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### **Rationality Now!**

Review of 'Rationality: What it is, why it seems scarce, why it matters.'  
by Steven Pinker

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(excluding references)

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*People are crazy and times are strange.* - Dylan

Steven Pinker, being a public intellectual, may expect readers of his *Rationality: What it is, why it seems scarce, why it matters* (hereafter: “RAT”) to bring certain hopes and expectations to the task. They know Pinker as a distinguished expert on linguistics, communications, and cognitive science, a professor with a deep knowledge of many theories from evolution to cognitive dissonance, a child of the Enlightenment and a prophet of progress. The expectation to see these qualities shine in RAT is not disappointed.

Readers with sensitivity and memory may recall that Pinker sometimes oversells his message. *How the mind works* (Pinker, 1997), for example, was a wild and fun ride through the cognitive science of that time, but it did not reveal how the mind really really works. There are, as far as I can see, two main reasons for this overselling. One reason is the impossibility of omniscience (Felin, Koenderink, & Krueger, 2017). We will never know how the mind really really works. What we can have are incrementally better models of it. In RAT, Pinker does better. He notes the impossibility of defining rationality in rational terms without begging the question. Yet, he pragmatically forges ahead, and this is his genius.

The other reason for why RAT goes a bit too far lies in its curated presentation of the relevant science. In *How*, Pinker’s discussion of the social mind was based on the work of a handful of authors with an evolutionary point of view and homes in Santa Barbara. In RAT, Pinker casts a broader net, but still anchors his story on a familiar cast of pioneers, namely Robyn Dawes, Paul Slovic, Daniel Kahneman, and Amos Tversky. Pinker knows that there is an ongoing debate over the nature of rationality and the proper role of normative models of thinking (Chater, Felin et al., 2018). Yet, he sidesteps these difficult issues in order to tell a story of how the concept of rationality can be understood and how its practice can be improved. This story requires some omissions, and their shadow reflects the dark side of his genius. Given these caveats, my recommendation is to read the book but to do so with an attitude of properly curbed enthusiasm. That would be the rational approach.

### **Why do we care about rationality?**

In his penultimate chapter Pinker asks ‘What is wrong with people?’ and he knows that his readers have been waiting for him to raise this question. Pinker also knows that he can’t answer it because he – as anyone would – has failed to define rationality without question-begging. So why do we care about a big question when all we can do is answer little ones, such as ‘Under what conditions do people neglect base rates?’ Is it rational to think that many little answers will add up to a big one? As a connoisseur of Hume, Pinker knows that this question is a version of the induction problem. When a large number of little questions has been answered, another one may come along to frustrate us. Yet, the effort to chip away at the big issue is not for nothing. Identifying limited questions and answering them is fun and profitable.

Like Pinker, I have enjoyed the ride on the rationality train. My favorite example of a thought problem that puzzled many great Renaissance minds until Fermat and Pascal came along to solve it is “The problem of points” (Krueger, 2000). Suppose Steven and Joachim use a fair coin, bet on opposite sides, and agree to throw it until one of them has won six times. This person will get the \$20 that Dominic has kindly provided. At the point, however, where Steven has won 5 rounds and Joachim has won 3 rounds, Dom is called to editorial duty and terminates the game. What is a fair distribution of the \$20? As it turns out, 7/8 of the money should go to Steven because the only way I could win under the agreed-upon conditions would be to score another 3 wins in a row. Few people understand this intuitively, but Fermat’s math leaves no doubt that the rational solution is also a moral one, and for once, the tug of war between the sweet and the smart is relaxed.

The problem of points, the solution of which was a crucial step toward the modern understanding of probability, is an example of significant, if limited, progress. Alas, the tug often asserts itself and leaves us in tragic dilemmas, where rational individuals bring forth their own destruction. Pinker is, for example, pessimistic about our prospects in the prisoner’s dilemma and its derivatives (e.g., commons dilemmas). For an optimist like Pinker, this is a surprising surrender. In fact, one ray of hope in the prisoner’s dilemma is social projection, an inductive inference that was once considered irrational. Yet,

when people reasonably assume that other reasonable people will choose as they themselves do, mutual cooperation becomes more likely than the presumably rational catastrophe of mutual defection (Krueger, 2013). The dilemma of trust, not discussed by Pinker, also illustrates this point. Classic game theory holds that rational agents will not trust strangers on the assumption that there is no incentive to reward trust with trustworthiness. Yet, a proscription of trust is self-defeating and thus irrational – as is a prescription of trust. The rational attitude is to gather available cues (e.g., self-other similarities) as well as moral considerations (e.g., the golden rule) and social projection. With that the leap of trust can be framed as a decision under calculated uncertainty (Evans, Ong, & Krueger, 2021).

