Certitude feeds imperatives. Those who are sure of what they believe seem determined to convince others to join their certitude. They can become presumptive and imperative to the max. Of course, there could be millions who are certain of things who do not feel compelled to convince others to join them; they keep their certitude to themselves. We never hear from them. So, why are the certain so imperative? Does it naturally follow that certainty implies persuasion? Or could there be subtle doubts lurking beneath the surface that are quelled when newbies convert to certitude? “The bigger the mouth the bigger the insecurity.”

This book is about the neurology of certainty. Being certain doesn’t necessarily mean valid, true, and accurate. I can be certain there are aliens among us but that doesn’t make it true. Why do things feel true to some? What does “feeling true” even mean? Where does certitude come from?

- Brain chemistry run amok?
- Weigh evidence, make a decision?
- Do we create our unshakable beliefs?
- Involuntary neurological processes in the brain? (Yes, again).
- “Though I have tried to make this book as accurate as possible, there will be many areas of controversy and frank disagreement.” (page xi).
- “I have set out to provide a scientific basis for challenging our belief in certainty,” page xii.

Why do certainty and claims to certainty give us pause?

- It often precludes considering alternative opinions.
- It comes across as arrogant and preachy.
- It fuels imperativeness.

Chapter One: The Feeling of Knowing

- “I know that guy’s name, I just can’t remember it.”
- “I know there’s an answer to this math problem,” and when it comes, “Aha!”
- “2+2=4” feels true, right, and correct.
- “I do not know how magnets, computers, or electricity works.”
Chapter Two: How Do We Know What We Know?

Examples of delusional misidentification syndromes:

- Stroke victims with “blindsight” see light but don’t know they see it.
- Memories morph over time yet many people cling to their morphed versions as real/true over the documented impressions made immediately after the event!
- Cognitive dissonance: “Instead of acknowledging an error in judgment and abandoning the opinion, we tend to develop a new attitude or belief that will justify retaining it,” P. 12).
- Cotard’s syndrome…the belief that certain parts of us are gone, or dead, or that we ourselves are dead (when in fact there are no missing parts or death). “The inability of a patient to shake a belief that he logically knows is wrong” (page 16).
- When our bodies “just sense” something has been changed. We don’t know it cognitively but sensationaly, physically.

Why is it so difficult to relinquish unreasonable opinions, even in light of contradictory evidence (see page 13)?

- There may be an adaptive benefit to clinging to certainty despite contrary evidence.
- Stubborn, pride, vested interests?

Chapter Three: Conviction Isn’t a Choice

“Let’s begin with the Varieties of religious Experience by William James—which, for me, remains one of the most elegant testimonials to the power of clinical observations to explore the mind.” P. 22-23.

- States of feeling resemble states of knowing. P. 23
- Knowledge is felt, not thought.
- “Certainty without deliberation or even conscious awareness of having had a thought.” P. 23.

Sources of religious epiphanies

- hysteria, schizoid
- divine revelation
- limbic system in the brain, seizures in the temporal lobe (neurotheology)

I’m reminded of an excerpt from a long forgotten source, “During my drug induced state I discovered the secret of the universe and wrote it down. When I awoke the next morning here’s what I read, ‘It’s hot in here.’”
By jolting the limbic system with electricity, researchers triggered mystical experiences, clarity of thought, and familiar-strange-bizarre feelings in patients.

Chapter Four: Classification of Mental States

Are the following thoughts, emotions, feelings, sensations, or moods?

- Tip of the tongue knowledge
- This feels utterly strange
- This feels totally real
- This feels otherworldly
- Primary emotions: happiness, sadness, fear, anger, surprise, disgust
- Secondary emotions: embarrassment, jealousy, guilt, pride
- Gratitude?
- Pride
- Feeling of knowing
- Déjà vu
- Sense of conviction
- Pathological certainty—thoughts that “feel right” (like John Nash becoming the emperor of Antarctica)
- Pathological uncertainty—objective evidence does not trigger a feeling of knowing (OCD folk)
- Doubt….guilt….regret….indignation….humility….irony....

Chapter Five: Neural Networks

“The feeling of knowing is a primary mental state and not dependent upon any underlying state of knowledge” (page 41).

“Certainty is contrary to basic biological principles.” Page 41.

Chapter Six: Modularity and Emergence

“Individual ‘mindless’ neurons join together to mysteriously create the mind.” P. 55.

“The stripped down model of brain hierarchy is that the individual neurons, which contain no imagery and operate outside of awareness, flow into progressively higher-order networks until a picture emerges….the conversion of lower-level information into the final image is accomplished via a series of mathematical calculations within the hidden layer of the neural networks. The precise mechanisms remain a profound mystery and the key to understanding how consciousness arises out of ‘mindless’ neurons,” P. 58.

