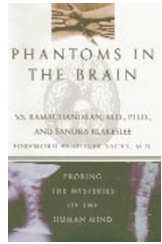


# Overheated imaginations



## *Phantoms in the Brain: Probing the Mysteries of the Human Mind*

by V.S. Ramachandran and Sandra Blakeslee

William Morrow and Company, Inc., 1998. \$27.00 hardcover, pp 328

ISBN 0-688-15247-3

Reviewed by John C. Marshall

Lay readers, who are the primary audience for *Phantoms in the Brain*, could be forgiven for thinking that they had wandered into an unusually gripping episode of *The X-Files*. Within the space of a mere three hundred pages, Mulder and Scully (alias Ramachandran and the science writer Sandra Blakeslee) amputate phantom limbs, watch zombies mail letters, talk to a woman who sees nonexistent cartoons and a man who only shaves the right side of his face. And that's just for starters. Later, a woman claims that she could lift a heavy mahogany table with her paralyzed arm, a man is convinced that his parents have been replaced by imposters, and God is discovered in the left temporal lobe. In short, this is vintage Ramachandran.

Many of the seemingly bizarre behaviors and beliefs that can result from brain damage are vividly described and provocatively interpreted. I know of no other volume that covers anything like the same range of odd but (partially) explicable phenomena in the border zones between neurology and psychiatry. From blindsight to phantom pregnancy by way of autistic savants and wart removal by hypnosis, one never quite knows where the magical mystery tour will stop next. But the reader can rest assured that some attempt (of varying plausibility) will be made to explain even the very strangest of signs and symptoms. More impressive yet is Ramachandran's willingness to offer hostages to fortune by way of empirical prediction. Consider, for example, the nihilistic delusions of Cotard's syndrome where, in extreme cases, patients claim to be dead. Ramachandran suggests that such patients will have a flat galvanic skin response to all stimuli that would normally be emotionally evocative. In consequence, they are "stranded on an island of

emotional desolation, as close as anyone can come to experiencing death". This account would be consistent with the severe depression that is almost invariably found in Cotard's syndrome.

Ramachandran's position here is argued by analogy with a well known explanation of Capgras syndrome. These patients believe that their erstwhile family and friends are really doubles who have been substituted for the real thing. Don Siegel's classic movie *Invasion of the Body Snatchers* provides the closest approximation to how the delusion might feel. It is known that Capgras patients fail to show a galvanic skin response to familiar faces. This loss of emotional reaction to previously loved ones leads the patient, it has been claimed, to interpret the lack of an appropriate 'warm glow' as evidence that an imposter is pretending to be the vanished original. This very neat theory, first proposed by Andrew Young and Hadyn Ellis, is consistent with neurological findings, in some Capgras patients, of disconnection between cortical areas specialized for facial recognition and limbic regions implicated in the emotions. Nonetheless, the full story of the Cotard and Capgras delusions must include other factors. Not every depressed patient with a self-accusatory personality and odd perceptual experiences would go so far as to deny his own existence. Likewise, not all people who no longer get an emotional kick from their spouse conclude that he or she has been replaced by a double. Adultery or divorce (or both) is surely the more common response.

Be that as it may, emotional blunting is not characteristic of this book's style. *Phantoms in the Brain* is a racy, jocular opus in which some of the jokes are in refreshingly dubious taste. Ramachandran claims that he will take us "at times to the very limits of scientific inquiry". He keeps his promise (and sometimes more). The flow of the text occasionally oversteps the bounds of what is known, although copious endnotes redress the balance a little; qualifications, exceptions and preliminary or controversial

results are usually noted therein. One can see why this approach has been taken in a work intended for a general readership, but I wish I felt more confident that the endnotes will indeed be read. With an experienced science journalist on board, it should have been possible to find a better solution.

The real joy of the book arises from Ramachandran's determination to explain the higher reaches of the human mind within the context of neuroscience but without the pernicious reductionism that disfigures so much current work. Ramachandran seems to work on a Mobius-strip; it is impossible to decide which side is mind and which brain. The only failure of imagination occurs in Oliver Sacks' foreword. He quotes from the passage in *Hard Times* where Mrs. Gradgrind is asked if she is in pain. Sacks claims that her reply, "There is a pain somewhere in the room, but I cannot be sure that I have got it", was either "her confusion, or Dickens's joke, for one cannot have a pain except in oneself". Has Sacks forgotten that there are well-documented reports of exosomaesthesia where stimulation at a point on the body is referred into extrapersonal space?

My main criticism of the book, however, is that Ramachandran's remarks are sometimes overheated and under-referenced. The most egregious examples occur in the chapter entitled *God and the Limbic System*. It is hardly a novel observation that mystical experience must be mediated by the brain, the association of religiosity with (temporal lobe) epilepsy was a commonplace of nineteenth century neuropsychiatry. For example, the third edition of Clouston's *Clinical Lectures on Mental Diseases* (1892) notes that "A certain religious emotionalism of a strong and usually perverted kind is often present in epileptics". Ramachandran wonders whether stimulation of the left temporal lobe of a well known atheist (Francis Crick) might induce him to experience God. That Ramachandran is writing with tongue in cheek causes him to lose sight here of the distinction between a cognitive belief (any belief) and an emotional state. He discusses how a 'piety index' could be constructed from the galvanic skin response (GSR) to words and images of a religious nature. The "absolute zero on the scale", he suggests, "could be set by measuring Francis Crick's galvanic skin response". But the joke is ruined by Ramachandran's misinterpretation of the GSR; a highly 'positive' response can indicate a highly 'negative' emotion. Absolute zero would be set by an agnostic who just didn't care one way or the other.

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