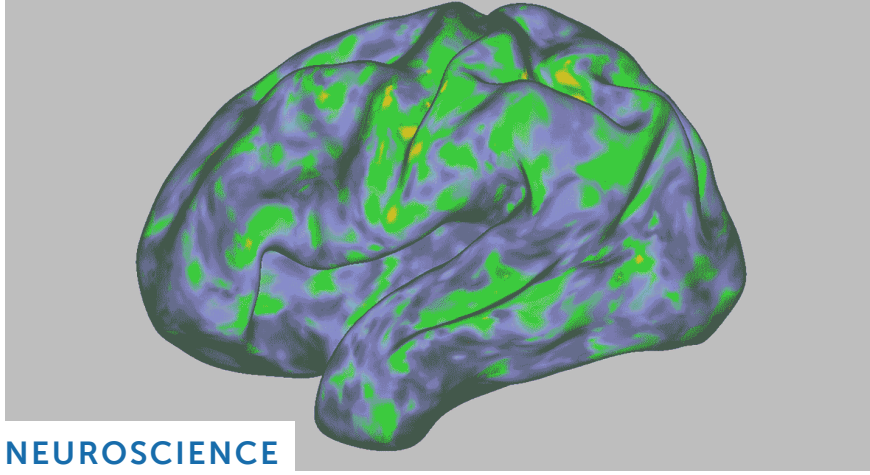
By Laura Sanders • August 12, 2019

More Stories from Science News on Neuroscience



Alzheimer's blood tests are getting better, but still have a ways to go

By Laura Sanders • August 2, 2024



Psilocybin temporarily dissolves brain networks

By Laura Sanders • July 17, 2024



Bird flu has been invading the brains of mammals. Here's why

By Erin García de Jesús • July 11, 2024



Breastfeeding should take a toll on bones. A brain hormone may protect them

By Claire Yuan • July 10, 2024