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Close-Mindedness and Mysticism in Science: Commentary on John Smythies's Review of *Reflections on the Dawn of Consciousness*

Marcel Kuijsten
Julian Jaynes Society

In the decades after the publication of Julian Jaynes's book, *The Origin of Consciousness in the Breakdown of the Bicameral Mind* (1976/1990), occasional criticisms emerged. In some cases Jaynes responded, but in many cases he did not. There were probably many reasons for this. Jaynes was at times frustrated by the fact that many of his critics had not read or at least not fully understood his ideas. Perhaps engaging critics was not his personality style. While understandable, in some sense it is unfortunate, as criticisms, if unaddressed, can leave some with the impression that they are valid.

I will be taking a more assertive role in countering criticisms and misconceptions. The book *Reflections on the Dawn of Consciousness: Julian Jaynes's Bicameral Mind Theory Revisited* is an important first step toward that end. The book clarifies and further illuminates many aspects of Jaynes's theory, extends his ideas to new areas, and counters criticisms.

In late 2007, John Smythies, a Cambridge-educated neuroscientist now at the University of California San Diego's Center for Brain and Cognition, wrote a mostly negative review of *Reflections* (Smythies 2007). Smythies's criticisms are for the most part about Jaynes's theory in general, rather than the book specifically. I will address these criticisms in some detail here. While I do not expect to persuade Smythies, discussing his wide ranging comments may help clarify certain points of Jaynes's

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theory for others, as well as illustrate the persistence of both close-mindedness and "New Age" mysticism in science.

Errors and Omissions

In the opening paragraph of his review, Smythies misspells Jaynes "Jayne" two different times. Later, he refers to philosopher David Stove as "Stone" four different times and again misspells Jaynes "Jayne" while also spelling his name correctly in the same paragraph. In the references he misspells Jaynes "James." Perhaps this might seem overly picky, but when someone repeatedly misspells the name of the person whose theory they are criticizing, it conveys the impression that perhaps they are not as familiar with the subject matter as they should be. Based on the rest of Smythies's review, I think this is an accurate assessment.

Another error is Smythies's statement that Jaynes felt the transition from bicamerality to consciousness "explained the remarkable change in the *Iliad* between the early part about the Trojan war and the later part about Odysseus." As readers of Jaynes know, he does not contrast the early and later parts of the *Iliad*, but contrasts the use of mental language in the *Iliad* and the *Odyssey*. This reflects Smythies's poor understanding of key points of Jaynes's theory.

In the third paragraph, Smythies refers to an early criticism of Jaynes's theory by the philosopher Ned Block. However, Smythies fails to mention that an entire chapter of *Reflections* (the book he is supposedly reviewing), written by the philosopher Jan Sleutels, is devoted to meticulously and convincingly deconstructing Block's criticisms. Smythies's omission leaves the reader with the impression that Block's criticisms have never been addressed.

Smythies also does not discuss other topics in the book that do not support his view that Jaynes's theory is incorrect, such as recent brain imaging studies showing right temporal lobe activation during auditory hallucinations that — as noted by psychiatrists Robert Olin (1999) and Leo Sher (2000) — provide compelling new evidence for Jaynes's neurological model.

Consciousness, Language, and Memory

In his review, Smythies misunderstands or at least misrepresents Jaynes's definition of consciousness. Smythies does not define his use of the term but in his criticisms he seems to use it in a way that many neurologists do, i.e., that anyone in a waking state is "conscious." Readers of Jaynes will recall his much more precise definition. According to Jaynes, one can be awake and alert (reactive) but not conscious in the sense of possessing an introspectable mind-space. Smythies provides further evidence he defines consciousness very ambiguously as a waking state when he says that "consciousness depends critically on the integrity of two small cholinergic nuclei in the brain stem" (Smythies 2007).

Consciousness as defined by Jaynes is not an all or nothing proposition but a package of features, for example an analog 'T' narratizing in a mind-space and the ability to spatialize time. Smythies's review highlights the problem of distinct definitions of consciousness often being debated as if they were interchangeable. At conferences on consciousness, it is often the case that no two speakers seem to be talking about the same subject.

Smythies's main criticisms of Jaynes's theory are (1) his disagreement with Jaynes's argument that

consciousness is based on language (sometimes referred to as the language-dependency hypothesis) and (2) the fact that Jaynes's definition of consciousness leaves out a great deal of mental processes that advocates of a broader definition of consciousness would like to include. Smythies insists consciousness involves a host of more basic mental processes such as sense and perception (often referred to as the "phenomenal" view of consciousness). However, if one adopts this view, then all mammals and even insects would be conscious, rendering the term practically meaningless. Jaynes argues consciousness is unnecessary for most mental processes, pointing out even white blood cells can react to their environment (Jaynes 1976/1990, p. 449). Proponents of the phenomenal view of consciousness often ignore both the distinct features of consciousness (Jaynes pgs. 59–65) as well as different stages in consciousness such as those between pre-linguistic children and linguistic adults. (For a complete discussion of this debate, see Sleutels 2006.)

Smythies believes he offers a relevant criticism of the language-dependency hypothesis when he points out that "patients with aphasia, who have lost their language functions, do not lose consciousness." To be more precise, aphasia patients often lose only their ability to speak or write. Aphasia patients have already learned language and thus developed consciousness or an introspectable mind-space. No one that I am aware of argues that consciousness is based on speech alone. I make this point in *Reflections*:

Note that Jaynes is not associating consciousness with *speech*. For example, the quadriplegics described by John Hamilton ... could not speak, but were intelligent and had learned language. Physically impaired and brain-injured patients incapable of speech are of course conscious — although unable to speak, they have still learned language and thus developed an internal mind-space and the ability to introspect (p. 99).

As noted by Varley (1998), "few aphasics are [completely] 'language-less'." However, global aphasia, involving extensive damage to the language

areas of the brain, may indeed impact the ability to introspect by impairing inner speech (Goodglass *et al.* 1974; Varley 1998). Of related interest, researchers in Sweden found that children with cerebral palsy and severe speech impairment do experience a “considerable delay” in developing a theory of mind, or “the ability to impute mental states to oneself and others” (Falkman *et al.* 2005). Developing a theory of mind is an important aspect of consciousness — more research is needed in this area.

