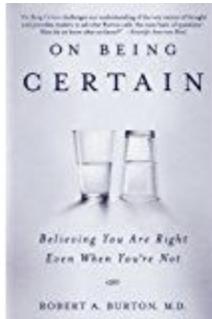


On Being Certain: Believing You Are Right Even When You're Not (St. Martin's Press, 2008) by Robert Burton, MD.

Highlights by Erik Johnson



Where does the "feeling of knowing" come from? Conventional wisdom says it's the result of objectivity, studying evidence, weighing pros and cons, drawing logical conclusions, and making informed decisions. Neurologist Robert Burton says this is not so. He says the brain can create unshakable beliefs on its own without resorting to rational thought or empirical research. To quote him directly,

"...they persist in the belief that everyone should draw the same conclusion if given the same information, as though reason operated according to an obligatory physics, like the optics of an eye. These book club members aren't alone. We are raised believing that reasonable discourse can establish the superiority of one line of thought over another. The underlying presumption is that each of us has an innate faculty of reason that can overcome our perceptual differences and see a problem from the 'optimal perspective.' One goal of this book is to dispel that misconception." (103)

To me, an interested layman, Burton's book is dense, tightly argued, deep, and very quotable. Rather than grappling with his arguments, summarizing the scientific basis for his claims, or providing a chapter by chapter outline of his book, I've chosen to simply reproduce many of his thought provoking quotes.

"Given what we know about the biology of schizophrenia, we recognize that the patient's brain chemistry has gone amok, resulting in wildly implausible thoughts that can't be 'talked away' with logic and contrary evidence." (x)

"Then we can see how this unreasoned feeling of knowing is at the heart of many seemingly irresolvable modern dilemmas." (xi)

"My goal is to strip away the power of certainty by exposing its involuntary neurological roots. If science can shame us into questioning the nature of conviction, we may develop some degree of tolerance and an increased willingness to consider alternative ideas--from opposing religious or scientific views to contrary opinions at the dinner table." (xii)

"He then delivered the cognitive checkmate, 'I know what I know.'" (17)

"Rather than rejecting ideas and beliefs that defy common sense and overwhelming contrary evidence, such patients end up using tortured logic to justify the more powerful sense of knowing what they know." (17)

"Mr. C's 'I know real when I see real' points out how a sense of 'realness' might also bias us toward believing that an idea is correct." (17).

(Quoting William James) "Mystical truth...resembles the knowledge given to us in sensations more than that given by conceptual thought." (23)

"James's description is perfectly straightforward--with mystical states, people experience spontaneous mental sensations that feel like knowledge but occur in the absence of any specific knowledge. Felt knowledge. Knowledge without thought. Certainty without deliberation or even conscious awareness of having had a thought." (23)

(Quoting Dostoyevsky) "I felt that heaven was going down upon the earth and that it had engulfed me. I have really touched God. He came into myself, yes. You all, healthy people, can't imagine the happiness which we epileptics feel during the second before our fit....I don't know if this felicity last for seconds, hour or months, but believe me, for all the joys that life may bring, I would not exchange this one." (24).

"If emotions as basic as surprise are difficult to physiologically categorize, what would a reasonable approach be to the even more elusive feeling of knowing? Perhaps an analogous situation would be the stream-of-consciousness voice in my head. Though not audible, I do 'hear' my internal voice in the same way as I 'see' an object in my mind's eye." (37)

"It is as though objective evidence cannot trigger a proper feeling of knowing, leaving OCD victims in a state of heightened doubt and anxiety. Psychologists have recently begun to consider the role of *pathological certainty* and *pathological uncertainty* as they relate to schizophrenia and OCD." (39)

"No one is on record as having experienced a sense of irony as a primary epileptic aura." (40)

"Some brain activities such as hope seem to defy categorization altogether." (40)

"Is this science fiction, wishful thinking, utter madness, or a heartfelt and genuine attempt by neuroscientists struggling to mold these essentially infinite connections into a workable medical model? Networks aren't localized like a spot of rust on a

fender. They aren't separable into the component parts any more than a cake can be reverse engineered into eggs, sugar, flour, water, and chocolate. These networks are the brain." (54)

