

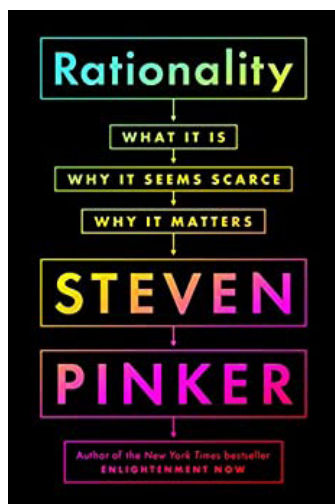


BOOK REVIEW

## ***Rationality: What It Is, Why It Matters, Why It Seems Scarce* by Steven Pinker**

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In his latest book, *Rationality: What It Is, Why It Matters, Why It Seems Scarce*, Steven Pinker brings attention to how we might strengthen our reasoning powers, as well be more cognizant of the ways we might fall short. This mostly takes the form of a wide-ranging tour, acquainting us with various forms of fallacious reasoning as well as tools to improve our reasoning faculties. As a famous professor of psychology at Harvard, Pinker is arguably well-equipped to provide a comprehensive survey on various sorts of cognitive biases and ways of thinking about rationality. The book provides a useful introduction on various tools and models that arguably characterize rational thinking. But as I'll discuss, despite his considerable knowledge and expository skills, he stumbles in areas where his own motivated reasoning clouds subject matter he is either attempting to explain or dismiss.

In the first chapter, he notes that while rationality often appears to be in short supply, he provides evidence for its universality even among hunter-gatherer tribes, with the San of southern Africa being his example. Here, Pinker demonstrates that many of the sophisticated hunting and decision techniques employed by the San suit their goals admirably. But then Pinker pivots toward areas where our reasoning could be flawed in the areas of math, logic, and probability, according to psychologists.<sup>1</sup> And he highlights that even experts in math or probability can succumb like the rest of us. How do we reconcile this with Pinker's observation of the sophisticated reasoning of hunter-gatherers? Pinker eventually gives us something of an answer toward the end of the book, where he explains that we do much better with the problems we face in our immediate surroundings (and where there are real stakes) than relatively more abstract and remote problems.

Pinker explains that rationality, essentially, is "a kit of cognitive tools that attain goals in particular worlds" (p. 5). Later, he puts it slightly differently as an "ability to use knowledge to attain goals" (p. 36). And for Pinker, knowledge is "justified true belief," or the things we know confidently that are grounded in facts. Of course, Pinker acknowledges that our quest for truth requires epistemic humility, as perfect rationality and purely objective truth must elude all humans. But we can nevertheless aim to be aware of various rules and models of reasoning that can aid us in avoiding biases that obstruct rationality, and "allow us to approach the truth collectively in ways that are impossible for any of us individually" (p. 41). Much of the book provides a tour of cognitive biases and tools for avoiding them.

One important area in this regard is logic and critical thinking. Here he provides an introduction into formal logic, as well as some peculiar outcomes or implications that can aid us in identifying fallacious arguments. His list of fallacious arguments includes the straw man, move the goal, begging the question, whataboutism, special pleading, and ad hominem arguments. But throughout the book, he also tends to take his subject matter as jumping off points for critical takes against favorite targets. In one



case, he notes that advocates of ESP “can engage in special pleading, such as explaining that ESP fails in experimental tests because it is disrupted by the negative vibes of skeptics” (p. 87). But is this really a common tactic among psi advocates? Pinker cites no examples. A few pages later, he cautions against using argument from authority to justify shaky claims because, he notes, some scientists do have flaky beliefs, which include, according to Pinker, beliefs in telepathy, astrology, and synchronicity. Again, Pinker gives us no arguments or citations to justify the dubious nature of such beliefs, but in all likelihood his intended audience does not require them.