Smythies says nothing to counter the voluminous evidence — most recently, from research in child development — that language in fact has a dramatic influence on consciousness. For example, child psychologist Philip Zelazo has done extensive research on the developmental stages of consciousness in infants and children. He notes that there are widely held beliefs both that infants are essentially conscious in an “adult-like fashion” and that the dramatic mental differences between infants and toddlers and between preschoolers and adolescents reflect “differences in the contents of consciousness, but not in the nature of consciousness itself” (Zelazo *et al.* 2007). Zelazo — like Jaynes — disagrees, arguing that the nature of consciousness is in fact fundamentally different between these groups. With regard to the importance of language to consciousness, Zelazo writes that “language and conscious thought become increasingly intertwined in a complex, reciprocal relation...” Further, “the onset of naming signals a split between namer and named, and in an important sense, it brings into being the world as we know it (as opposed to the world as it is experienced)” (Zelazo 1999).

Many other theorists, such as the philosopher Daniel Dennett (1986), share this view. The philosopher Peter Carruthers argues that children before roughly the age of 4 are not conscious, clarifying that “it is highly unlikely that either animals or pre-linguistic children have a capacity to

think about their own acts of thinking...” He goes on to state that “... language is not just a very important, but nevertheless peripheral, channel of communication. It is, rather, constitutive of many of our central processes of thinking and reasoning, particularly those that are conscious” (Carruthers 1996). For more on this subject, see child psychologist Joseph Church’s *Language and the Discovery of Reality* (1961) and the writings of Russian psychologists A.R. Luria (1982) and Lev Vygotsky (1934).

Next, Smythies writes that “patients with Klüver-Bucy syndrome, whose new memory spans only five minutes, do not lose consciousness either.” It should be noted that patients with Klüver-Bucy syndrome often have no memory problems. More frequent symptoms include emotional changes, psychic blindness (loss of vision in organically normal eyes), hyperorality (inserting inappropriate objects in the mouth), abnormal sexual behavior, and changes in appetite (Yoneoka *et al.* 2004). However, there is no reason to assume that severe memory impair-

“...the patient ‘was like one of Jaynes’s bicameral men, who did not have feelings of personal identity.’”

ments (regardless of the cause) would not impact aspects of Jaynesian consciousness, such as the ability to see one’s life on a timeline, reflecting on the past and considering possible future outcomes. This has been studied by the Canadian neuroscientist and memory expert Endel Tulving, who reports that a head injury in a young man “left him without auto-noetic consciousness. This deficit is manifested in his amnesia for personal events and his impaired awareness of subjective time” (Tulving 1985). Tulving describes auto-noetic consciousness as “the kind of consciousness that mediates an individual’s awareness of his or her existence and identity in subjective time extending from the personal past through the present to the personal future.” The patient described by Tulving, although understanding the concept of chronological time, seemed to be living in an eternal present that inhibited his ability to make future plans.

Tulving notes that in this regard the patient “was like one of Jaynes’s bicameral men, who did not have feelings of personal identity.” Clearly, memory and consciousness are related. See also “Autonoetic Consciousness” by Hans Markowitsch (2003).

Language and the Right Hemisphere

Smythies then confuses Jaynes’s arguments about language and the right hemisphere. He writes, “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.” Here Smythies is under the mistaken impression that Jaynes felt that the right hemisphere had no role in language, and that evidence for the right hemisphere’s role in language contradicts Jaynes’s bicameral mind theory. Actually, Jaynes argues the opposite. To support his neurological model, Jaynes provides evidence that the right hemisphere can speak and understand language. This would be necessary if the right temporal lobe is the source of auditory verbal (i.e., language-based) hallucinations. Jaynes makes this point very clearly on pages 106–107 of *The Origin*. This is why for years I have listed articles relevant to right hemisphere language ability on the Julian Jaynes Society website. Smythies’s quotes by neurologist Michael Trimble regarding the language abilities of the right hemisphere, then, offer support for Jaynes’s neurological model — not evidence against it.

It is interesting that Smythies chose Michael Trimble to quote. In 2007, Trimble co-authored an article on Jaynes’s theory that offers conditional support for some of Jaynes’s ideas (Cavanna *et al.* 2007). Trimble and his colleagues state:

... Recent functional neuroimaging findings seem to confirm the hypothesis that the right middle temporal gyrus represents the source of auditory hallucinations in at least some schizophrenic patients. Arguably, this lateralization pattern could well be the reason why these inner voices lack the characteristic of being self-generated (Cavanna *et al.* 2007).

They go on to note that, “On the whole, neurophysiological data provide weak support for a bicameral structure of the preconscious mind. Indeed, significant paradigm shifts regarding the concept of consciousness took place in ancient times, as documented in literary texts.” (In Volume 3, Issue 1 of this newsletter I critique this article and show how the neurophysiological evidence actually provides strong support for Jaynes’s neurological model.)

Surely if Trimble’s work on right hemisphere language proficiency contradicted Jaynes’s neurological model, he would have mentioned it in an article on Jaynes’s theory. It is entirely possible that left hemisphere language areas play a dominant role in language use while the right hemisphere language areas play a secondary role as well as serve as the source of auditory hallucinations (Crow 1997a). The fact is Smythies appears to be confused about this point of Jaynes’s theory and cites evidence supporting it that he mistakenly believes contradicts it. (One would think Smythies would be aware of Trimble’s interest in Jaynes, as Trimble thanks Smythies in the acknowledgements to his book *The Soul in the Brain* — which briefly mentions Jaynes — and Trimble wrote a review for Smythies’s self-published play “The Trial of God,” that “examines the responsibility for an allegedly benevolent God for creating a world full of suffering and evil.”)

Schizophrenia as a Vestige of the Bicameral Mind

Smythies next point has to do with the issue of schizophrenia as a vestige of the bicameral mind. He writes:

In support Kuijsten ... 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.

