

The “bicameral mind” 30 years on: a critical reappraisal of Julian Jaynes’ hypothesis

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Received: October 2006

Accepted for publication: January 2007

Summary

In 1976 Julian Jaynes published his controversial book *The Origins of Consciousness in the Breakdown of the Bicameral Mind*, introducing the hypothesis of a two-chambered brain-mind model that preceded the evolutionary development of the conscious mind. Jaynes’ speculative model gave rise to a huge debate, which has reverberated throughout the current neuroscientific and neurophilosophical literature. Has the bicameral mind stood the test of time? To answer this question, the present paper adopts a multidisciplinary perspective and, after briefly summarizing Jaynes’ hypothesis, addresses two main critical issues: the neurological basis of the bicameral model and the philological accuracy of Jaynes’ arguments. Finally, the concept of a non-unitary Self is presented as one of the most relevant contemporary legacies of the bicameral mind.

KEY WORDS: *bicameral mind, consciousness, qualia.*

Introduction

It is now thirty years since Julian Jaynes first proposed his model of the bicameral mind, based on a wealth of archeological, anthropological, psychological, and neu-

*There's a blind man here with a brow
As big and white as a cloud.
And all we fiddlers, from highest to lowest,
Writers of music and tellers of stories,
Sit at his feet,
And hear him sing of the fall of Troy.*

Edgar Lee Masters, *Spoon River Anthology* (1916)

rological data (1). Not surprisingly, Jaynes’ thought-provoking and pioneering work in the field of consciousness studies gave rise to a longstanding debate, with contributions from a wide spectrum of disciplines (2-4). Even today, it has been argued that a multidisciplinary approach to the problem of consciousness and its development in the evolutionary process that shaped *Homo sapiens* cannot leave out an analysis of Jaynes’ theory of the origin of consciousness in the breakdown of the preconscious bicameral mind (5,6). The present paper provides a brief summary of the bicameral mind model, followed by a critical reappraisal of some theoretical issues in the light of more recent acquisitions on the putative cerebral basis of bicamerality.

Jaynes’ theory of the bicameral mind

The background of Jaynes’ evolutionary account of the transition from bicamerality to the conscious mind is the claim that human consciousness arises from the power of language to make metaphors and analogies. Metaphors of “me” and analogous models of “I” allow consciousness to function through introspection and self-visualization. According to this view, consciousness is a conceptual, metaphor-generated inner world that parallels the actual world and is intimately bound with volition and decision. *Homo sapiens*, therefore, could not experience consciousness until he developed a language sophisticated enough to produce metaphors and analogical models.

Jaynes recognizes that consciousness itself is only a small part of mental activity and is not necessary for sensation or perception, for concept formation, for learning, thinking or even reasoning. Thus, if major human actions and skills can function automatically and unconsciously, then it is conceivable that there were, at one time, human beings who did most of the things we do – speak, understand, perceive, solve problems – but who were without consciousness. Man’s earliest writings (hieroglyphics, hieratic and cuneiform) are quite difficult for us to translate and understand in depth, especially when they refer to anything psychological. Thus, if we want to look for any historical evidence of consciousness – an analogous “I” narrating in a mind-space – we should go to a language with which we have some cultural continuity, and that is ancient Greek.

According to Jaynes, the earliest Greek text of sufficient size to test the question of whether there is any evidence of consciousness is the *Iliad*. In fact, the *Iliad* does not seem to mention any subjective thoughts or the contents of anyone's mind. The heroes of the *Iliad* were not able to make decisions, no one was introspecting or even reminiscing. Apparently, they were noble "automata" who were not aware of what they did. Iliadic man did not have subjectivity as we do; he had no internal mind-space to introspect upon. Some lexical oddities in the Homeric text (such as the absence of a single word translating "consciousness", "mind", "soul", or even "body") led Jaynes to formulate the hypothesis that the *Iliad* was composed by non-conscious minds, which automatically recorded and objectively reported events, in a manner rather similar to the characters of the poem. The transition to subjective and introspective writings of the conscious mind occurred in later works, beginning with the *Odyssey*.