In another chapter, Pinker turns to our cognitive biases concerning probability and randomness. For instance, we (understandably) place greater weight on impressions based on our experienced frequencies of events, rather than on the actual data of such occurrences. Such instinctive impressions, he notes, distort our understanding whenever the strengths of those impressions don’t accurately reflect the events. And outside of our experience, our view of the world is largely shaped by the media. But the media has incentives to highlight violence in our community or the likelihood of a terrorist attack. On the other hand, relatively peaceful events or even positive news are often filed under “not much happening” and therefore do not get reported. According to Pinker, “As the economist Max Roser points out, news sites could have run the headline 137,000 People Escaped Extreme Poverty Yesterday every day for the past twenty-five years” (p. 124). But they never run the headline, because there was never a particular day when it suddenly happened. Thus, he argues that one of the greatest developments in human history—a billion and a quarter people escaping from poverty—goes unreported.

Another aspect of probability that Pinker argues skews our reasoning is the tendency of finding patterns after the fact, which he labels post hoc fallacies. Thus, he dismisses the notion of synchronicity or meaningful coincidences, introduced by Carl Jung, by noting the likelihood that occasionally coincidences just simply happen. Now cultivating a cautious attitude toward taking patterns or otherwise random events to be more than they are seems like good advice. That said, some psychologists and philosophers remain intrigued by this and other notions of Jung’s. And while something like synchronicity might be very difficult to test within a scientific framework, that difficulty does not by itself invalidate it.

Like his chapter on logic, much of the book explains how rationality is considered formally. Thus, he introduces us to rational choice theory and how economists might incorporate it into their frameworks. And he doesn’t shy away from exploring how rational choice theory, while use-

ful in some contexts, leads to peculiar outcomes in others. Pinker provides a serviceable introduction to statistical decision making, as well as the difficulty of applying such tools in the real world. In another chapter, Pinker introduces the reader to game theory as a tool for understanding rational decision making in different cases. Many of these various introductions will likely be useful, though perhaps tedious, to readers unfamiliar with the topics. Readers more familiar with rational choice and game theory may still find value in how Pinker employs such concepts to rationality (or the lack thereof) in our world.

In a chapter focused on causation and causality, Pinker presents several examples of how we are prone to see patterns or effects that are only apparent. One example he discusses is the tendency of ‘regression to the mean.’ Examples he lists include sports stars profiled in *Sports Illustrated* after an outstanding performance, but who follow up with a more average performance. Some have referred to this as the *Sports Illustrated* jinx, but Pinker argues that this is more likely a return to a relatively normal performance after an especially good one. Pinker notes that scientists are by no means immune from this regression to the mean. Occasionally a study finds an unusual effect, perhaps something too good to be true, that other authors have difficulty replicating. Pinker notes that regression to the mean is likely responsible for what many have termed the “decline effect.” And once again, Pinker manages to jab some of his favorite targets. In his words,

Many of our primitive intuitions of causal powers turn out, in the light of science, to be mistaken, such as the ‘impetus’ that the medievals thought was impressed upon moving objects, and the psi, qi, engrams, energy fields, homeopathic miasms, crystal powers, and other bumkum of alternative medicine. (p. 258)

Throughout his book, Pinker chooses to denigrate topics he considers fringe, flaky, or the product of defective reasoning, without much in the way of argument or citation. On these instances, readers more familiar with the literature on psi and other subjects will have reason to question Pinker’s epistemological modesty. Taking psi in particular, there is considerable evidence that this data represents something real that we don’t yet understand. Recently, Cardeña (2018) has summarized the meta-analyses of experimental analysis across an assortment of experimental designs, based on data that have been accumulated and pooled over decades. Pinker fails to mention this, although I believe it is quite likely that he is aware of Cardeña’s (2018) summary findings.<sup>2</sup> This raises the question of whether Pinker’s own cognitive biases are filtering

out data that arguably merit a closer look.<sup>3</sup> I'll return to this question later.