"And yet, out of this mass of cells comes Shakespeare and Newton. Consciousness, intentionality, purpose, and meaning all emerge from the interconnections between billions of neurons that do not contain these elements." (59)

(Quoting Patricia Duffy) "What did the rest of the world see that I didn't? It occurred to me that maybe every person in the world had some little oddity of perception they weren't aware of that put them on a private island, mysteriously separated from others. I suddenly had the dizzying feeling that there might be as many of these private islands as there were people on the earth." (65)

"...we experience a feeling of knowing without any accompanying thought, as is seen with mystical experiences and brain stimulation studies. Any interpretation of explanation of this feeling occurs after the experience." (66)

"To understand the problem of the same feeling of knowing being attached to correct and incorrect conclusions, we need to take a quick look at the present-day understanding of memory." (81)

"These are the memories that are revised by subsequent experience." (82)

"If I can be sure of where I was born, and this feeling of knowing can be easily verified, should I trust all my memories that feel correct?" (83)

"For an excellent summary of the latest studies of faulty recall, shifting memories, and false memory syndrome check out the excellent and easily accessible writings of Harvard psychologist Daniel Schacter." (84)

"Stick the most rational of the rationalists in a poker game, hook up a lie detector to his subconscious, and you will hear the silent supplications. Oh, poker lord, give me an ace." (87)

"...today's reliance upon adaptive explanations may also be too simplistic. Using behavioral observations to determine why a physical characteristic evolved might lead us to conclude that the human appendix developed as a source of mortgage payments for hungry surgeons. There is nothing wrong with the idea that our biology evolved and is adaptive; rather the problem is in knowing exactly what that adaptation must have been." (92-93)

"If you doubt the need for a reward system for the unprovable thought, stop and consider what propels you forward in a long term intellectual project." (93).

"No matter what the psychological impulse, no one ever spent twenty years in some stinky lab without some little pellet of pleasure periodically dropped into his median forebrain bundle." (94)

"Once firmly established, a neural network that links a thought and the feeling of correctness is not easily undone. An idea known to be wrong continues to feel correct." (98)

"I often wonder if an insistence upon being right might have physiological similarities to other addictions..." (98)

"We all know others (never ourselves) who go out of their way to prove a point, seem to derive more pleasure from final answers than ongoing questions, and want definitive one-stop-shopping resolutions to complex social problems and unambiguous endings to movies and novels." (98)

"I can't help wondering if an educational system that promotes black and white and yes or no answers might be affecting how reward systems develop in our youth. If the fundamental thrust of education is 'being correct' rather than acquiring a thoughtful awareness of ambiguities, inconsistencies, and underlying paradoxes, it is easy to see how the brain reward systems might be molded to prefer certainty over open-mindedness. To the extent that doubt is less emphasized there will be far more risk in asking tough questions." (99)

(Quoting Nobel Laureate Richard Feynman) "I can live with doubt and uncertainty and not knowing. I have approximate answers and possible beliefs and different degrees of certainty about different things....It doesn't frighten me." (100)

"...they persist in the belief that everyone should draw the same conclusion if given the same information, as though reason operated according to an obligatory physics, like the optics of an eye. These book club members aren't alone. We are raised believing that reasonable discourse can establish the superiority of one line of thought over another. The underlying presumption is that each of us has an innate faculty of reason that can overcome our perceptual differences and see a problem from the 'optimal perspective.' One goal of this book is to dispel that misconception." (103)

"...our individual lines of reasoning for any given problem will be as idiosyncratic as our underlying code." (103)

"I know an avowed atheist who privately confesses to having once been a Pentecostal Born Again. It doesn't take much imagination to see how his Born Again and atheistic thoughts might arise out of a similar genetic predisposition but result in diametrically opposite conclusions." (112)

"From politics to medicine, seemingly deliberate reasons for a decision will be influenced by innate risk tolerances. A close look at most contentious issues of the day reveals the same problem. Arguments...are often the reflection of different risk-reward calculations." (117)

