

Book Review

A review of *In the Theater of Consciousness: The Workspace of the Mind*, by Bernard J. Baars, 1997. New York: Oxford University, xiv + 193 pp. ISBN 0195102657. \$45.00 USD.

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Historically, the most influential individual to seriously address the question, “What is consciousness and how does it work?”, was the American philosopher William James. James, in his seminal work, *Principles of Psychology* (1890), outlined the essentials of a fairly comprehensive “stream of consciousness” theory. However, for the better part of the twentieth century, the hard-problem of consciousness was often avoided. In fact, the scientific community long considered consciousness a subjective phenomenon not amenable to serious investigation. With the demise of behaviorism in recent years, cognitive psychologists have resurrected the work begun by James over 100 years ago. Bernard J. Baars, Senior Fellow in theoretical neurobiology at The Neurosciences Institute in San Diego, California, picks up where James left off. The book under review herein, a reprint of the 1997 paperback edition, brings the reader to the frontlines of the consciousness debate, offering an expansive overview of how top scientists currently understand conscious experience. When this book was originally written, now over ten years ago, the study of consciousness was beginning to see remarkable strides that reflected important technological breakthroughs.

In this short book, Baars first attempts to illustrate the “variable” nature of consciousness. Once consciousness can be treated as a variable, one can begin to make some headway in understanding it. Indeed, a way of treating consciousness as a variable is through the method of contrastive phenomenology in which a single experimental task is performed under both conscious and unconscious conditions with the differences

between the two closely tracked. Baars presents a highly readable account of his Global Workspace (GW) theory of consciousness which generates explicit predictions for conscious aspects of perception, emotion, motivation, learning, working memory, voluntary control, and self systems in the brain. It is similar to biological theories such as neural Darwinism and dynamical theories of brain functioning. The GW model is a cognitive architecture based on a simple theater metaphor. Baars' model is the most influential cognitive model of consciousness extant today, for better or for worse. In fact, few today would contest the main idea behind the model—that the function of consciousness is to broadcast information to separate functional modules all around the brain.

Baars devotes a chapter to each of the components of the theater metaphor. A theater contains a stage with props and actors, a spotlight, stagehands, a director, and an audience. In the model, a variety of context operators work “behind the scenes” to provide the necessary stage backdrops. If all goes as expected, when the lights dim, all members of the audience focus attention on a few actors at a time, as they are spotlighted on the stage. The “players” that compete for access to the stage include the variety of exteroceptive senses, interoceptive senses, and abstract ideas. At any point in time, many sensory stimuli, ideas, and events are potentially accessible to human consciousness, although we can only attend to one at a time. Baars argues that neural structures proverbially work behind the scenes in tasks analogous to the director, the stagehands, the audience, and the spotlights to determine the contents and directions of our consciousness. The theater stage has a limited capacity, but it creates vast access by broadcasting information to a variety of unconscious routines and effectors (the “audience”).

In a particularly interesting assertion, Baars contends that consciousness is widespread among all vertebrates. Humans differ from other species only in terms of the content and foci of consciousness, but not in the possession of consciousness itself. So then, according to Baars, consciousness has extended in humans to the extent that humans are able to be flexible in terms of behavior, and they are also able to synthesize discrete informational entities into new, more complex concepts. In a notable contribution to the area of consciousness study, Baars notes the importance of unconscious mental processing for human understanding and problem-solving abilities. In a small, but nevertheless significant critique of this book, I note that Baars ought to have paid more attention to the Extended Reticular-Thalamic Activating System (ERTAS). The ERTAS model suggests a neural mechanism responsible for regulating generalized levels of arousal (rest-activity cycle, sleep cycle, etc.) as well as behavior specific patterns of arousal. Within the ERTAS model, the specific contents of consciousness are said to be neurologically *cortical*, with the cortical attributes being the result of social-psychological conditioning and elemental cognitive acuity. Another area of criticism relates to subjectivity, as Baars does not fully address the subjective nature of consciousness in his model.

The theater metaphor, as presented by Baars, has considerable heuristic value as it allows for a considerable amount of information to be conveyed. The general mechanism

(a limited-capacity center stage which creates vast access to specialized control systems) is a sound design solution for complex nervous systems. This book offers an invaluable introduction to the field, brilliantly weaving together the various theories that have emerged as scientists continue their quest to uncover the profound mysteries of the mind--and of human nature itself. For serious readers interested in "getting their feet wet" in the relatively new field of cognitivism, Baars' highly readable book would serve as an excellent introduction. While some knowledge of neuroscience is probably helpful, Baars goes out of his way to make a potentially technical topic understandable. Nonetheless, he does his part to bridge the Cartesian gap between mind and body. For that reason alone, he should be commended. In sum, this book would serve as a valuable resource for general readers, upper-division undergraduate, graduate students, and professionals.

Reference

James, W. (1890) *Principles of psychology*. New York, NY: Holt.

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