Later in the book, in a chapter titled "What's Wrong with People?" Pinker focuses on the rise of misinformation and conspiracy theories in recent years. Why are people susceptible to various far-fetched, irrational, or plain crazy ideas? (Pinker casts a large net on what he judges to be crazy, with believers in reincarnation or extrasensory perception lumped together with anti-vaxxers and deniers of the Holocaust.) Pinker discusses how motivated reasoning, which involves driving an argument toward a favored conclusion that one prefers, plays a central role. For various reasons, people are motivated to embrace particular beliefs and will marshal their cognitive resources to arrive there, even at the cost of abandoning facts and optimal reasoning. People may seek out arguments that ratify beliefs they identify with and shield themselves from those that might disconfirm them.

Pinker describes some relevant studies that find individuals identifying with a political party will rapidly accept data that confirms their positions and will criticize more strongly statements opposed to their identified positions. One case focuses on how different political orientations might shape or filter what is seen on a video of a protest in front a building.<sup>4</sup> When the video was labeled as a protest against abortion at a health clinic, conservatives tended to see a peaceful demonstration, while liberals noticed various details such as protestors blocking the entrance and intimidating those trying to gain entry. When it was labeled as a protest against the exclusion of gays, conservatives saw the crowd as angry, while liberals viewed the protestors as relatively peaceful.

The rise in political tribalism is often blamed on social media (Facebook, Twitter, etc.), and this is arguably an important source. However, Pinker (and many others) argue that polarization on broadcast and cable news might be even more important. Additional factors Pinker adds to the list include regional polarization (with educated liberals locating in urban enclaves and less educated conservatives tending to live in rural areas) and the decline of class-crossing civil-society organizations like churches and volunteer groups.

Pinker also argues that universities have played a role in the growing decline of the public's trust in science, and this in turn contributes to the rise in misinformation. Pinker believes universities are culpable, primarily through their "suffocating left-wing monoculture, with its punishment of students and professors who question dogmatics on gender, race, culture, genetics, colonialism, and sexual identity and orientation" (p. 313). Pinker also adds that universities "have a responsibility to secure the credibility of science and scholarship by committing

themselves to viewpoint diversity, free inquiry, critical thinking, and active open-mindedness" (p. 314).

But another possibility Pinker doesn't consider or discuss is the strong secularizing influence universities have on their students and society. And Pinker himself arguably presents the poster-perfect stereotype of the professor at an elite academic institution who dismisses any value in religion. For myself, I find Pinker's tendency to lump notions of God or teleology in with the sort of dubious beliefs found in today's conspiracy theories highly inappropriate. There is also evidence that spirituality and religion are linked with psychological health and well-being (Vieten & Lukoff, 2022).

I've skipped over an important chapter (Chapter 5), in which Pinker introduces his readers to the Bayesian framework for assessing evidence. Here Pinker mounts his strongest attack against psi, in particular Daryl Bem's findings on precognition. He begins with a straightforward introduction of Bayes's Rule and how we might assess questions of evidence given our prior beliefs (before we are presented with the evidence), posterior likelihoods (how we update the priors given the evidence), and the probability of the evidence itself. Much of the focus here is on how we formulate our prior probability, and how much faulty reasoning might be avoided through more skillful application. His opening example of finding the right prior is in the context of a medical diagnosis, where accurate data is plentiful. He shows that by using population data on the accuracy of medical diagnosis, we can formulate a prior that assists us in making sense of a favorable (or unfavorable) diagnosis.

Having established the importance of constructing an accurate prior based on the available data, Pinker seamlessly turns toward attacking Daryl Bem's findings in support of precognition. This involves a bit of sleight of hand; Pinker pivots from a medical case, where plentiful data exists, to an area where little data exists, except arguably that generated by psi researchers, which Pinker prefers to avoid. Pinker holds Daryl Bem's 2011 paper, "Feeling the Future: Experimental Evidence for Anomalous Retroactive Influences on Cognition and Affect," as a prime example where we do not sufficiently consider the correct prior, within a Bayesian framework. In his paper, Bem (2011) presented nine time-reversed versions of well-known psychological experiments, which allowed him to test for precognition, or whether test participants could "feel the future." But Pinker explains that accepting such results at face value is absurd, and thus we should weight our priors accordingly to discount such evidence. But how do we construct an appropriate prior to investigate this question? Toward this end, Pinker brings in David Hume's argument against accepting the evidence of a miracle. As