"If I ask myself a question and get an immediate answer, the answer feels like an intentional response to the question. But the longer the delay, the weaker the feeling of intentionality is; 'Yes, that's what I thought,' gradually shifts to 'it just popped into my head.'" (133)

"It would be foolish to suggest that the feeling of knowing is present in the unconscious--an unfelt feeling makes no sense." (135)

"These sensory systems also determine how we experience mental cause-and-effect and intentionality. And they are instrumental in imbuing our thoughts with a sense of their correctness. Without the embedded sensation of being on the right track, a thought wouldn't be worth the mind it's printed on." (139)

"We know the nature and quality of our thoughts via feelings, not reason. Feelings such as certainty, conviction, rightness and wrongness, clarity, and faith arise out of involuntary mental sensory systems that are integral and inseparable components of the thoughts that they qualify." (139)

(Quoting Tolstoy) "When Levin thought about what he was and what he lived for, he found no answer and fell into despair; but when he stopped asking himself about it, he seemed to know what he was and what he lived for, because he acted and lived firmly and definitely... Reasoning led him into doubt and kept him from seeing what he should and should not do. Yet when he did not think, but lived, he constantly felt in his soul the presence of an infallible judge who decided which of two possible actions was better and which was worse; and whenever he did not act as he should, he felt it at once...So he lived, no knowing and not seeing any possibility of knowing what he was and why he was living in the world, tormented by this ignorance to such a degree that he feared suicide, and at the same time firmly laying down his own particular, definite path in life." (140)

"There is no isolated circuitry within the brain that can engage itself in thought free from involuntary and undetectable influences. Without this ability, certainty is not a biologically justifiable state of mind." (141)

"How do we know that this sense of knowledge can be trusted? Talking about the impossibility of a rational mind generates this general category in the same way that an atheist needs the concept of God in order to refute it." (142)

"To avoid repetition, I will refer to this belief--that we can step back from our thoughts in order to judge them--as the myth of the autonomous rational mind." (142)

"Our emotions have a mind of their own, one which can hold views quite independently of our rational mind." (144)

"Though useful in emphasizing that unrecognized foul moods and emotions can impact clarity of thought, the theory of emotional intelligence ultimately sidesteps the crucial question of how we determine whether our thoughts are free of perceptual illusions and unsuspected biases." (145)

"...the unconscious mind is inaccessible to self-analysis." (146)

(Quoting Malcom Gladwell with whom Burton strongly disagrees): "Decisions made very quickly can be every bit as good as decisions made cautiously and deliberately." (147)

"All thoughts--the trivial, the brilliant, the mundane, the profound, the catastrophic, and truly dangerous--percolate up from the unconscious (the hidden layer). The issue isn't whether or not unconscious thoughts can be of great value, but in sorting out those that are from those that aren't." (150)

"We accept that the unconscious is loaded with unrecognized agendas, motivations, and complex ill-defined predispositions." (155).¹

"For me the claim of no a priori assumption is a red flag to the likelihood of bias." (156)

(Quoting Stephen Jay Gould) "Objectivity cannot be equated with mental blankness; rather objectivity resides in recognizing your preferences and then subjecting them to especially harsh scrutiny." (157)

"Gould refutes the idea of a mental blank slate that can observe without prejudice, and warns us to look under every mental rock to see what biases might have been overlooked. But 'recognizing your preferences' brings us back to the strange loop of the mind judging itself. Though he knew better, and warned us about bias, Gould could not discuss objectivity without tacitly accepting some degree of the autonomous rational self." (157)

"Our mental limitations prevent us from accepting our mental limitations." (159)

¹ Hebrew sages recognized these ideas 3 millennia ago. "Many are the purposes of a person's heart," Proverbs 20:4).