### **Elements of Rationality**

In chapters 3 to 9, the main body of RAT, Pinker surveys engaging examples of problems posed and problems solved, thereby illustrating the many and diverse tools critical thinkers find in their boxes. Here are some of them in super-short shrift: Chapter 3 reviews the elements of logic, and this is just as well because ‘logic’ is as close as one gets to the term ‘rationality’ in the Greek language. The *Ur*-term is ‘logos,’ which we first find in Heraclitus as a reference to the hidden order of the universe. Aristotle used it to refer to how we think, or should think, about the world. He, like Socrates and Plato before him, figured that we need help. The chasm between thinking as it is and thinking as it should be had opened up and it stills yawns at us today. Pinker, like Dawes (1988) and many other pioneers, knows that the mastery of logic does not eliminate the question ‘What is wrong with people?’ because villains can be perfectly logical in the pursuit of their villainy.

Chapter 4 confronts human ignorance and its management with an introduction to probability and randomness. Probabilistic thinking is the poor human’s retreat when high rationality in the form of ‘true knowledge’ fails. Now that we know so little, how may we still be rational? The obvious task seems to be gathering more data, making coherent inferences, and detecting randomness wherever it may lurk. Yet, there are ironic puzzles, such as ‘deliberate ignorance,’ when people elect to hide information from themselves although they might have if for free. As it turns out, such self-blinding need not be irrational

in the tradition of King Oedipus's self-mutilation, but a rational response to an environment that has no compassion (Krueger et al., 2020).

Chapter 5 is written in reverence of the Reverend Bayes, who sought an inductive proof of the existence of God, and failed. For all its elegance, Bayes's theorem's ability to nudge us toward true beliefs depends on the quality of the assumptions that go into it, that is, the priors. When we ask 'What is wrong with people', we may find that they over- or under-adjust their beliefs in light of evidence, but the deep problem is that many people with contrasting priors are willing to di- rather than con-merge with their beliefs after evidence. Pinker refers to Stanovich's (2021) book on 'myside bias' (reviewed in Krueger, 2022), but his faith in Bayes remains intact.

Chapter 6 follows the bending arc of the utility function and its implications for rational choice. Pinker follows the tradition of marveling at the beauty of utility theory's axioms and noting that we'd be better off in our goal pursuit by observing them. At least we'd be protecting ourselves from being turned into money pumps by exploiters who are more rational and less scrupulous than we are (Grüning & Krueger, 2021). Kahneman and Tversky (1979) delivered what should have been the coup de grâce to the utility paradigm by showing how preference reversals emerge from the human ability to adapt to current circumstances and their differential treatment of gains and losses. However, organisms that don't adapt (even fungi habituate to mild toxins) or that reduce their loss aversion to match their love of gains in absolute terms might not live long enough to see the next equinox.

Chapter 7 discusses the management of errors. Signal Detection Theory (SDT) was created to help radar operators decide if a blip on the screen presented a Stuka formation or a flock of geese, a situation in which human sensibilities prefer to tolerate a few more false positives if that means fewer Stukas will be missed (Swets, Dawes, Monahan, 2000). Beyond the radar screen lies a reality: The Stukas are either coming or they are not. Being able to tell the difference – with a large  $d'$  – is a way of having knowledge and thus of being rational. The *beta* parameter, that is, the threshold one sets for sounding the 'Stuka!' alarm is only of interest when  $d'$  is low. It is here that the trade-off between the two types of errors must be adjudicated in light of preferences and values. Pinker then presents the Neyman-Pearson

theory of statistical decision making as if it were a version of SDT, although it was its predecessor (Neyman & Pearson, 1933). A critical difference is that the size of a statistical effect is a random variable. It's rather like asking 'How many Stukas are there? If there is only one, we may not care, but our theory says there are 4 (i.e., a formation). Any power analysis, which nowadays fashionably and ritualistically prefaces every result section of a psychology article, is conditioned on a theorized, that is unobserved, effect size. Whereas SDT yields  $d'$  as a measure of discriminative sensitivity, the N-P theory of statistical testing *assumes* a  $d'$ , as well as a false positive and a false negative rate, and then yields a probability of the data under the assumption that  $d' = 0$ . Which theory is more rational?