First, this is a misrepresentation of what I actually say. My exact words are: “To date, while biological abnormalities have been noted, no conclusive evidence of brain abnormality has been discovered in all people with schizophrenia” (Kuijsten 2006, p. 126). The statement remains correct, as a “large percentage” is not “all.” Even if Smythies is correct in his claim that this atrophy accounts for auditory hallucinations (which I do not believe he is), what then accounts for auditory hallucinations in the others (i.e., those who are not part of the “large percentage”)?

Smythies’s bold claim that “loss of this [cortical] connectivity is directly responsible for most of their symptoms, including auditory hallucinations” is dubious at best (and a big departure from his early work with Humphry Osmond on a stress/adrenaline cause of hallucinations [Osmond and Smythies 1952]). As described by York University Professor of Clinical Psychology R. Walter Heinrichs in his excellent book *In Search of Madness*, over the past several decades a wide variety of neurochemical and neurophysiological causes for schizophrenia have been proposed — each greeted with initial enthusiasm, only later to be abandoned. Loss of brain tissue in those being treated for schizophrenic symptoms may have more to do with the side effects of anti-psychotic medications or environmental stressors than a biological cause of auditory hallucinations.

As recently noted by researchers in the departments of Psychiatry and Clinical Psychology at the University of Pittsburg: “Chronic exposure of non-human primates to antipsychotics was associated with reduced brain volume. Antipsychotic medication may confound post-mortem studies and longitudinal imaging studies of subjects with schizophrenia that depend upon volumetric measures” (Dorph-Petersen *et al.* 2005). Another study found that “Haloperidol was associated with significant reductions in gray matter volume” (Lieberman *et al.* 2005).

Clinical psychologist Richard Bentall (2009) notes that finding mental health patients who have not been treated medically has become nearly impossible.

In addition, he argues in some cases observed brain abnormalities may be caused by “tribulations of life” such as childhood sexual abuse, drug abuse, etc., which also can have an effect on the brain (Bentall 2009). Clinical psychologist John Read, psychiatrist Bruce Perry, and their colleagues also argue that brain abnormalities found in patients diagnosed with schizophrenia may be primarily due to environmental stress on the developing brain (Read *et al.* 2001).

Bentall (2009) observes that the question of brain abnormality as the cause of mental illness

is nowhere near as straightforward as has often been supposed, and that attempts to answer it have led more often to confusion than to clarity. It is not simply that the brain is difficult to study; following recent technological advances, demonstrating that the brains of patients are different from the brains of ordinary people has become almost ridiculously easy. Rather, the problem is working out what these differences mean (p. 152).

Similarly, neurophysiologist and Associate Professor of Psychiatry R. Grant Steen and his colleagues (2006) note that

It is still not known whether changes in grey matter volume ... [in schizophrenia] are associated with disease progression itself or with the many correlates of disease, including antipsychotic medication, alcoholism, drug misuse, malnutrition or even social deprivation.

As recently as 2008, researchers in Norway, while not finding significant effects of antipsychotic medication, reported “thinner prefrontal and temporal brain regions ... among patients with schizophrenia” (Nesvåg *et al.* 2008) — areas different than those indicated by Smythies. Researchers in Australia note that “extensive research has not determined the definitive cause” of schizophrenia (Beveridge *et al.* 2008). Finally, hundreds of recent studies continue to propose a wide variety of possible causes for schizophrenia (e.g., Beveridge *et al.* 2008; Chong *et al.* 2008; Hashimoto *et al.* 2008). So much

for Smythies's "incontrovertible evidence" for a single biological cause for schizophrenia symptoms.

The almost religious-like quest for a biological explanation for schizophrenia is based on the erroneous view of schizophrenia as a disease in the traditional sense of the term and the failure to view auditory hallucinations in cultural and historical contexts. We have to remind ourselves that "schizophrenia" is simply a label given to a set of symptoms (or, more precisely, "complaints") which frequently include auditory hallucinations. Further, auditory hallucinations are frequently experienced in a variety of non-clinical populations — which includes high altitude climbers, the elderly, widowers, combat personnel, the highly religious, drug users, and children — as I discuss on pages 101–106 of *Reflections*. Furthermore, in *Primitive Mentality* (1923), anthropologist Lucien Lévy-Bruhl notes that auditory and visual hallucinations occur in nearly all tribal cultures worldwide. To cite one of many examples, "...with these undesirable denizens of the spirit-world ... the Ten'a may be said to have an almost continual intercourse. They hold themselves liable to see or hear them at any time." As noted by Timothy Crow (1997b), "schizophrenia, it seems, is a characteristic of human populations."

Are we really to believe that "a 50 percent degree of atrophy of ... cortical neuropil" accounts for the experience of auditory hallucinations in cultures worldwide and throughout history? Or is the idea that auditory hallucinations played an important role in an earlier stage of human mental development a more plausible explanation? A growing number of psychiatrists and mental health practitioners — such as Marius Romme (2000) and Jim Van Os (2003) in the Netherlands, John Watkins (2008) in Australia, and Timothy Crow (1997b) in Britain — now argue for a continuum model of auditory hallucinations. They view auditory hallucinations in clinical populations not as distinct but rather at one end of a continuum of auditory hallucinations found throughout society. The continuum view of auditory hallucinations can trace its roots back to Jaynes, whose book popularized the idea that auditory

hallucinations may be more common throughout society than previously believed and inspired the first modern studies on hallucinations in normal (Posey and Losch 1983) and other populations (Hamilton 1985).

Despite Smythies's convictions to the contrary, not only is there no widespread consensus on the causes of schizophrenic symptoms, there is also considerable debate as to the validity of schizophrenia as a disease in the traditional sense of the term. In *Schizophrenia: A Scientific Delusion?* (2002), clinical psychologist Mary Boyle argues convincingly against the scientific validity of the mainstream psychiatric view of schizophrenia. In addition, Boyle describes Jaynes's theory in her discussion of the history of auditory hallucinations.

