



# Brain Wars

*Mario Beauregard*

*Mario summarises the important thesis of his new book, proposing a more adequate model of consciousness based on the full spectrum of evidence. He will be speaking at next year's Beyond the Brain conference.*

## Overview

Few people, including scientists, realise that materialist science is based on a few philosophical assumptions which constitute the central elements of what has been called the modern scientific worldview. This article attempts to show that these philosophical assumptions are not supported by the available empirical evidence, and it concludes by outlining key elements of an emerging scientific worldview in which mind and consciousness represent a fundamental aspect of reality, and are more than the activity of nerve cells in the brain. This emerging worldview has deep social, moral, and spiritual implications and may contribute to the appearance of a planetary form of consciousness.

## Introduction

To begin with I want to show that the modern scientific worldview is based on a collection of philosophical assumptions that can be traced back at least to the 17th century (mainly to the fathers of classical physics such as Galileo, Descartes, and Newton). These assumptions include materialism, reductionism, and determinism. Materialism is the idea that the universe is a cold, impersonal machine, devoid of goals, purpose or meaning; and that all things are composed of matter. This assumption implies that the brain is made up entirely of material particles and fields. Reductionism is the notion that the nature of complex things can be understood by reducing them to the interactions of their parts, or to simpler or more fundamental things. According to this assumption, mind and consciousness can be reduced to electrical and chemical activity in the brain. Determinism is the idea that the state of the physical world at any time is completely determined by its state at any earlier time. With respect to the relationship between mind and brain, proponents of determinism claim that humans are mechanical automata. In other words, they believe that our thoughts, feelings, and intentions do not make a difference in what we do.

There are several main approaches to the mind-brain problem from a materialist standpoint. First epiphenomenalism which is the view that the mind exists, like a rainbow shimmering over the falls. It is merely a product of brain-body processes. The mind sometimes facilitates for itself the illusion that it affects those processes, much as if the rainbow thought it affected the falls in some way. Secondly eliminative materialism, which denies that mental functions and processes exist in their own right. This theory asserts that "consciousness" and "mind" are pre-scientific concepts that belong to an unsophisticated notion of how the brain works (sometimes called "folk psychology"). They can be reduced to whatever the nerve cells happen to be doing. "Consciousness" and "mind" as concepts will be eliminated by the progress of science. And thirdly the psychophysical identity

theory, which holds that the activity of the mind is identical to the activity of the brain.

These three theories have implications for human experience. For instance, if the mind is a delusion created by the brain, then human beings cannot have a transcendent experience that puts them in contact with a reality beyond themselves because there is no such reality. And beliefs or intentions cannot influence what is going on in the brain and the body.

## **Empirical evidence challenging materialist views**

### **The Power of Belief to Cure or Kill**

To start with, I want to discuss the placebo effect. This refers to any treatment—including drugs, surgery, psychotherapy and quack therapy—used for its ameliorative effect on a symptom or disease but that is actually ineffective for the condition being treated. The psychological and physiological responses elicited by placebos strongly suggest that expectations and beliefs about a treatment can have a major positive impact on what is happening in the brain and the body. Consider the famous case of "Mr. Wright", who was found to have cancer and was given only days to live. Hospitalised, he heard that scientists had discovered a horse serum – Krebiozen - that appeared to be effective against cancer. He begged to receive it. His doctor agreed and gave Mr. Wright an injection. A few days later, Mr. Wright was out of his "death bed", joking with the nurses. He was discharged from the hospital. Two months later, Mr. Wright read a medical report that the horse serum was really a quack remedy. He suffered an immediate relapse. The doctor told Mr. Wright that those reports were inaccurate, and he injected him with a new super-refined double strength version of the drug (actually, water). Again, the cancer vanished. Mr. Wright was "the picture of health" for another two months - until he read a definitive report stating that Krebiozen was worthless. He died two days later.

There are several recent brain imaging studies of the placebo effect in healthy individuals and patients suffering from various disorders, including Parkinson's disease and major depression. The results of these studies demonstrate that beliefs and expectations can markedly affect activity in brain regions involved in perception, movement, pain, and emotion. In relation to this I should also mention the so-called nocebo effect, the evil twin of the placebo effect. Nocebo responses refer to negative physiological changes and symptoms that follow the administration of a chemically inactive substance that the recipient believes to be an active drug.

## Brain Control

Neurofeedback is a procedure in which a person learns to gain control over specific aspects of her brain activity, usually measured with sensors placed on the scalp. Measurements of brain activity are converted into video displays and sounds which are continuously fed back in real-time to the person.