In short, Jaynes claims that men in the age of the *Iliad* learned to speak, read, and write, as well as conduct their daily lives, yet remained nonconscious throughout their lives. Being nonconscious, they were not responsible for their actions. Who, then, made the decisions? Jaynes' answer is that whenever a significant choice was to be made, an auditory hallucination intervened, telling people what to do. These voices, in the *Iliad* always and immediately obeyed, were called Gods. Before the cultural evolution of consciousness, the human brain was organized in a bicameral fashion: the right hemisphere (the synthetic, poetic, "god-brain") used to transmit hallucinatory verbal instructions to the left hemisphere (the analytical, rational, "man-brain"), especially in response to unusual or stressful situations. It follows that human mentality was divided into two parts, a decision-making part (located in the right hemisphere) and a follower part (in the left hemisphere), and neither part was "conscious". According to Jaynes, the bicameral mind is to be observed not only in the most ancient literature but also in the contemporary examples of throwbacks to bicamerality, such as hypnosis and schizophrenia, since auditory or verbal hallucinations (VHs) can be regarded as a remnant of this early mentality. Moreover, the bicameral mentality allowed a large group to carry around with them, in the form of VHs, the directions of the king. The leaders used these stress-generated "voices" to lead the masses in cooperative unison. The bicameral mind enabled men to build societies and the earliest civilizations (the Near East, Egypt, Southern Africa, India, China, Mesoamerica) developed through common hallucinating voices attributed to Gods and other rulers – i.e. external "authorities" – and to various symbols, such as graves, temples, and idols.

Finally, Jaynes speculates that the development of modern human consciousness began as late as around 1400-600 B.C., when men were evolutionarily forced by the chaos of huge migrations induced by overpopulation and natural catastrophes, and by the widespread use of writing, to change their mentality.

While innovative and thought-provoking, Jaynes' sophisticated hypothesis presents several difficulties, as shown by the criticism it attracted from different angles. The next two sections will summarize the main streams

of the critical arguments, focusing respectively on the neurological and philological substrates of the bicameral mind. Some of the most important contemporary legacies of Jaynes' model will be presented in the final section.

The bicameral brain

The first line of critical argument arises when considering the theory of the bicameral mind from a neurophysiological and neuropsychological perspective. Jaynes' neurological model for the bicameral mind relies on the structural and functional differences between the two cerebral hemispheres that emerged from brain laterality studies. The notion of the right hemisphere as a generator of hallucinatory experiences derived from the well-known experiments involving the electrical stimulation of the brain of patients with epilepsy (7). This was the only neurobiological knowledge about the "silent areas" of the right temporal lobe available around 1970. The role of the right-sided areas corresponding to Broca's and Wernicke's areas is still not completely clear, but recent functional neuroimaging findings (8-10) seem to confirm the hypothesis that the right middle temporal gyrus represents the source of auditory hallucinations in at least some schizophrenic patients (11). Arguably, this lateralization pattern could well be the reason why these inner voices lack the characteristic of being self-generated (12). According to Persinger and Makarec (13), the "feeling of a presence", a subjective experience that characterizes periods of profound literary or musical creativity, could be attributed to a concomitant increase in the individual's access to meaningful nonverbal representations held in the right temporal structures. However, the variety of hallucinatory phenomena observed in normal subjects and different neuropsychiatric disorders, ranging from schizophrenia to epilepsy, suggests that the stress situations proposed by Jaynes are far too simplistic to be a valid model for common aetiological processes (14).