Chapter 8 surveys the essentials of game theory and presents rationality as John von Neumann saw it. This view leads to despair because when rational goals yield irrational outcomes we have tragedy. When individually rational agents find themselves in noncooperative games like the prisoner's dilemma or chicken, they can do no better than avoid exploitation (chicken) or face mutual destruction (prisoners). The failure of game theory highlights the failure of individualized notions of rationality when collective welfare is at stake. To frame rationality at the supra-individual level requires the surrender of methodological individualism, one of the sacred tenets of the Enlightenment. Both Pinker and I hesitate to accept the need for a methodological collectivism, but there may be no way around it.

Chapter 9 seems mildly out of place because it covers familiar questions about correlation and causation. Pinker takes the conventional line of prioritizing causation. Chains of cause and effect are the cement of the universe, although we know from Hume that we cannot prove this. Correlation is a trickster because it enables sloppy causal reasoning. The rational person knows how to extract credible causal claims from correlation with the help of other cues such as precedence or mechanism. One may counter that, since causation cannot be observed but only inferred, a rational person can be imagined who is not interested in causal explanations but who has a good fix on the available correlations and is able to predict what will happen next. Data scientists and machine learners seem to be betting on this model of rationality (Krueger, 2020).

### **The Rule of the Priests**

Late in his distinguished career, the German sociologist Helmut Schelsky (1975) diagnosed and bemoaned the rise of a priestly caste on campus. These self-anointed priests took it upon themselves – Schalsky argued – to tell the rest of society, and thus its productive classes, what was wrong with their perceptions and actions, and what they should do to overcome their ‘false consciousness.’ After the Enlightenment had broken the power of the seminary to control thinking, the power of the seminar took its place. Today, we see a similar situation in cognitive psychology. Reasoning errors are revealed – or rather designed – to bring forth in the audience the humbling *Aha!* experience of ‘How could we be so stupid!’ The omniscient lecturer then offers a path toward salvation. “Think again,” they might say (Grant, 2020), or think that which is not on your mind (Kahneman, 2011), or learn to think like us, the scientists (Pinker, 2021). Much like Schelsky’s estranged colleagues from the Frankfurt School, today’s cognitive scientists of the Kahneman school treat their audience to a domination-submission ritual. We tell you what’s wrong with you, they declare, and you will thank us (and pay us) for it. The false consciousness lies in the audience’s cheerful acceptance of this game.

Arguably, the greatest achievement of psychological science is the demystification of the workings of the visual system. Visual illusions are endlessly fascinating in their weirdness and instructive in what they teach us about this masterpiece of nature. Tversky and Kahneman’s (1974) greatest rhetorical trick was to suggest that cognitive illusions are analogs of visual illusions. Nothing could be further from the truth. Pinker wisely notes that to reveal the nuttiness of a belief is to challenge the believer to act on it, but he still is lulled by the Sirens’ song of the visual illusion metaphor. If the metaphor were true, there would be no irrationality. The so-called cognitive illusions would be the features of the system, not its bugs. This is a conclusion I do not wish to defend. Irrationality does exist and it is all around us.

Pinker comes closest to a solution, I think, when he early on in RAT tells how the Ju/'hoansi Bushmen of the Kalahari reason about their environment with exquisite cognitive skill. Their abilities meet the demands of their ecology – to the detriment of the springbok. Most contemporary people live in a world in which their skills are not aligned with their ecology – and this is partly the fault of the

academic priests who design wicked puzzles in their labs or on their Qualtrics platforms (Lejarraga & Hertwig, 2021). Perhaps it is time to chill about individualist rationality, take a more ecological perspective (Hertwig, Leuker, Pachur, Spiliopoulos, & Plaskac, 2021), and not forget to have a good laugh (Kazantzakis, 1952).

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