Studies, including our own, show that neurofeedback can be used in the treatment of epilepsy, attention-deficit hyperactivity disorder (ADHD), anxiety, and major depression. Related to this are systems called Brain-Computer Interface (BCI). A BCI is a direct communication pathway between the brain of a person and a computer. By controlling their thoughts, severely paralysed patients can answer yes-or-no questions, spell out sentences or even surf the Internet using a BCI such as the Thought Translation Device (created by Dr. Niels Birbaumer and his colleagues at the University of Tübingen, Germany).

In addition, there is evidence indicating that neurofeedback can be utilised to enhance performance in healthy individuals and athletes. Neurofeedback training has been shown to improve shooting accuracy in skilled archers, and to increase the percentage of successful putts in golfers. Neurofeedback is also currently used – in the MindRoom (conceived by Dr. Bruno Demichelis) – to train top professional football players.

## Train Your Mind, Transform Your Brain

Numerous brain imaging studies of emotional self-regulation have been conducted during the last decade (some of these studies have been carried out in my lab). This cognitive skill allows people to influence which emotions they have, when they have them, and how they experience and express these emotions. The results of these imaging studies clearly show that human beings can intentionally alter the way the brain reacts to emotional situations. These results indicate that humans are not totally controlled by their brains since they can purposefully guide cerebral activity.

Other brain imaging studies (including our own) have measured the effect of psychotherapy in the case of people suffering from diverse forms of mental health problems (e.g., obsessive-compulsive disorder, panic disorder, major depression). These studies support the view that the mental functions (e.g., thoughts, feelings, beliefs) involved in various types of psychotherapy can exert an important influence on the functioning of the brain.

Studies by Richard Davidson and his colleagues at the University of Wisconsin-Madison, over the past few years, have been carried out in collaboration with Tibetan monks. Davidson and co-workers found that mental training through meditation can itself change the functioning of the brain. Moreover, recent work conducted by my research team shows that the practice of mindfulness (i.e., a nonjudgmental, present-centered awareness in which each sensation, thought, or feeling that arises is acknowledged and accepted as it is) changes the brain in the short term, but also quite possibly produces permanent changes. Regarding this possibility, there is now evidence that meditation can even modify the physical structure of our brains.

## Surfing the Psychosomatic Network

The interdisciplinary area of psychoneuroimmunology (PNI) research examines interactions between the mind, the brain, and the immune system. A number of PNI studies indicate that chronic stress leads to a global suppression of immunity. Other investigations have revealed that negative mood is associated with suppression of the immune system, whereas positive mood appears to strengthen immune function.

Some studies demonstrate that the immune system can be influenced by visualisation (mental imagery). In one of these studies, Dr. Carl Simonton and his colleagues taught patients to visualise their bodies in perfect working order and mentally imagine white blood cells (seen like strong eating sharks) devouring and eliminating the cancer cells (seen as shark bait). Results revealed increased life expectancy, better pain management, more positive attitude and self-images, and

reduced tumour size and incidence for those patients who used the visualization technique. Similar results were found in other studies.

Hypnosis also can be a powerful tool for harnessing the power of our minds and affecting the way our brains and bodies function. Research shows that suggestions received in a hypnotic state of trance can markedly reduce pain perception and improve various skin conditions, allergies, and asthma. And there are studies showing that hypnotic suggestions can alter the activity of the brain and even lead to spectacular body changes.

## Beyond Space and Time

What of psychic (or *psi*) phenomena? There are two types to note: first the perceiving of objects or events beyond our ordinary sense capabilities (*extra-sensory perception*) and second the direct influence of mind on objects or living organisms (*psychokinesis*). These phenomena directly challenge some of the basic philosophical assumptions of materialist science. Because of this, materialist scientists and philosophers usually consider that psi phenomena cannot really exist.

There is considerable evidence indicating that some psi phenomena (e.g., perception at a distance, mind-matter interaction, mental interactions with living organisms) are genuine. For instance, a meta-analysis (a statistical approach that combines the results of several studies to test certain hypotheses in a more accurate way) of all telepathy studies up to 1997 revealed a probability of a million billion to one against chance.

For psychokinesis, current research uses a random number generator (RNG), i.e. an electronic circuit that randomly flips an electronic “coin,” while recording the results. In a typical modern experiment, spikes of electronic noise (i.e. a random fluctuation in an electrical signal inherent to all electronic circuits) occurring several thousand times per second interrupt a clock that is counting at a rate of 10 million cycles per second. The clock’s state when interrupted will produce either 0’s or 1’s. The experimental subject is asked to influence the RNG’s output by “wishing” for 0’s or 1’s. A meta-analysis looking at 832 RNG studies conducted during the last decades showed odds against chance beyond a trillion to one.

In my view, psi phenomena represent a direct consequence of living in an interconnected universe. Interestingly, the idea of the universe as an interconnected whole has been for millennia one of the core assumptions of Eastern philosophies and spiritual traditions.

