

**Reflections on the Dawn of Consciousness: Julian Jaynes's Bicameral Mind Theory Revisited** edited by M. Kuijsten. Henderson, NV: Julian Jaynes Society, 2006. 446 pp. \$35.00 (hardcover). ISBN 0-9790-7440-1.

Some thirty years ago Julian Jaynes (1976) published a remarkable theory of the nature and origin of consciousness. The book under review is a Festschrift in Jayne's honor written by a group of his enthusiastic followers. Their general theme is that Jayne's theory has stood up well over the years (after some initial skepticism) and is now supported by more evidence to the extent of promoting some thawing of this initial negative response amongst the neuroscientific and philosophical communities.

The theory consists of several interwoven parts. His main theme (similar to Dennett's and Wittgenstein's) is that consciousness is a social construct wholly dependent upon language. It involves seeing one's self as a subject in linear time with a past and a future. Consciousness consists essentially of "... thoughts, images, memories, interior dialogues, regrets, wishes, resolves all interweaving with the constantly changing pageant of external sensations of which I am selectively aware" (Jaynes, 1976, p. 23) and again as a "... self-scanning, inner life, self-consciousness" (Kuijsten, 2006, p. 269).

This statement immediately attracts the objection (voiced by Ned Block, 1981) that Jaynes has oversimplified consciousness by paying scant attention to the fact that there are two different major theories of consciousness. The first is the Cartesian version (T1) that Jaynes presents in which consciousness consists of images and thoughts (that depend on language) but not of sensations, that are "exterior" and so are part of the external world (how "physical objects appear to us"); as the theory of perception known as Direct Realism asserts: "... consciousness is not involved in hosts of perceptual phenomena" (Kuijsten, 2006, p. 309). The second theory (T2) states that, in addition to thoughts and images, all sensations also form an integral part of phenomenal consciousness, as parts of our own organism, constructed by the representational mechanisms of perception, which is held by the opposing scientific theory of Representational Realism (Smythies & Ramachandran, 1998). The area of science most pertinent to this matter is psychophysics (aka introspectionist psychology) as practiced by Ramachandran, Gregory, myself, and many others. This discipline examines the contents of phenomenal consciousness under a wide variety of conditions.

T1 should not be confused with Cartesian Dualism. T1 states that consciousness consists of images and thoughts, and leaves open the relation of these to brain events. Cartesian Dualism goes further and says that images and thoughts are spiritual substances exterior to the brain.

It may also be relevant to mention that patients with aphasia, who have lost their language functions, do not lose consciousness. Furthermore, patients with Kliever-Bucy syndrome, whose new memory spans only five minutes, do not lose consciousness either. In contrast, consciousness depends critically on the

integrity of two small cholinergic nuclei in the brain stem (see Smythies, 1994a, 1997, for details). Thus, supporters of T2 object, in this reviewer's opinion rightly, that Jaynes has left out a large hunk of what consciousness actually is (see Smythies, 1994b, for details).

Jaynes's linguistic theory of consciousness then led him to make the claim that only humans of all animals are conscious and then only since they had developed an advanced language. Before that, he says, humans had a different mentality, "... an unconscious bicameral mind, in which decisions and remembering were not conscious but heard from another part of the brain as auditory hallucinations called god" (Jaynes, 49). Thirty years ago it was widely accepted that language was almost exclusively a function of the dominant (left) cerebral hemisphere, especially Broca's and Wernicke's areas. This gave Jaynes the idea that the areas in the right hemisphere equivalent anatomically to Broca's and Wernicke's areas must be doing something—but what? By a startling leap of the imagination, it occurred to him that this "something" was to create neuronal activity that, when transmitted across the corpus callosum, generated activity in the left temporal auditory cortex that the subject experienced as an auditory hallucination of a god speaking to him, giving him orders, and directing his behavior when he was faced with life-and-death decisions. The birth of consciousness as we know it, Jaynes suggested, occurred when the voices of the gods, due to a number of not very well-defined external circumstances, became faint and no longer compelling. The right temporal lobe stopped generating hallucinations and presumably did something else. This, he felt, explained the remarkable change in the *Iliad* between the early part about the Trojan war and the later part about Odysseus. In the Trojan war everyone, especially Achilles, behaves like a zombie. They attribute many of their important actions not to their own agency, but to a god working through them. In contrast, Odysseus takes responsibility for his own actions. So Jaynes saw Achilles as a late bicameral man and Odysseus as an early conscious man.

Unfortunately, today, this picturesque theory is no longer tenable. It has been shown that the right hemisphere has as extensive a role in language as does the left hemisphere, but of a different kind. The distinguished neuropsychiatrist Michael Trimble (2007) in a recent book has reviewed the recent advances in our understanding of the role of the right hemisphere in language functions. As he says, "The left hemisphere can no longer be considered as dominant for language skills in the way envisaged by our neurological forefathers; the right hemisphere is known to play a significant role in our language and emotional life" (p. 72). He adds, "... the right hemisphere has a rich lexicon and some control over syntax" (for details, see pp. 80–89). This activity covers language areas such as emotional tone, poetry, prosody, humor, metaphor, as well as music. The cerebral basis of language consists of a complex network of parallel processors extending far beyond Broca's and Wernicke's areas and in which both hemispheres are robustly involved.

