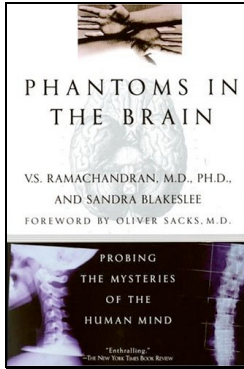


## Spectacular or Speculative

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By V. S. Ramachandran  
Harper Collins Publishers (1999)

Dr. Vilayanur S. Ramachandran, one of today's leading neuroscientists, takes a look into the brain through intriguing phenomena in his book *Phantoms in the Brain*. Each of the patients with unusual ailments poses a new mystery, and he takes the reader along on his journey into the brain. Ramachandran introduces each piece of the puzzle of how the brain works with a peculiar case study, an exception to the rule. He attempts to incorporate both neurobiology with psychology to give readers a glimpse into the complex processes involved in every second of our lives. His writing is intriguing while explaining each particular ailment and biological process. However, as he attempts to make the connection from biology to psychology, the strengths of his arguments falter.

Imagine you were in a serious accident, you survive but without your arm. Now imagine that you knew it was gone but you still felt the arm, and even pain in the missing limb which is referred to as a phantom limb in this case. Ramachandran discusses cases with similar symptoms in his initial attempt to explain sensory processes of the brain. As he weaves the reader along his thought process, one comes to discover that if the brain can feel something that is not there, then the sensory input must be coming from elsewhere in the body. Using new technologies that track brain activity in his patients, Ramachandran discovers that the area of the brain responsible for sensory information from the face took over the areas responsible for the phantom limbs. Therefore, every time the patient moved the muscles in their face, the brain not only received sensory information for the face but for the phantom limb as well. Somehow in these patients, the visual pathway failed to signal to the brain that the appendage was not there. In a colorful and understandable way, Ramachandran uses the cases of the phantom limbs to explain very basic sensory neuroscience to a non-scientific audience.

Another of Dr. Ramachandran's patients suffered

Along with this case, many of his other patients, who suffer from a loss of vision, could not tell him what they saw. However, if asked to reach out and grab an object their arm extended the exact distance of the object and their hand opened exactly the required amount for the task. Through these unusual cases of "blind sight," Ramachandran builds the theory that there is a "zombie" within one's mind. The idea of the zombie directing tasks that require a lesser amount of awareness, demands that the design of sight as a single process be re-examined. Ramachandran's examination of the visual pathway provided new insight into vision; there are two different visual pathways—the 'how' and the 'what' pathways. The what pathway allows one to recognize an object that lies on the visual field, but the how pathway is comparable to the zombie that controls actions after recognition. With colorful imagery and comprehensive english, Ramachandran explains the new theory from every angle using different phenomena, blind sight in this case, to explain the possible psychology behind the brain's complex processes.

In his attempt to incorporate psychology, Ramachandran first brings the unconscious mind into his field by presenting the notion that there is a pathway that works on a level one is unaware of, such as the sight zombie. The notion of the unconscious is found again in Ramachandran's theory when he investigates Mrs. Dodds. She was losing patience with everyone around her for insisting that she was paralyzed when she had just used both her hands to wash her face and therefore could not be paralyzed. She had just suffered a stroke to the right side of her brain and her left arm was indeed paralyzed. When questioned, however, she would say she could use both her arms equally as well and that she could even clap. Using this extreme case of denial, Ramachandran explains some of the psychology behind the brain. Although he does give the credit to the first proponent of these ideas, he relies too heavily on Sigmund Freud's idea of the unconscious mind. This dependence on Freud is disappointing to those who are educated in the field of psychology. Freud, as many of us know, was a leader in the psychology field, but as time has moved on, so have psychological ideas. Although he sparked interesting research, many of his ideas are now considered baseless and speculative to say the least. Psychology is considered a science because of its devotion to the scientific method. Freud however, supported his theories not by experimental evidence, but by single case studies. Ramachandran also falls into the trap of explaining a theory in terms of case studies. He gathers that the evidence the denial patients offer support Freud's theory of defense mechanisms. However, because the theory of defense mechanisms itself is not testable, this idea works to discredit Ramachandran's attempt at psychology. Without fail, until this point in the book, Ramachandran supported his theories from every aspect with clear testable evidence. When it comes to honoring Freud, however, this strength is found lacking. He attempts to connect his case studies with Freud's theory but the idea that one represses their feelings, for example, cannot possibly be proven by the scientific method.

Overall the book *Phantoms in the Brain* was a gripping look into the complex processes of the human brain. Ramachandran's use of intriguing phenomena to

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explain the biological process of many aspects of vision make this book a definite captivating read for the non-scientific audience. However, excess confidence in Sigmund Freud's psychoanalytical views reduces the pleasure of this read.

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