

The Tell-Tale Brain: A Neuroscientist's Quest for What Makes Us Human

By **V. S. Ramachandran**

W. W. Norton & Company, Inc., New York, 2011,
xxvi + 358 pp., ISBN 978-0-39307782-7
[US\$26.95]

Reviewed by **Ferenc Kocsor**

Department of Evolutionary Psychology,
University of Pécs, H-7624 Pécs, Ifjúság útja
6/b, Hungary [E-mail: kocsorferenc@gmail.com]

In spite of the fact that V. S. Ramachandran is a world-famous neurologist, I have to admit that – save some vague facts, e.g. on mirror neurons, and phantom limbs – his work was as good as unknown to me. His new book *The Tell-Tale Brain: A Neuroscientist's Quest for What Makes Us Human* (2011) proved to be a perfect start for those unfamiliar with his former writings.

The starting assumption of the book, which repeatedly comes into focus throughout the book, is that humans, though part of a continuous evolutionary process, are unique in respect to their brain capacities and the way they process information. This uniqueness is explained by some evolutionary novel rearrangements in brain structure, which gave rise to human specificities. The book consists of 9 chapters, all of which focus on some special brain ability thought as being unique to humans, such as abstract thinking, language, self-awareness and culture. Two chapters are dedicated to the perceptual and ethological bases of aesthetic preferences, from which human art developed. Although the importance of these features is unquestionable, Ramachandran's reasoning for *H. sapiens'* distinctiveness at times seems a bit overemphasized. For instance, when he writes about the unsupported (yet also not falsified) claim about the lack of episodic memory in other animals (p. 291). In a provocative, intentionally far-fetched paragraph he even calls our species *H.*

plasticus, pointing out our enormous capacity to improve innate abilities, and moreover, to interfere with evolutionary processes.

The introduction hints at the strange neurological phenomena discussed later in the book, and aims to explain the basic functions of the most important brain areas. Surprisingly, it is the most incomprehensible part of the book, and it remains to be hoped that this quite short section will not discourage laymen from further reading.

In the very first chapter the reader is introduced to the ingenious experiments that led Ramachandran to insights on how to cure chronic pain in phantom limbs using low-tech equipment. With a set of suitably arranged, ordinary mirrors he achieved not only dramatic improvements regarding patients' quality of life, but also contributed to a better understanding of the functioning of some neural circuits. His train of thought is described in an exciting and logical manner, so that one can only ask oneself at the chapter's end why it took researchers so long to get to these simple conclusions. This verve of storytelling carries on throughout the book; Ramachandran shows us with surprising ease the leaps from an intuition to replicable experiments, and to verifiable theories.

The author's talent of storytelling unfortunately has also its downside; generations of scholars took pleasure in depicting possible evolutionary scenarios with vivid colors, but seldom to evolutionary psychology's benefit. Just-so stories about the incidents of, for instance, oral sex during primate evolution are fun to read (p. 42), but the smile fades when bumping into out of date explanations for the giraffe's neck, or claims like „survival is the only thing evolution cares about” (p. 211). Nevertheless, Ramachandran's speculations about the ultimate causes of brain evolution are just as intriguing as his account of proximate mechanisms, even though he sometimes seems to neglect (or overlook) the achievements of modern theoretical evolutionary biology. Needless to say, both explanatory levels are necessary if we want to construct a comprehensive picture of the human brain. And Ramachandran's efforts to near these approaches

are much more powerful than what most neuroscientists had been trying to do a few decades earlier.

Chapters two to six focus on the most perplexing cases Ramachandran encountered as a neurologist, and the inferences which can be drawn from them. Sometimes otherwise “normal” and healthy people report tasting salty flavor when touching iron, or perceiving the color red when seeing the number 5. A melody can induce the visualization of the whole color spectrum in some people. How can these strange synesthetic feelings be explained if not with childhood experiences, conditioning, or artistic talent? As Ramachandran states, the human brain in fact used to have a well-developed device for cross-sensory synthesis, namely the angular gyrus. He argues that the split of the inferior parietal lobule into the angular gyrus and the supramarginal gyrus, due to a gene-duplication at a certain point in the human lineage, had been a crucial step in enabling our ancestors to use their primate minds in a fundamentally novel way. Symbolical thinking could be considered as one of the main achievements of this change. Substituting the visual representation of an object with an auditory one, and then uttering this specific sound, is the very basis of language, our most unique feature.

According to the author, another contributor to human uniqueness is our well-developed mirror neuron system. In the last chapter, self-awareness is ascribed to these cells. As mirror neurons match conspecifics’ movements with the observer’s, they allow not only for an insight of others’ intentions, but also reflect one’s own mental state – thus, the individual is able to see itself from another person’s viewpoint. Just as if we put two mirrors on opposite walls of a room and stood in the middle: our own image will be multiplied, while other objects in the room will lose some of their significance. This recursive use of mirror neurons could also be responsible for the overwhelming feeling philosophers are still trying to grasp in vain: self-consciousness.

This book is highly recommendable to both scientists and laymen for the inspiring tone in which Ramachandran introduces his reader to

scientific methods and a scientific way of thinking. He takes us on an exciting journey full of discoveries about the brain, while showing us the very essence (the *rasa*) of science. Though sometimes speculative, he is also careful; he does not intend us to believe he knows how we actually think – a fourth order intentionality, unimaginable without mirror neurons. But reading his book evokes the feeling that we are finally tapping into a better understanding of the human mind.

Ferenc Kocsor, MSc, is a biologist working at the University of Pécs, Hungary. He obtained his degree in 2007 in the Faculty of Natural Sciences. Between 2008-2011 he was a doctoral student in the Institute of Behavior Sciences, Medical School. Now he is a research assistant in the Institute of Psychology. His main field of interest is face perception, particularly its evolutionary and neuropsychological background.