Jaynes also brings schizophrenia into his account by claiming that people with

schizophrenia are partly bicameral people by virtue of the fact that their auditory hallucinations have the same source as the hallucinations of fully bicameral people. In support Kuijsten (Kuijsten, 2006, p. 126) claims that no significant structural evidence of brain abnormality has been found in schizophrenia. This, also, is no longer the case. There is now incontrovertible evidence that a large percentage of people with type 2 schizophrenia (in which auditory hallucinations are prominent) have a 50 percent degree of atrophy of their cortical neuropil. The neuropil consists of the fine neuronal process (axons and dendrites) that enable neurons to communicate with each other. Loss of this connectivity is directly responsible for most of their symptoms, including auditory hallucinations. Moreover, considerable progress has been made in unraveling the genetic and neurochemical causes of this atrophy (see Smythies, 2004, for details). None of this has anything to do with bicameral brains.

The atheistic philosopher David Stone contributed the most interesting essay in this volume, written with biting wit. He admits that most of what Jaynes wrote is "incredible" but says that at least Jayne's treatment of religion is a treasure (Kuijsten, 2006, pp. 277–289). Jaynes tackles the real problem, which is, according to Stone, "Why should almost all human history be a tale, (in Jayne's words), of 'the slow withdrawing tide of divine voices and presences', and of ever-renewed attempts, through prophets or poetry or peyote or whatever, to establish contact with 'a lost ocean of authority'" (Jaynes, 1976, p. 320). Stone admires Jaynes for the facts, unique in a theorist of religion, that Jaynes sees the real problem: he is refreshingly free from Enlightenment superciliousness [how unlike many of our current crop of militant atheists! see Michael Shermer (2007)], and he avoids all attempts to rationalize religion, recognizing as he does its essentially strange noetic nature. Stone is also fascinated in the way that Jaynes brings the past, so saturated with religion, to life. Finally, he says, Jaynes presents an immediate sensory origin for religious beliefs. It is certainly true that auditory hallucinations have played a major part in the historical development of many religions. However, many of these clearly arise from conditions such as schizophrenia and, more commonly, temporal lobe epilepsy and bipolar disorder; none of that is news, and there is no need to invoke bicameral minds.

Thus, to conclude, Jaynes's theory of consciousness fails to give an adequate account of phenomenal consciousness and over-emphasizes the role of language. His theory of the cerebral basis of language is obsolete. His account of schizophrenia has been bypassed by recent discoveries in the field of the neuro-anatomical abnormalities found in that condition. The optimism expressed by most of the contributors to this book is doomed to disappointment. However, the book is well worth reading for Stone's chapter, and if the rest of the book is read in the context of the history of enchanting but failed ideas.

For all the poetry of expression that illuminates Jaynes's writings and for all his lack of superciliousness and deep respect for the poignant tragedy of the human condition, his theory is essentially a reductionist theory of mind and

consciousness, and therefore does nothing to abate the miasma of nihilism that is so prominent and threatening a feature of our civilization today (Smythies, 2007). However, this should be seen in context. Most of the other theories of mind and consciousness currently discussed by philosophers and scientists, e.g., the Identity Theory, Functionalism, Eliminative Materialism, and Epiphenomenalism, are equally reductionistic (Smythies & Koestler, 1969). Furthermore, as in the case of Jaynes's theory, their defects, too, far outweigh their virtues (Smythies, 1994b, 1994c, 2003).

JOHN SMYTHIES  
*Center for Brain and Cognition*  
*University of California at San Diego*  
*and Institute of Neurology*  
*University of London*  
*Smythies@psy.ucsd.edu*

### References

- Block, N. (1981). Review of Julian Jaynes's *The Origin of Consciousness in the Breakdown of the Bicameral Mind*. *Cognition and Brain Theory*, 4, 81–83.
- Jaynes, J. (1976). *The Origin of Consciousness in the Breakdown of the Rirameral Mind*. Houghton Mifflin.
- Kuijsten, M. (Ed.) (2006). *Reflections on the Dawn of Consciousness. Julian Jaynes's Bicameral Mind Theory Revisited*. Henderson, NV: Julian James Society.
- Shermer, M. (2007). Skeptic. *Scientific American*, 297, 44–46.
- Smythies, J. (1997). The functional neuroanatomy of awareness. *Consciousness & Cognition*, 6, 455–481.
- Smythies, J. (2003). Space, time and consciousness. *Journal of Consciousness Studies*, 10, 47–56.
- Smythies, J. (Ed.). (2004). Schizophrenia. A disorder of synaptic plasticity. *The International Review of Neurobiology*, 59, pages.
- Smythies, J. (2007). *Planet in Peril*. Pulborough, Ellis.
- Smythies, J., & Koestler, A. (Eds.). (1969). *Beyond Reductionism*. Macmillan.
- Smythies, J. R. (1994a). On the nature of consciousness and the unconscious from the point of view of neuroscience and neurophilosophy. In Critchley, E. M. R. (Ed.), *The Neurological Boundaries of Reality*. Farrand Books.
- Smythies, J. R. (1994b). *The Walls of Plato's Cave*. Aldershot, UK: Avebury.
- Smythies, J. R. (1994c). Requiem for the Identity Theory. *Inquiry*, 37, 311.
- Smythies, J. R., & Ramachandran, V. S. (1998). An empirical refutation of the Direct Realist theory of perception. *Inquiry*, 40, 437–438.
- Trimble, M. (2007) *The Soul in the Brain*. Johns Hopkins University Press.