In *Doctoring the Mind: Is Our Current Treatment of Mental Illness Really Any Good?* (2009) clinical psychologist Richard Bentall (who has studied auditory hallucinations for more than two decades) also tackles "the myth that mental illnesses are brain diseases" as well as questions the degree to which medical treatments for patients diagnosed with schizophrenia and other mental illnesses have been effective. Taking issue with the science underlying psychiatric practice, Bentall contends that biological solutions that treat issues such as auditory hallucinations as brain disease to be treated with drugs are often ineffective or in some cases (because of harmful side effects) do more harm than good. Bentall also mentions Jaynes's theory.

In addition, several other researchers (who all quote or reference Jaynes) have published right hemisphere language explanations for auditory hallucinations similar to Jaynes's. These include:

- University of Cincinnati College of Medicine Professor of Psychiatry, Neurology and Neuroscience Henry Nasrallah — "The Unintegrated Right Cerebral Hemispheric Consciousness As Alien Intruder: A Possible Mechanism For Schneiderian Delusions in Schizophrenia" (1985);
- British psychiatrist and researcher Timothy Crow — "Is Schizophrenia the Price that *Homo*

sapiens Pays for Language?” (1997b; see also Crow 2000; Mitchell and Crow 2005); and

- Dutch psychiatrist and brain researcher Iris Sommer — “Language Lateralization in Schizophrenia” (2004).

Another recent book discussing the history of auditory hallucinations is Daniel Smith’s *Muses, Madmen, and Prophets: Rethinking the History, Science, and Meaning of Auditory Hallucination* (2007). Because Smith makes the case that auditory hallucinations are found both throughout society (and not just in those diagnosed with schizophrenia) and throughout human history, his book is frequently cited as supporting evidence for Julian Jaynes’s theory (and is grouped with Jaynes’s book and *Reflections* on Amazon.com). Surprisingly, Smythies (2008) wrote a positive review of this book, stating “As a retired neuropsychiatrist myself, I fully agree with all that Smith says.” Would Smythies then maintain that the cause of the auditory hallucinations in historical figures discussed by Smith such as Achilles, Socrates, and Joan of Arc is a “50 percent degree of atrophy of their cortical neuropil?” (Smythies 2007). Smythies’s (2008) statements that Smith “rightly states that auditory hallucinations occur in sickness and in health” and his agreement that

simply to give the stigmatizing and harmful opinion to the patients that their voices are merely “pathological,” and must be eradicated as one would a cancer is inadequate: particularly as many people with “voices” show no other signs of mental disturbance

are in direct contradiction to his earlier claim that the hallucinations of early religious figures “clearly arise from conditions such as schizophrenia and, more commonly, temporal lobe epilepsy and bipolar disorder” (Smythies 2007). Smythies’s statements vacillate between two radically opposing views: (1) the idea that auditory hallucinations are a symptom of schizophrenia or bipolar disorder and that these are biologically-based brain diseases, and (2) that auditory hallucinations occur on a continuum in

clinical and non-clinical populations, are not necessarily indicative of pathology, and that schizophrenia does not meet the criteria of a disease but is rather a label given to a set of complaints that have occurred in all societies throughout history (that perhaps have their roots in a previous mental model where hallucinations had a functional role [Jaynes 1990]).

Smythies’s Views on Consciousness

Let us briefly take a look at Smythies’s own views on consciousness. In his review, Smythies for the most part comes across as a mainstream neuroscientist criticizing Jaynes’s theory as perhaps being too speculative or at odds with conventional thought on consciousness and schizophrenia. However, something in the review gave me reason to suspect this might not be the case, and that it might be worth taking a look at Smythies’s own views on consciousness to perhaps further illuminate his antagonism toward Jaynes’s theory. Near the end of his review, he criticizes Jaynes’s theory as “reductionist.” Over the years I have learned that whenever I hear the criticism of reductionism, there is a good chance the person making the comment subscribes to some type of mystical or “New Age” view of consciousness.

I decided to read one of Smythies’s own articles on consciousness to find out if my hunch was correct. In an article in the *Journal of Consciousness Studies* titled “Space, Time, and Consciousness,” Smythies (2003) states that “that the Universe consists of three fundamental entities — space-time, matter and consciousness, each with their own degrees of freedom.” Here Smythies is building on the speculations of Russian physicist Andrei Linde. However, “Linde himself does not discuss what the nature of consciousness might be other than its independent ontology” (Smythies 2003). Nor does Linde provide anything to support his speculation — at least that I could find. Smythies strings together a series of quotes on sense and perception and theoretical physics that in my view do nothing to support his hypothesis, which is a sort of neo-Cartesian dualism in which consciousness is

generated not by brain activity but exists as a separate entity in some sort of other dimension or “brane” (which he defines as “a four-dimensional space-time enclosed in a higher dimensional space-time”). Smythies (2003): “If the theory of consciousness presented in this paper is correct, then all the contents of consciousness — including our visual sensations — lie in a space, or brane, of their own outside the physical universe.”

This is pure speculation and Smythies does not offer anything that could be considered credible evidence to support his fantastic claims. In *The Walls of Plato’s Cave* (Smythies 1994, now out of print) he contends physics is simply not yet advanced enough to test his ideas. It also seems there would be a great deal of evidence to contradict these ideas — for example, if Smythies is correct in his speculation that “consciousness may be in the brane not in the brain,” it remains unclear why brain damage would have any impact on thought. This would also seem to contradict Smythies’s statement, quoted above, that “consciousness depends critically on the integrity of two small cholinergic nuclei in the brain stem” (Smythies 2007). I am not alone in my confusion — even a fan of Smythies concedes that “there may be some confusion, even when all is said and done, about what Smythies means by consciousness” (Almeder 1996).

Smythies’s article reveals seemingly irrational beliefs as well as predispositions that would put him at odds not only with Jaynes’s theory but any “materialist” theory of consciousness (i.e., one that proposes that the universe consists only of matter and that consciousness arises from brain activity). On this last point Smythies agrees: “Most of the other theories of mind and consciousness currently discussed by philosophers and scientists ... are equally reductionistic” (Smythies 2007). These theories (i.e., those based on rational scientific thought) contribute, in Smythies’s view, to the

“Smythies’s article reveals seemingly irrational beliefs as well as predispositions that would put him at odds not only with Jaynes’s theory but any ‘materialist’ theory of consciousness.”