Pinker explains, a miracle necessarily requires that we apply a very small value to the prior probability in order to safeguard our accepting “pseudoscience.” Therefore, a large amount of evidence in favor of what Pinker assures us is a dubious finding is required to overcome the necessarily small assignment of value to the prior. Pinker explains that using Bayes’ Rule this way is just another way of applying Carl Sagan’s maxim (which appears at the beginning of the chapter): “Extraordinary claims require extraordinary evidence.” And Pinker notes that as we might expect, Bem’s findings have failed to be replicated.

Many people reading this chapter (who have little knowledge of the psi literature) will likely come away thinking that Bem’s findings have not held up under the weight of serious examination and that researchers have turned away from such shenanigans. But on the contrary, the meta-analysis on Bem’s “feel the future”-style experiments have confirmed strongly significant effects (Bem et al., 2015).<sup>5</sup> In other words, the efforts to duplicate Bem’s experiments ended up vindicating Bem’s findings.<sup>6</sup> Like Cardeña’s (2018) summary of the evidence on laboratory psi, Pinker does not inform his readers of this information. How do we account for this poor characterization of the data in a book whose ostensible aim is to keep our cognitive biases in check? Could Pinker be deliberately trying to present a one-sided view, or is he genuinely ignorant of the evidence?

I’d like to press on this issue of how Pinker manages to treat this (admittedly controversial) subject in a couple of ways. First, like many skeptics of the psi data, Pinker has arguably misread Hume’s essay “Of Miracles.”<sup>7</sup> Hume’s argument was aimed at the undependable nature of human testimony regarding religious miracles described in religious scripture. Examples Hume mentioned included the dead rising from their graves, severed limbs growing back, and the blind being cured by spittle. For Hume, testimony on religious matters was inherently unreliable, dependent on reports for events in remote areas, with relatively few witnesses. He noted that we might expect testimony on a religious marvel to excite emotions of passion and wonder. Simply lifting Hume’s argument against miracles found in religious testimony and applying it against anomalous findings under controlled test conditions, with the aim of replicability, appears to be inappropriate, to say the least.

Pinker believes that Hume’s argument allows him to frame the question of accepting something like precognition as: “Which is more likely[,] that the laws of the universe as we understand them are false, or that some guy got something wrong?” (pp. 158–159). Setting aside his mischaracterization of this literature (as if it were based only on “some guy” in a lab), we can note that Pinker

never considers the possibility that the psi data reflects something about the gaps in our current understanding of the world. Anomalous findings in scientific history, which initially clashed with conventional theories and assumptions, have played an important role in advancing scientific theory. We can’t simply assume that science is pretty much done and there aren’t any future surprises in store, no matter how successful current science appears to be. As it happens, the psi data arguably falls into domains, such as consciousness and quantum mechanics, where our understanding remains incomplete. By ignoring the possibility that the data suggests something about the gaps in our current theories, Pinker (and his fellow skeptics) argue for an astronomically low value for the prior, based on their view that psi should be treated as a supernatural miracle.<sup>8</sup>

Pinker may be aware of the problem that our understanding remains incomplete, but he avoids any deeper reflection on this. In his book, he recounts that a colleague once suggested “Maybe Pinker doesn’t understand the laws of physics?” Pinker’s reply was “But actual physicists, like Sean Carroll in his [2017] book *The Big Picture*, have explained why the laws of physics really do rule out precognition and other forms of ESP” (p. 160).<sup>9</sup> Carroll, the physicist Pinker chooses to cite here is a well-known cosmologist who also aims for wide audiences in his books. In citing Carroll (recall Pinker earlier cautioned against argument from authority with respect to “fringe” science), he fails to mention that Carroll is also well-known for advocating the Everett (Many Worlds) interpretation of quantum mechanics. This interpretation posits that the universe is constantly branching and forming additional universes parallel to ours. So far, no ability to test this claim appears on the horizon. So here we have Pinker, not particularly worried about the wide disagreements on interpretations of quantum mechanics, reaching out to find an agreeable ally but at the cost of arguably turning Sagan’s maxim of “extraordinary claims” on its head.<sup>10</sup>

