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Reviews the film, Mind in motion directed by Philippe Baylaucq, Françoise Lindeman, and Véronique Maison (2008). This film proposes that emerging findings from neuroscience will revolutionize the way that we think about our interactions with the world around us. It asserts that our consciousness is nothing special—it is just a by-product of discreet neural network activations. The underlying assumption of Mind in motion is that we will locate consciousness in the brain alone. According to the reviewers, Mind in motion captures an enthusiasm that is pervasive throughout the neurosciences as these fledgling disciplines chart remarkable progress. They add that this film is accessible and suitable for clinicians interested in the brain, as well as for undergraduate students, especially in psychology, neuroscience, and philosophy of science. (PsycINFO Database Record (c) 2009 APA, all rights reserved)

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Consciousness Reduced : Will Neuroscience Confine the Mind to the Brain?

Review By: Amir Raz
Benjamin Whatley

Review of: Mind in Motion
By: Philippe Baylaucq, Françoise Lindeman, and Véronique Maison (Directors), (2008)

Recently, neuroscientists have developed tools to investigate the brain processes presumed to underlie consciousness, leading to novel therapeutic possibilities and philosophical considerations. *Mind in Motion* proposes that emerging findings from these brain sciences will revolutionize the way that we think about our interactions with the world around us. This revolution will stem, according to the film, from emerging observations that our consciousness is nothing special—it is just a by-product of discreet neural network activations. In addition to presenting relevant findings from the fields of attention, learning, and neuroplasticity research, director Philippe Baylaucq accents this lively and engaging film by means of interviews with luminaries including Vilayanur Ramachandran and Walter Freeman.

Mind in Motion provides a good introduction to understanding consciousness in terms of the brain. Unfortunately, despite documenting exciting applications flowing from modern conceptions of the mind, the film may be overexuberant in its predictions of an imminent scientific revolution stemming from consciousness research.

As Freeman states at the beginning of the film, the greatest challenge in neuroscience is "to construct a theory of brain to fit our current needs." The film presents compelling evidence that the *neuron doctrine*—the idea that the mind can be understood entirely through a neuroscientific framework (Gold & Stoljar, 1999)—is a useful model for understanding behavior.

From this perspective, the mind and the brain are two sides of the same coin, which means that we can construe psychological concepts such as learning, knowledge, and attention in neurological terms. Neuroscientists now believe that learning depends on dynamic changes in synaptic connections within the brain and that networks of these connections encode knowledge. Attention selects appropriate processing networks and plays an important role in perception, learning, and the guidance of goal-directed behavior.

Indeed, recent investigations of a superior memorist indicate that there is a tight coupling among attention, consciousness, and memory (Raz et al., 2009). Brain-based conceptualizations of these psychological phenomena serve to advance our treatment of several psychiatric conditions, especially by identifying means of altering brain chemistry to affect changes in behavior.

Improved understanding of the connections between mental experience and the brain has also led to exciting clinical applications in the other direction, whereby one can alter psychological

experience to effect changes in the brain. *Mind in Motion* highlights these latter applications particularly well.

Ramachandran, for example, is treating patients with paralysis following stroke using visual feedback. Patients view an *unaffected* limb in a mirror, which results in the perception that the paretic hand is in fact moving. This simple therapy may operate by overcoming what Ramachandran terms a *learned paralysis*, incurred during the acute phase of the stroke (Ramachandran & Altschuler, 2009).

Maurice Ptito (Ptito & Kupers, 2005) has translated the finding that blind people process Braille in the visual cortex into the development of a new therapy for congenital blindness. This therapy uses a camera mounted on a patient's head to translate visual input into tactile stimulation of the tongue. Following sufficient training, these patients are able to "see" objects in their surrounding environment through the somatosensory interface, and this tactile information comes to be processed in the visual cortex. Both of these therapies build upon and further support the hypothesis that altering perception can have dramatic effects on the brain, which implicitly seems to support the neural doctrine.

The underlying assumption of *Mind in Motion* is that we will locate consciousness in the brain alone. The work of Ramachandran and Ptito, however, may support an emerging hypothesis that argues against this assumption. This new hypothesis presumes that consciousness exists in our interactions and relationships with the world around us in a way that cannot be reduced to the brain (Noë, 2009).

For example, early attempts to create an apparatus for somatosensory "seeing," as outlined above, mounted the camera on a tripod and were unsuccessful at producing the sensation of vision. It was not until the camera was mounted on the patient, establishing feedback between head movement and tactile stimulation, that the sensation of "seeing" started to take shape, even allowing blind patients to successfully hit a moving ball with a racquet (Bach-y-Rita, 2004).