“miasma of nihilism” threatening our civilization. Actually, the opposite is true (Sagan 1997).

Smythies, who is British, grew up in India and experimented with mescaline in the 1950s (Stevens 1998) — both experiences that may have influenced his views on the nature of consciousness. In 1989, he co-edited *The Case for Dualism*, a collection of essays promoting the idea of the separation of mind and brain. The idea that “thought could have an independent spirit-like existence” dates back to Plato, is largely attributed to René Descartes (d. 1650), and was heavily promoted by a group referred to as the

spiritualists in the 1800s (Lesser 1989). As noted by psychiatrist Jonathan Burns (2006), “most contemporary philosophers and phenomenologists of mind have abandoned the Cartesian model of an isolated ethereal mind separated from body and environment, in favor of a physically and socially integrated construct of mind, embodied in the living world.” Although Smythies maintains that his brand of dualism is subtly

different, one cannot help but wonder if modern notions of the separation of consciousness from the brain stem from a form of pseudo-religious thinking — beliefs based on antiquated ideas of a non-material spirit that lives on after bodily death in some sort of afterlife. Only now the terminology has been changed to be more scientifically palatable: “Heaven” is now a higher dimension, parallel universe, or “brane” and the eternal spirit is now “consciousness.”

For example, Smythies cites as evidence a purely speculative article on life after death (Price 1953) which he reprinted in a book he published in 1965. Other proponents of these ideas also hold mystical beliefs. For example, the one glowing review (Almeder 1996) I could find of Smythies’s *The Walls of Plato’s Cave* was written by the author of a book titled *Death and Personal Survival: The Evidence for Life after Death* (1992). And an essay by Andrei Linde appears in the book *Science and the Spiritual*

Quest (Clayton 2002) that seeks to bridge the gap between science and religion. For a critique of modern mystical views of consciousness that use quantum physics for evidence, see physicist Victor Stenger's *Quantum Gods: Creation, Chaos, and the Search for Cosmic Consciousness* (2009).

Conclusion

Compared to Smythies's, Jaynes's theory by contrast seems quite non-controversial and mainstream. As mentioned above, Smythies's radical views of consciousness are not just at odds with Jaynes, but the vast majority of scientists and philosophers who view consciousness as a mental activity — similar to mathematics in that its actual location may be arbitrary — but one that is nonetheless predicated solely on brain activity and ceases with death.

Book reviews can be a valuable way to discover new books of interest. But as is demonstrated by Smythies's review, one has to be careful not to be influenced by the biases, predispositions, or even mystical beliefs of the reviewer. Scientists are not always as rational or impartial as is generally assumed. People also frequently have the belief that those who hold more mystical views are in general more "open-minded," but this is not necessarily the case. Just as close-mindedness can be found on both sides of the political spectrum, non-mainstream views can be held just as dogmatically as conventional ones (Rokeach 1973). Smythies does not provide a thoughtful, balanced, impartial book review, open-mindedly evaluating the evidence for and against Jaynes's theory, but instead uses the review as an opportunity to disparage Jaynes's ideas based on his own preconceived notions (e.g., a "neuroanatomical abnormalities" view of auditory hallucinations, a non-material or mystical view of consciousness, etc.). Smythies's previously mentioned disparate statements regarding similar subject matter in his review of *Reflections* versus his review of Daniel Smith's book provide further evidence for his having a knee-jerk negative reaction to "anything Jaynes" rather than well reasoned, evidence-based objections.

The lesson is clear: If a book interests you, read it yourself, evaluate the evidence, and make up your

own mind. We must resist the temptation to unquestioningly rely on self-proclaimed authorities and so-called "experts" — a vestige of the bicameral mind — and instead cultivate our own ability to think critically. Each of us must make a conscious effort to remain open-minded to new ideas, avoid forming strong opinions prematurely, and readily modify existing views based on new evidence. On the other hand, we must resist adopting irrational or mystical beliefs (or pseudo-religious views masquerading as science) that are not backed by evidence. The acceptance of Jaynes's theory faces obstacles on both sides: It is dismissed out-of-hand due to close-mindedness by some in mainstream academia and rejected as "reductionistic" by some that hold more mystical beliefs about consciousness.

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CONFERENCE ANNOUNCEMENTS

Toward A Science of Consciousness

Tucson, Arizona
April 12–17, 2010

We are pleased to announce that we have arranged for a four-hour pre-conference workshop as well as several conference speakers on Jaynes's theory at the 2010 Toward a Science of Consciousness conference. We hope you will join us!

Pre-Conference Workshop

Prof. Brian J. McVeigh & Marcel Kuijsten – “Voices, Visions, Dreams, and the Limits of Consciousness: Explaining Anomalous Neurological Phenomena through the Work of Julian Jaynes.”

This interactive 4-hour pre-conference workshop will take place on Monday, April 12th from 2pm–6pm. The workshop will be like an intensive Jaynes “mini-conference,” so be sure to attend.

Jaynes-Related Conference Talks

In addition to the pre-conference workshop, there will be several talks given by Julian Jaynes Society members during the conference, including:

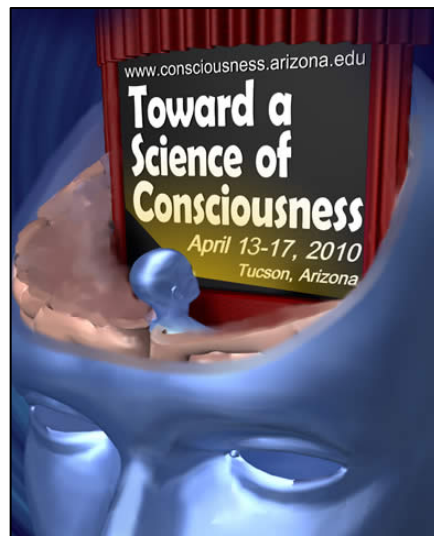
Robert J. Sawyer – “Consciousness in Science Fiction”

Science fiction writer Robert Sawyer will be one of the keynote speakers. Mr. Sawyer incorporates Jaynes's ideas into two of his novels: *WWW: Wake* and *Mindscan*.