For me, all of this is a rather impressive display by Pinker, a world-famous expert on human reasoning and its limitations, inadvertently putting his own prejudices in the display window. And Pinker provides good support to characterize it as such. As he explains toward the book’s end, “The mustering of rhetorical resources to drive an argument toward a favored conclusion is called motivated reasoning” (p. 288). Just a bit later, he discusses how the motivated reasoner likely filters how information is consumed: “In biased assimilation (or selective exposure), people seek out arguments that ratify their beliefs and shield themselves from those that might disconfirm them” (p. 290). Needless to say, presenting this understanding in the book and applying such guidance on one’s own beliefs are two very different things.

Fortunately for Pinker, few among his audience are likely to be familiar with the psi literature and in probability many share his prejudices. Those more knowledgeable or sympathetic to the data are perhaps written off, having drunk the Kool-Aid, so to speak. But unfortunately, because of Pinker's large influence, his skewed portrayal of psi (as well as other topics he views as "fringe") may prevail.

While Pinker's book does possess virtues in its clear accessibility on a wide range of aspects on rationality, his unreliability as a guide on his central subject matter—cognitive bias—substantially mars the book's value. A rather sobering take-away is that a world-class psychologist can stumble against his own cognitive biases while at the same time lecturing in top professorial mode on the nature of such biases. But thinking more positively, perhaps the book serves as a useful case study that illustrates the difficulty of acquiring and distributing new knowledge of the world in the face of entrenched assumptions and beliefs which even the most well-informed and "reasonable" among us have embraced.

## NOTES

- <sup>1</sup> Pinker goes into some depth describing three problems psychologists have used to uncover fallacious reasoning: the Cognitive Reflection test, the Wason selection test, and the Monty Hall problem.
- <sup>2</sup> Cardeña's (2018) summary on the meta-analyses on laboratory psi was published in *American Psychologist*, the flagship journal of the American Psychology Association.
- <sup>3</sup> On Pinker's dismissal of psi and lack of curiosity on the evidence, see also a recent post by Rupert Sheldrake (2021). <https://unherd.com/2021/11/rationalists-are-wrong-about-telepathy/>
- <sup>4</sup> Kahan et al., 2012.
- <sup>5</sup> The subsequent meta-analysis was based on 90 experiments from 33 laboratories in 14 countries. The overall statistic for this combined data was  $z = 6.40$ , with a  $p = 1.2 \times 10^{-10}$ . This strong statistical significance was also robust to Bayesian analysis.
- <sup>6</sup> Roe (2022) presents a good overview of Bem's original paper, criticisms, and the meta-analysis on findings.
- <sup>7</sup> "Of Miracles" is found in Hume's *An Enquiry Concerning Human Understanding* (2007).
- <sup>8</sup> See also Wagenmakers et al. (2011) who attacked Bem's (2011) findings using a similar argument for constructing an extremely low prior within a Bayesian framework.
- <sup>9</sup> See Nobel laureate Brian Josephson's (2022) critical response to both Pinker and Carroll. <https://opensciences.org/comments-on-steven-pinker-s-view-of-the-paranormal>.

<sup>10</sup> My intention here is not to criticize the Everett Many Worlds interpretation. While I am not an advocate, I accept that some find the interpretation attractive for philosophical reasons. That said, I do not understand how someone simultaneously argues: 1) extraordinary claims require extraordinary evidence and 2) the Many Worlds interpretation, for which we have no evidence, is likely the best explanation for the quantum measurement problem.

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