“A classical example of emergence is how termites with their tiny brains are able to construct huge mounds up to twenty-five feet in height. No termite has a clue how or
why to build a mound; its brain isn’t large enough to carry the information. There are no termite engineers, architects, or critics; all termites are low-level laborers operating without blueprints, or even a mind’s eye notion of a termite mound. Yet the mound is built. Somehow the interaction of lower-level capabilities produces a higher-level activity.” P. 58.

“The same process applies to the human brain. Each neuron is like a termite. It cannot contain a complete memory or hold an intelligent discussion. There are no super neurons, nor is there a master plan contained within each neuron. Each neuron’s DNA provides general instruction for how a cell operates and relates with other cells; it does not provide instructions for logic, reason, or poetry. And yet, out of this mass of cells come Shakespeare and Newton.” P. 59.

Chapter Seven: When Does a Thought Begin?

Some senses of knowing occur after deliberate thought. Others are the result of intuition, perception, ‘temporal reordering,’ or some mysterious synchronism mechanism in our physiology. “Brain time has its own agenda” (page 80).

Chapter Eight: Perceptual Thoughts: A Further Clarification

Our memory adds to our sense of knowing sometimes falsely! Episodic memories can be ... “revised by subsequent experience,” (page 82). In like fashion, episodic thoughts can be “continuously and subliminally undergoing revisions, augmentations, and diminutions... [they] require an element of perception and are subject to a variety of perceptual illusions” (page 85).

Chapter Nine: The Pleasure of Your Thoughts

Brain reward system: “I play poker to feel lucky.”

“At the moment the crucial card is being dealt, you show me a gambler, no matter how icy his cerebrospinal fluid, and I will show you primitive man howling at the moon, waiting for the miracle that will deliver him from ordinariness” (page 87).

What a lyrical sentence!

“I confess to a real discomfort with explaining all human actions exclusively in evolutionary terms. Just as so much of Freud’s phallic presumptions have turned out poorly, 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,” (pages 92-93). Hilarious!
“I often wonder if an insistence upon being right might have physiological similarities to other addictions, including possible genetic predispositions? 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 on going questions, and want definitive one-stop-shopping resolutions to complex social problems and unambiguous endings to movies and novels. In being constantly on the lookout for the last word, they often appear as compelled and driven as the worst of addicts. And perhaps they are. Might the know-it-all personality trait be seen as an addiction to the pleasure of the feeling of knowing?” page 98.

Brilliant question!

People engage in more risky or exciting behavior in order to stimulate a less responsive dopamine-based reward system. (Paraphrase of quote on page 98). I wonder if drama addicts, conflict addicts, and provocateurs are similarly addicted? I answer with a resounding yes. But how then does one deliver the addict?

Chapter Ten: Genes and Thought

“There is no evidence that parenting plays a substantial role in religious attitudes.” P. 104.

“What if the degree of our interest or disinterest in religion isn’t primarily the result of parental and cultural exposure or metaphysical ruminations, but rather arises out of the sequence of amino acids comprising our DNA?” p. 105.

“If DNA can influence how we think about religion, could it also be playing a role in my own idiosyncratic worldview?” Page 105.

Chapter Eleven: Sensational Thoughts

Thoughts cannot exist without sensations, outside world and internal mental states. P. 125.

“We need a sensory appreciation of the world in order to give our thoughts palpable meaning.” P. 126.

“Reason is not a transcendent feature of the universe or of disembodied mind. Instead, it is shaped crucially by the peculiarities of our human bodies, by the remarkable details of the neural structure of our brains, and by the specifics of our everyday functioning in the world.” P. 126.

“Though subject to all the caveats inherent in correlating fMRI with behavior, the study has convinced researches that the terporo-parietal junction plays a major and specific role in how we sense where the self is located in relationship to the body.” Page 128.
Up to 95% of our thoughts are unconscious.

“Cognitive thought is the tip of an enormous iceberg. It is the rule of thumb among cognitive scientists that unconscious thought is 95 percent of all thought—and that may be a serious underestimate. Moreover, the 95 percent below the surface of conscious awareness shapes and structures all conscious thought. If the cognitive unconscious were not there doing this shaping, there could be no conscience.” Page 237 (footnote 4).

Our unconscious can be thinking about stuff we’re not aware of....processing, cogitating, ruminating, and figuring.

“It would appear that evolution has chosen the uncluttered mind at the expense of stripping the feeling of intention from unconscious thoughts.” P. 134.

“As we have neither the investigative tools nor sufficient circumstantial evidence to know how thoughts emerge from neurons—either consciously or unconsciously—we are free to speculate as to any possible mechanism.” P. 136.


“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.” P. 139.