"Timothy Wilson suggests that we should become 'biographers of our own lives, distilling our behavior and feelings into a meaningful and effective narrative.' His point bears repeating. If as modern neuroscience strongly indicates, the self is an ongoing personal narrative constructed by the very mind that is examining itself, introspection is analogous to interpreting a complex work of fiction. To get a view of oneself that is relatively 'in sync' with one's unconscious motives requires a combination of close, detailed analysis, looking at it from a wide variety of angles (including the views of others), and a broad background knowledge from one's personal and cultural history to the latest genetics of behavior. However, the overriding requirement is that any self-assessment be seen within the light of its biological constraints." (160)

"But until he has positive supporting evidence, he is only justified in saying, 'I believe,' not 'I am sure.'" (183)

"Good science requires distinguishing between 'felt knowledge' and knowledge arising out of testable observations. 'I am sure' is a mental sensation, not testable conclusion. Put hunches, gut feelings, and intuitions into the suggestion box. Let empiric methods shake out the good from the bad." (167)

"...is your risk tolerance such that anything less than certainty means you should repeat all [medical] tests?" (168)

"The purpose of this chapter is to expose the limits of any concept of rationality or objectivity, not to suggest that all answers are equal and everything is relative." (172)

"Recognizing the limits of the mind to assess itself should be sufficient for us to dispense with the faded notion of certainty, yet it doesn't mean we have to throw up our hands in a pique of postmodern nihilism. We thrive on idealized goals that can't be met. In criticizing the limits of reason and objectivity, I do not wish to suggest that properly conducted scientific studies don't give us a pretty good ideas of when something is likely to be correct. To me, pretty good is a linguistic statistic that falls somewhere in between more likely than not and beyond a reasonable doubt, yet avoids the pitfalls arising from the belief in complete objectivity." (175-176)

"The whole argument of luck, coincidence, miracle, or divine intervention hinges upon one's personal view of low probability events.... The difference is that rationalists and skeptics see coincidence irrespective of the improbability of chance occurrences. Those inclined toward belief in higher powers see a finite point when coincidence becomes the evidence for the miraculous....We have an innate tendency to characterize the unexpected and unlikely according to our worldview." (185)

"No matter how strong the evidence for our inability to know why we are here, we continue to search for an answer. Even when those questions arise out of paradoxes

generated by contradictory brain functions, we feel that we should be able to solve the problem. The result is that we see patterns where none exist and don't see patterns that might exist. Combine our urge to categorize with an inherent tendency toward religiosity and it is not surprising that we will see a higher purpose rather than coincidence in low-likelihood events." (187)

"Though I would prefer a world free from (or at least unaffected by) fundamentalist beliefs, I can't see where fundamentalists are going to abandon religion because scientists portray a cold sterile world where all is pointless and faith is not to be respected." (189)

"...we also learn through profound emotional experiences that contain no elements of reason. These forms of knowledge aren't ideas that can be assessed, tested, and judged as right or wrong. They aren't 'facts'; they are ways of seeing the world beyond reason and discussion." (190)

(Quoting Darwin) "I cannot pretend to throw the least light on such abstruse problems. The mystery of the beginning of all things is insoluble to us; and I for one must be content to remain an Agnostic." (194)

"If possible, both science and religion should try to adopt and stick with the idea of provisional facts. Once all facts become works-in-progress, absolutism would be dethroned. No matter how great the 'evidence,' the literal interpretation of the Bible or Koran would no longer be the only possibility. By exploring and making common knowledge of how the brain balances off contradictory aspects of its biology, we might gradually turn absolutism into an untenable stance of ignorance." (197)

(Quoting Alfred North Whitehead) "Not ignorance, but ignorance of ignorance, is the death of knowledge." (216)

"It is in the leap from 99.99999 percent likely to a 100 percent guarantee that we give up tolerance for conflicting opinions, and provide the basis for the fundamentalist's claim to pure and certain knowledge." (220)

"Science needs to maintain its integrity at the same time as it must retain compassionate respect for aspects of human nature that aren't 'reasonable.'" (222)

"Certainty is not biologically possible. We must learn (and teach our children) to tolerate the unpleasantness of uncertainty." (223)

(Quoting David Gross): "The most important product of knowledge is ignorance." (224)