We anticipate that three or four other talks will be given related to Jaynes's theory as well. Check the Julian Jaynes Society website for updated information as additional speakers are confirmed.

For more information on conference registration and accommodations see:

www.consciousness.arizona.edu



The 2010 Julian Jaynes Conference on Consciousness

University of Prince Edward Island
Charlottetown, Prince Edward Island, Canada
July 29–31, 2010

Call for Papers:

Please send abstracts (500–750 words) to Prof. Scott Greer at sgreer@upeil.ca by April 1, 2010.

This conference was created as part of the Julian Jaynes Memorial Endowment at the University of Prince Edward Island. This fund was established to create a lasting tribute to the late Princeton professor and author, and long-time PEI resident, and to fulfill his legacy to support and encourage the study of consciousness. For more information, please visit the conference website at:

www.upei.ca/~sgreer/jaynesconference2010.html

BOOK REVIEW

The Third Man Factor: Surviving the Impossible

John Geiger

Weinstein Books, 2009

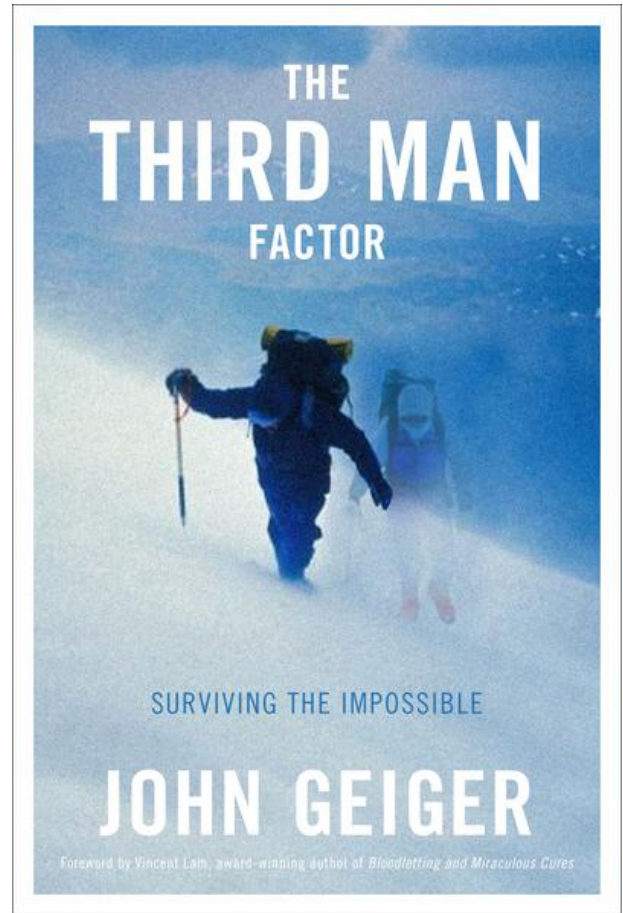
299 pgs., 978-160286107-7

In recent years, several book-length works have been devoted, all or in part, to analyzing and criticizing and applying Julian Jaynes's theories concerning "consciousness" and "the bicameral mind." Two of the most notable of such works are Daniel Smith's *Muses, Madmen and Prophets* (2007) which dealt with the topic of auditory hallucinations, and, of course, *Reflections on the Dawn of Consciousness* (2006), which was edited by Marcel Kuijsten.

If works such as *Muses* and *Reflections* have suffered from any significant limitations, one of such limitations is that the phenomena and issues that they concern themselves with tend to be "macro" in nature, though specific examples and applications are provided for illustrative and probative purposes. Works which deal with issues and phenomena that are more "micro," and, perhaps, a bit less abstract are less common.

In *The Third Man Factor*, John Geiger attempts to apply the ideas of Jaynes and others to a common and fascinating "micro" category of auditory and visual hallucinations: "The Third Man Factor." Geiger describes the Third Man Factor as follows:

There is, it seems, a common experience that happens to people who confront life at its extremes, and strange as it may sound, given the cruel hardships that they endure to reach that place, it is something wonderful. This radical notion — that an unseen presence has played a role in the success or survival of people who have reached the limit of human endurance — is based on the extraordinary testimony of scores of people who have



emerged from extreme environments. To a man or woman, they report that at a critical point they were joined by an additional, unexplained friend who lent them power to overcome the most dire circumstances. There is a name for this phenomenon: it's called The Third Man Factor. (p. 15)

Geiger describes the overall implications of the Third Man Factor very much in terms of an

“alternate reality” that is generally accepted by a secular value system. Geiger describes:

A world populated by unseen beings that can be summoned as required during times of great need [which] bears little resemblance to the rational world we are supposed to inhabit. It seems like a throwback to an earlier age, when monks would disappear into the desert for years, only to emerge with accounts of religious epiphanies and encounters with divine beings, or when it was accepted that guardian angels watched over each of us and would come, as needed, to our spiritual and physical aid. (pgs. 62-3)

Geiger claims that the upshot of *The Third Man Factor* is the “radical idea...that we are never, really, truly *alone*, that we can summon someone — some other — in certain situations, commonly in extreme and unusual environments” (p. 103).

Geiger posits five basic rules that govern the Third Man’s appearance and invest the experience with meaning: the pathology of boredom, the principle of multiple triggers, the widow effect, the muse factor, and the power of the savior. Geiger claims that these factors “help to explain the onset of the Third Man Factor. But they are causal in nature; they do not explain his origins or where the power comes from” (p. 18).

Geiger develops his five rules by means of applying these rules to a tremendous number of fascinating and often harrowing narratives. While one could argue that Geiger “places too many vegetables in the stew” in terms of the amount of narrative relative to exposition, the narratives are all “rattling good yarns” that are exceptionally well told. Indeed, one could enjoy this book just on the basis of its stories.

Geiger bases his arguments primarily on the theories of Julian Jaynes, Peter Suedfeld and his collaborators (who include Geiger), and Michael Persinger. To his credit, I think, Geiger treats Jaynes’s thought in an unusual amount of depth and with a fair amount of respect. For example, Geiger goes much deeper into “the Jaynes canon” than most researchers have. He does not limit himself to simply quoting passages from *The Origin of Consciousness*. Geiger also provides his own examples to illustrate and expand upon Jaynes’s arguments.