Furthermore, Jaynes' speculations appear to be shaped by the striking insights derived from the early studies on "split-brain" patients by Sperry and colleagues (15,16). The unexpected findings about the independent functionality of the two hemispheres after the surgical removal of the corpus callosum (commissurotomy) led some neuroscientists to postulate the co-existence of two parallel streams of consciousness (17,18). Likewise, Jaynes' bicameral model requires some sort of underlying functional interhemispheric disconnection in the brain architecture. However, from an evolutionary perspective, it seems very unlikely that such a dramatic remodelling of extensive neural networks could have come about in the space of three millennia or so – the time taken, according to Jaynes' theory, for the transition from the bicameral mind to the modern conscious mind. Furthermore, Jaynes' idea that somehow there is an emergent function that is phylogenetically discontinuous is a position that few neuroscientists would buy.

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. To use the brain-computer analogy, Jaynes’ theory could, at best, account for some software (=cultural), rather than hardware (=structural), developments of the brain/mind continuum (2).

Consciousness and bicamerality

The second line of argument concerns the philological and anthropological basis of Jaynes’ archeopsychological investigation of the earliest Western literature. The *Iliad* is a collection of oral poetry composed by a millenary succession of “aoidoi” or bards from different traditions, and then assembled around 700 B.C. (19-21). This heterogeneity is the most likely explanation for the numerous incongruities that classical philologists have detected in the text (22,23). Indeed, several passages appear to confirm Jaynes’ hypothesis about the bicameral mentality of the represented characters, and the leading role of VHs in determining their actions. One striking example is the celebrated episode of the anger of Achilles against Agamemnon being checked by the hallucinatory vision of Athena (Book I). However, considered as a whole, the narration of the *Iliad* is not always consistent with the thesis of the noble “automata”. Crucial decisions, such as Hector’s decision to take on Achilles, do not seem to be inspired by anything other than the heroes’ conscious volition (Book XXII). Arguably, it might have proved more useful to restrict any speculation on the preconscious mentality to specific passages of the poem and to the oral traditions they stemmed from. As a consequence, the hypothetical transition from the bicameral mind to modern consciousness would have been shifted indefinitely backwards.

Besides these philological considerations, some important conceptual issues should be highlighted. From a psychological and philosophical perspective, Jaynes’ definition of consciousness appears to be quite limited, since it does not take into consideration the existence of any subjective, “phenomenal” experiences – or “qualia”, according to the philosophical jargon (24) recently translated into the neuroscientific lexicon (25). Philosophers of mind use this technical term to refer to the subjective texture of experience, which is the essence of the qualitative dimension of consciousness. Roughly speaking, a quale (singular of qualia) is the “what it is like” character of mental states: the way it feels to have mental states such as pain, seeing red, smelling a rose, etc. Therefore, qualia are experiential properties of sensations, feelings, perceptions and, more controversially, thoughts and desires (26). From this perspective, the most difficult challenge to the scientific explanation of consciousness is represented by the “hard problem” of qualia, as opposed to the “light problems” of explaining the neuronal substrate of specific cognitive functions, such as memory, learning, and attention (27). The status of qualia is hotly debated in both philosophy and neuroscience, largely because it is central to a proper understanding of the nature of consciousness (28). On the other hand, Jaynes’ concept of consciousness seems to provide the backbone for a theory of higher-order awareness involving self-representation, while leaving such subjective experiences

aside. In this sense, bicameral-minded people could be said to lack some sort of self-monitoring accessory function, rather than consciousness as a whole, including qualia.

Furthermore, Jaynes’ assumption that consciousness depends on language-driven metaphors involves the seemingly endless philosophical debate on the role of language in conscious thoughts. Which came first? Contrary to Jaynes’ claim that consciousness ultimately depends on inner language skills, both neuroscientists and philosophers of mind now tend, much more, to assume that language simply contributed to some higher faculties of consciousness (see, for example, 29), rather than being an essential prerequisite for any kind of conscious experiences. Romantic love, for instance, could represent a by-product of language, whilst sexual attraction apparently does not need any verbal component.

