

You don't know what you don't know.

Etymology: The term was coined by cognitive developmental psychologist Andrew Shtulman as the title for his 2017 book *Scienceblind: Why Our Intuitive Theories About the World Are So Often Wrong*.

Meaning: It's no easy thing to understand the world around us as it really is. We may think we know what causes rainbows, or the seasons, but when asked to explain, our supposedly scientific knowledge can evaporate. In the heat of the moment, we usually revert to intuitive theories.

Heat is a good example. Taking a bath on a winter's day, we might imagine heat as a substance that is "escaping" from the tub. Those with a smattering of physics might think warmer molecules are flowing out of the water, while colder molecules from the air are flooding in. While these intuitive theories of heat transfer are wrong (see radiation, conduction, convection), they work well enough for estimating how long our bath will stay warm, just as they did for our ancestors, huddled around a fire.

Intuitive theories are a normal, even universal part of human cognition. At the societal level, however, they can be quite dangerous. Those who oppose vaccines or GMOs, for example, often have

flawed intuitive notions about what is "natural." Shtulman's book is to be read like a catalog of errors that shows just how saturated our minds are, and always have been, by intuitive mistakes.

"It would be easier if there were just a few systemic, general biases that people held, [but] it's not that simple," Shtulman says. Instead, we face the more difficult task of methodically replacing our intuitive theories with scientific knowledge, like the boat that is repaired plank-by-plank at sea. There is no eureka moment in which, as individuals or as a society, we finally achieve a rational worldview.

"These intuitive theories may be with us forever because children will continually reconstruct them from one generation to the next," Shtulman says, noting that even accomplished scientists make intuitive errors outside their own disciplines. "The best option is to have intellectual humility... the recognition that our intuition might always be wrong."

We can be forgiven if we are fond of our private intuitions, like misheard lyrics in a beloved song. The trick is to see them for what they are, and to never hold onto them so tightly that we become blind to reality.

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Word: Scienceblind