It is obvious that Geiger’s analysis is closest to Suedfeld’s. Geiger provides excellent descriptions and analyses of Suedfeld’s extensive research into people’s responses to EUEs (extreme and unusual environments). Geiger claims that Suedfeld “took Jaynes’s theory and applied it to the real world.”

Geiger also claims that Michael Persinger has “built on Julian Jaynes’s theory” in his approaches to “neurotheology.” Persinger is best known for his work that suggests that a link exists between hallucinations and a feeling of a sensed presence and electromagnetic stimulation of the right temporal lobe via his “god helmet.”

Geiger concludes the book by claiming, quoting Peter Suedfeld, that interactions with the Third Man will only intensify in the years ahead (pgs. 249-50). Perhaps, these increased interactions will come to pass. If they do, it might be interesting to see whether such a development might affect the continuing “conscious” secularization that Jaynes predicted or whether a reinvigorated Third Man might usher in some sort of neo-bicameral era.

John Schedel, Ph.D.
Communication Department
Medaille College

ESSAY

Endogenous Hallucinations and the Bicameral Mind

Rick Straussman

University of New Mexico School of Medicine

Introduction

One of the most characteristic features of the bicameral mind is the presence of an audible voice. In *The Origin of Consciousness in the Breakdown of the Bicameral Mind*, Julian Jaynes raises the possibility that an endogenous hallucinogenic, or psychedelic, compound might contribute to the production of the voice. DMT or N,N-dimethyltryptamine, is a powerful psychedelic that belongs to the same family of compounds as LSD and psilocybin, is a powerful endogenous psychedelic present in the human body, and is a reasonable candidate for such a compound. The DMT and bicameral states share at least two features: the perception of previously hidden information, and the certainty regarding these perceptions' independent external reality. In this essay, I will review the possible role of DMT in bicamerality. I also will discuss Jaynes's formulation of Old Testament prophecy as a transitional bicameral state. This formulation lends itself to further explication by considering the role of endogenous psychedelics. Finally, I suggest areas for future research.

Jaynes and Hallucinogens

Hallucinogens, or psychedelics, are chemical substances that elicit a complex constellation of characteristic subjective effects in humans. While the term "hallucinogenic" emphasizes changes in perception, "psychedelic" ("mind-manifesting") more accurately reflects similarly powerful alterations in mood, cognition, volition, and somatic sensations.

Psychedelics exist widely throughout the plant and animal kingdoms. Psychiatric researchers have discovered compounds with psychedelic properties that are endogenous, or naturally-produced within the organism, and suggest their presence may help explain abnormal mental experience. The conditions that have drawn the most attention are the psychoses, particularly schizophrenia. One of the characteristic features of schizophrenia is the hallucinated voices and the conviction of their utter otherness. This prompted Jaynes to propose schizophrenia as a modern vestige of the bicameral mind. Thus, if schizophrenia is related to the bicameral mind, and endogenous psychedelics to schizophrenia, then it behooves us to investigate the relationship between bicamerality and endogenous psychedelics.

On page 93 of *The Origin*, Jaynes mentions adrenochrome as a potential endogenous psychedelic. This is a chemical product, or metabolite, formed from endogenous adrenaline, the latter compound existing in all of us. In the 1950's, adrenochrome was the object of considerable attention as a possible mediator of psychotic experience in schizophrenics. Scientists proposed that stress-related rises in adrenaline in schizophrenia were abnormally diverted into the formation of psychedelic adrenochrome. This idea helped explain the fact that stress reliably worsens psychotic symptoms.

Subsequent research was unable to reliably establish adrenochrome's presence in humans, and interest in it as an endogenous psychedelic ended. However, researchers had a more promising candidate for an endogenous psychedelic in DMT.

DMT

DMT, or N,N-dimethyltryptamine, is a powerful psychedelic that belongs to the same family of compounds as LSD and psilocybin. Scientists learned of its presence in psychedelic Amazonian snuffs in the 1940's, its psychedelic effects in man in the 1950's, and its presence in human body fluids in the 1960's. We now know how DMT is made in the body, and researchers have identified, characterized, and cloned the human gene responsible for the final step in DMT production. Initial clinical studies of DMT generated valuable data, such as determining that stress raises DMT levels in non-human animals, and that DMT production increases in schizophrenics when their symptoms worsen. However, human DMT studies ended in 1970 when all psychedelic drugs were made illegal in the United States, thus ending the first stage in clinical work with these compounds.

Helping begin the next stage in human psychedelic research, I performed an investigation into the effects of DMT in humans in the 1990's at the University of New Mexico. We applied strict psychopharmacological principles and methods to this research, particularly necessary as so many years had elapsed since similar work had been done in the U.S.

My interest lay in the biology of spiritual experience as much as it did in the possible role of DMT in psychosis. Many of the subjective effects of psychedelics are similar to those in spiritual states, such as visions and voices, intense emotions, new insights, and changes in body awareness. I believed that stress-related increases in endogenous DMT might underlie some of the features of, for example, the near-death and mystical states. To the extent administering DMT elicited features of those states, the data would support this theory.

The DMT Experience

When volunteers received intravenous DMT they nearly instantly began perceiving a world of objects composed of intense light. In many cases, research subjects exchanged ideas and feelings with what appeared to be sentient beings. Nearly always, the power of these beings was impossible to resist, so great was the intensity associated with the experience.

I also was struck by the how powerfully volunteers felt a sense of "otherness" regarding their apprehension of the DMT state. They were convinced that what they perceived under DMT's influence was not a projection or production of their own minds. Rather, they believed these were free-standing, external, and independent alternative levels of reality that DMT allowed them to apprehend.