Overall, the attitude of philosophers of mind towards the plausibility of a bicameral mind has been controversial. For example, in his review of Jaynes’ book, Block (30) argued that even bicameral-minded people could have been conscious – in the phenomenological sense – long before they acquired the concept of consciousness. On the other hand, according to Dennett (2), since mental phenomena like consciousness are partially created by the arrival on the scene of a certain set of concepts, there is no space for conscious experiences unless the concept of consciousness has been developed. In short, the ambiguities that surround the exact meaning and the use of the term “consciousness” seem to play a central role in further entangling the philological and philosophical views on the putative bicamerality of the characters featuring in the *Iliad*.

The cultural legacy of the bicameral mind

Despite the above-mentioned limitations, Jaynes’ composite picture of the bicameral mind has had widespread influence and undoubtedly shaped to a considerable extent subsequent reflections on the biological and cultural underpinnings of human consciousness. The most remarkable achievement of Jaynes’ theory is that it bridges the gap between distant disciplines, establishing intriguing links between some of their unsolved issues. It has been mentioned that the exact role of the right temporal lobe of the brain is not fully explained. The issue of the development of a conscious mind, from a phylogenetic perspective, is one of the key topics of current philosophical and neuroscientific debate. Another compelling mystery is the unique Iliadic view of man as an aggregate, both physical and psychological – a problem already raised by some prominent classical philologists of the past century, including Bohme, Snell, Dodds, Onians, Frankel, and Adkins (31-36). Unlike later writings, the Iliadic vocabulary lacks a single word for the concept of consciousness, or even mind (37,38). Instead, there exists a multitude of terms, referred to by Jaynes as “preconscious hypostases”, that are thought to relate to physiological processes associated with mental life (39,40). These “preconscious hypostases” are expressed by words like “psyche” (the living breath departing from the dead) (41), “thumos” (either the blowing breath or the flowing blood) (42),

“phren” (almost always in the plural form “phrenes”: presumably, the inflating lungs) (43), among others. Such lexical oddities apparently disappeared in subsequent milestones in Western literature, beginning with the *Odyssey*. The deep psychological analysis and the rich mental vocabulary that characterize Aeschylus’ *Agamemnon* or Euripides’ *Medea* (V-IV century B.C.), for instance, do not show any significant difference from what is found in most modern and contemporary literature. This is not the case for the composite text of the *Iliad*, which is peculiarly devoid of any psychological insight. As such, it stands out as a unique and unexplained model in Western culture (38).

Similarly, it has been pointed out that in early Mycenaean figurative art, the human body was depicted as a curious aggregate of limbs, with marked joints and a fairly inconsistent trunk (32,44). Greek classical art, on the other hand, closely resembled more recent figurative styles.

Quite surprisingly, this non-unitary concept of the Self happens to converge with some of the findings that have emerged from cognitive neuroscience studies during the past few decades. Theories involving concepts such as “society of mind” (45), “modularity” of brain functions (46), and “cognitive homunculi” (47) have been thoroughly investigated and discussed by both neuroscientists and philosophers of mind. According to Baars’ “global workspace theory”, for instance, consciousness emerges as a result of the highly integrated activity of multiple unconscious brain processes (48). Baars claims that the prefrontal areas involved in the regulation of selective attention are the brain module playing the key role of the “internal observer” in the “theatre of consciousness”. In addition, a growing body of psychiatric literature has focused on the fragmentation of the Self, through the recognition and description of dissociative disorders, that in the most recent APA classification (49) comprise depersonalization disorder and dissociative identity disorder, formerly called “multiple personality syndrome” (37). Therefore, the debate raised by Jaynes’ hypothesis seems to support some contemporary attempts to deconstruct the concept of a unitary Self – a coherent centre of consciousness and engine of human actions. Converging evidence suggests that our common sense-based intuition of the unitary Self could be considered an illusion created by Western cultural and social paradigms, developed after the Homeric ages and philosophically enhanced by Plato’s thought in terms of mind-body dualism (47). Apparently, both religious belief and Cartesian doctrine deepened this misleading way of thinking of ourselves, which historically shaped folk psychology and pervaded most theoretical reflections on consciousness.

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