This observation points to the importance of some sense of control, or self-centered interaction with the world—what Alva Noë has described as "our ongoing dynamic relation to objects" (2009, p. 59)—in producing consciousness. This same sense of control seems to be important to the treatment of phantom limb pain and stroke developed by Ramachandran: The mirror therapy gives patients a new way of relating to their affected limb and ultimately elicits a sense of control over it. It is unfortunate that the producers of the film neglected to discuss such a central aspect of consciousness.

Although the neuron doctrine may provide a practical model for understanding the interactions among mind, brain, and behavior, it is not necessarily the case that neuroscientists will ever reduce our mental lives to brain activity. *Mind in Motion* predicts that a revolution in cognitive neuroscience will stem from construing consciousness as nothing but the connection of attention to memories in the brain. The film moves from this reduction to the possibility of mind control and engineering a "society of brains that would cooperate" in order to overcome conflict.

However, while we may be fairly certain that all mental activity occurs in the brain, we are far from understanding how such activity might be explained in strictly neurological terms. The narrator would have us believe that the triggering of consciousness corresponds to a 200-ms delay in the activation of certain brain regions, but this finding hardly illuminates the richness and variety of consciousness itself. Similarly, the finding that brain events can predict choices as early as seven seconds prior to the conscious realization of those choices (Soon, Brass, Heinze, & Haynes, 2008) may be too incongruous with daily experience to convince the public that conscious experience is actually a post hoc evaluation of unconscious decision making.

In order for neuroscience to stand in for other ways of understanding mental life—for it to reduce psychology—it has to account for psychological phenomena without a loss of explanatory power (Gold & Stoljar, 1999). If this reduction is to lead to a revolution, neuroscientists will also have to represent behavior in ways that are consonant with everyday experience.

To date, great strides in the cellular neurobiology of learning and plasticity have not been matched by progress in our understanding of how the brain governs thoughts and behaviors. In order to understand more fully the implications of consciousness research in the neurosciences, we need a broader, interdisciplinary discussion. While the film embraces the need for such a discussion, it neglects to interview any experts outside the neurosciences. Including perspectives from philosophers, sociologists, and historians would have improved the credibility of *Mind in Motion* while likely tempering some of its claims.

Mind in Motion captures an enthusiasm that is pervasive throughout the neurosciences as these fledgling disciplines chart remarkable progress. The film's argument for a reconceptualization of consciousness reflects a strong sentiment among neuroscientists (Gold & Stoljar, 1999), but the film may punch above its weight in its evaluation of the philosophical and social implications of this new framework.

The film succeeds at providing a synopsis of where investigating the mind through neuroscience has brought us and is particularly strong at demonstrating the clinical applications of recent research. A discussion of the relationship between a sense of control and consciousness would have been enlightening, and the film overextends itself by attempting to reduce consciousness to attention, learning, and memory mechanisms in the brain.

Nonetheless, *Mind in Motion* provides a glimpse of the exciting debates that are to come. The film is accessible and suitable for clinicians interested in the brain, as well as for undergraduate students, especially in psychology, neuroscience, and philosophy of science. Contemporary explorations of the mind are already yielding remarkable therapeutic progress and promise to assist in alleviating the suffering of many with chronic neurological disorders.

References

Bach-y-Rita, P. (2004). Tactile sensory substitution studies. *Annals of the New York Academy of Sciences, 1013*, 83–91.

Gold, I., & Stoljar, D. (1999). A neuron doctrine in the philosophy of neuroscience (with Discussion). *The Behavioral and Brain Sciences*, *22*, 809–869.

Noë, A. (2009). *Out of our heads: Why you are not your brain, and other lessons from the biology of consciousness*. New York, NY: Hill & Wang.

Ptito, M., & Kupers, R. (2005). Cross-modal plasticity in early blindness. *Journal of Integrative Neuroscience*, *4*, 479–488.

Ramachandran, V. S., & Altschuler, E. L. (2009). The use of visual feedback, in particular mirror visual feedback, in restoring brain function. *Brain, 132*, 1693–1710.

Raz, A., Packard, M. G., Alexander, G. M., Buhle, J. T., Zhu, H., Yu, S., & Peterson, B. S. (2009). A slice of pi: An exploratory neuroimaging study of digit encoding and retrieval in a superior memorist. *Neurocase, 15.* Advance online publication. Retrieved from http://www.informaworld.com/smpp/content~db=all~content=a912937428?words=raz

Soon, C. S., Brass, M., Heinze, H. J., & Haynes, J. D. (2008). Unconscious determinants of free decisions in the human brain. *Nature Neuroscience*, *11*, 543–545.

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