Models for the Psychedelic State

The models with which I entered the DMT studies denied the objective, external nature of what is perceived during the DMT state. These systems were the Buddhist and psychoanalytic/psychodynamic, in which I had studied and trained for many years. In addition, the Buddhist model of spirituality did not appear as relevant as I had hoped inasmuch as volunteers' experiences were more relational than unitive. By unitive, I mean a particular state in which self, time, and space all undergo profound transformation. There is no longer any separation between the self and what is not the self; personal identity and all of existence become one and the same. Past, present, and future merge together into a timeless moment, the now of eternity. Space becomes vast, no longer here or there, but everywhere, limitless, without edges. In contrast to this type of spiritual experience there existed in the DMT state a well-defined sense of self, interacting with all manner of phenomena, existing in a novel but clearly

perceptible environment, with a well-defined beginning, middle, and end.

In looking for new models that took into account the relational nature of the DMT state, I began studying the Old Testament, or Hebrew Bible, concept of prophecy. It was also in searching for alternative models of the psychedelic experience that I learned of Jaynes's work. He, too, was proposing a mechanism by which properties of the brain mediate experiences that are seemingly otherworldly or divine. His theory took into account the possible role of endogenous psychedelics, so I paid particular attention to his theories. In addition, I found particularly relevant Jaynes's discussion of Old Testament prophecy as a bicameral state, since my own research had led me to this topic as well.

Prophecy, DMT, and the Bicameral Mind

Prophecy in the Hebrew Bible is the highest state of spiritual development one may attain. The prophet enters a prophetic state, beholds images, hears words, flies through the sky, trembles in fear, and communicates with God and angels. He or she speaks or acts out the prophetic message, utterly convinced of the divine otherness of its source and unable to resist its power. Today we usually define prophecy as foretelling the future, but this is not the case in the Hebrew Bible. Foretelling the future may validate the legitimacy of the Old Testament prophet, but it is not an essential part of the scriptural definition.

According to Jaynes, prophets manifested a temporary return to or "vestigial" bicamerality since they appeared after the breakdown of bicameral mentality. Thus, it is important to distinguish between the history of bicamerality and its vestigial appearances.

The compelling audible voice is the primary sense datum in the bicameral mind. While "God's word" also is of the utmost importance in prophecy, there

are effects in other areas — emotional, visual, volitional, and somatic. To the extent that prophecy is a bicameral state, it is interesting to look at the Hebrew Bible's description of prophecy for a possibly fuller description of bicamerality than Jaynes himself provided.

In Jaynes's description of the bicameral mind, the message appears primarily to consist of solutions to problems resulting from encountering novel situations in the environment. In addition to providing advice to people and nations concerning their safety, the Hebrew prophetic message also concerned morality, hypotheses regarding nature, government, and poetic expression. Thus, we may begin considering whether the message of the bicameral/prophetic mind is also built into the nature of our nervous system. The presence of endogenous hallucinogens contributes to an understanding of the mechanisms mediating the perception of the audible voice and its sense of otherness in bicamerality. In addition to proposing the existence of a latent capacity within the central nervous system explicating a *mechanism*, we might extend our search to include the *content* of bicameral consciousness. That is, might the information received while under the influence of hallucinogens reflect similarly embedded structures within the nervous system?

Areas of Future Research

The biology of spiritual experience is an area of rapidly expanding research. Most contemporary studies rely upon brain metabolism imaging technologies, which indicate where in the brain metabolic activity changes in association with spiritual states resulting from prayer or meditation. Endogenous psychedelics add a valuable piece to this research since their effects are so reliable and profound. To the extent spiritual states (including prophecy) and bicamerality share features, this

ongoing research should be of interest to students of Jaynes's work.

It is unlikely that any one molecular compound is solely responsible for phenomena as complex as the bicameral mind or prophecy. While DMT is highly psychedelic and much of the DMT message appears to possess cognitive content, its primary effects are not auditory. Many of its more pronounced effects, however, do comport with those of classical Hebrew prophecy. To the extent that prophecy is an example of bicamerality, those non-audible effects may also be seen in a fuller description of the bicameral mind. In a similar manner, we know that schizophrenia is not simply hearing a voice, but consists of a complex combination of changes in subjective experience.

It therefore is important to look for other endogenous compounds with psychoactive effects, particularly auditory ones. Anti-cholinergic substances found in certain plants, for example, are particularly effective in generating the perception of a spoken voice. The presence in the human brain of receptors for these compounds suggests the presence of endogenous molecules that interact with those receptors.

Measuring levels of endogenous hallucinogens, such as DMT, in vestigial bicameral states such as schizophrenia, or certain types of spiritual experience, would help establish their role in those states. Discovering and characterizing effects of more highly auditory endogenous compounds would go even further in establishing a biology of bicamerality.

We might also carefully examine the effects of administering putative voice-producing compounds such as the anti-cholinergic drugs mentioned above. This would help establish the degree of similarity between the states they produce and bicamerality, and spur the search for endogenous compounds with those properties.

Summary

Jaynes draws upon similarities between psychosis and the bicameral perception of an audible voice and

the conviction of its absolute otherness. In this context, he relates theories regarding endogenous psychedelics' role in psychosis to their possible importance in bicamerality. The endogenous psychedelic DMT elicits some effects of bicamerality, and appears to play a role in psychosis. The relational-interactive nature of the DMT state also resonates with that of bicamerality. In addition, the model of spirituality presented in the Hebrew Bible's concept of prophecy, itself a bicameral state, is more consistent with our DMT data than the unitive model of spiritual experience found in East Asian religions. Future research should focus on other endogenous psychedelics with more definitive auditory effects, in order to continue explicating biological bases for bicamerality. It also may be possible to learn more about the subjective experience of the bicameral state, and the information contained within it, by study of prophetic text viewed through the lens of these biological considerations.



Rick Strassman, MD, is Clinical Associate Professor of Psychiatry, University of New Mexico School of Medicine; President of the Cottonwood Research Foundation; and author of *DMT – The Spirit Molecule* (Park Street Press, 2001).

www.rickstrassman.com

Please send items for *The Jaynesian*, including announcements, book reviews, essays, and other items of interest, to the co-editors:
 Brian J. McVeigh
 (bmcveigh@email.arizona.edu) and
 Marcel Kuijsten
 (kuijsten@julianjaynes.org).

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