## Mind Out of Body

There is evidence to show that the mind cannot be reduced to electrical and chemical activity in the brain. Such evidence is based on recent scientific studies on near-death experience (NDE) conducted by Drs. Bruce Greyson (USA), Peter Fenwick (UK), Sam Parnia (UK), and Pim van Lommel (Netherlands). The results of these studies indicate that approximately 15 per cent of individuals who suffer cardiac arrest and clinical death report lucid, well structured perceptual processes, thoughts, feelings, and detailed recall of events during their encounter with death.

These scientific NDE studies indicate that heightened mental functions can be experienced independently of the body at a time when brain activity is greatly impaired or seemingly absent (during cardiac arrest). Some of these studies demonstrate that blind people can have veridical perceptions during out-of-body experiences (OBEs) associated with an NDE. Other investigations show that NDEs often result in deep psychological and spiritual changes.

These findings strongly challenge the mainstream neuroscientific view that mind and consciousness result solely from brain activity. Such a view fails to account for how near-death experiencers (NDErs) can experience—while their hearts are stopped—vivid and complex thoughts, and acquire veridical information about objects or events remote from their bodies.

## Embracing a Greater Self

Next I want to consider the notion of transcendent experiences. These experiences extend beyond the limits of ordinary experience and are characterised by altered or expanded consciousness. Such experiences relate to a fundamental dimension of human existence and are frequently reported across all cultures and spiritual traditions. Central features of these experiences are: (1) The perception of being one infinite, unbroken life, encompassing all things; (2) Feelings of peace, bliss, and joy; (3) The feeling of having encountered the sacred or the divine (sometimes identified as “God”); (4) A transcendence of space and time. Transcendent experiences can be triggered by the ingestion of mind-altering drugs and natural substances, shamanic practices, meditation, and NDEs. They can also result from regular spiritual practice. Moreover, these experiences can occur without any apparent reason. Transcendent experiences often lead to profound transformative changes in attitudes and behaviour, i.e. changes in one’s worldview, belief system, relationships, and sense of self.

Transcendent experiences tell us that, contrary to appearances, we are not encapsulated within our brains and bodies and separate from each other but, rather, “organically” connected with all others and with everything in the entire universe.

## A Great Shift in Consciousness

In conclusion I suggest that the philosophical assumptions at the heart of the modern scientific worldview are not supported by the available empirical evidence. On the contrary, this evidence backs up a radically different scientific worldview.

In spite of the fact that quantum physicists, faced with compelling experimental evidence, have been moving away from the founding philosophical assumptions of modern science, many scientists in the biological sciences, especially in the neurosciences, are still clinging to these assumptions of classical physics. These scientists have not yet grasped that these old assumptions dissolved because of the advancements in quantum physics.

I am not the first one to refer to the emergence of a new scientific worldview. During the last few decades, a number of well-known scientists and thinkers have discussed the emergence of such a worldview. These scientists and thinkers include physicists (Dr. Fritjof Capra, Dr. Amit Goswami, Dr. Edgar Mitchell), futurists (Dr. Willis Harman, Dr. Ervin Laszlo), psychiatrists (e.g., Dr. Stanislav Grof, one of the founders of transpersonal psychology), parapsychologists (Dr. Dean Radin, Dr. Marilyn Schiltz) and scholars (e.g., Dr. Theodore Roszak, Dr. Richard Tarnas, David Lorimer).

Here are a few core elements of this emerging scientific worldview:

- Mind is one of nature’s ultimate realities. Both matter and mind are fundamental aspects of the universe. They are not radically separate; rather, they represent different aspects of a deeper reality.
- The universe is a multi-levelled interconnected unity, i.e. a network of phenomena that are fundamentally interdependent. Within this wholeness - pervaded by life, mind and consciousness - every part is connected to every other part. This single whole includes every aspect accessible to human awareness (the physical world as discerned through our senses, and all the contents of consciousness - e.g., sensations, feelings, thoughts, beliefs, intentions). Spiritual awareness is the feeling of belonging (or connectedness) to the universe as a whole.
- The human mind, which is more than the activity of nerve cells in our brain, can significantly influence brain activity and the physiological systems connected to this organ (e.g., immune system, endocrine system). The human mind can also interact at a distance with objects (e.g., RNGs) and living organisms (e.g., microorganisms, plants, animals, humans), and operate beyond brain (e.g., NDEs).
- Mind and consciousness are transmitted and filtered through the brain, they are not generated by this organ. It is thus likely that mental functions, consciousness and personality can survive physical death.

This new scientific worldview has profound social, moral, and spiritual implications. It is supportive of the highest values, meanings, and purposes of all societies. It ennobles rather than demeans individuals (showing that humans are not sophisticated biological machines), and fosters cooperation and conservation of nature. Ultimately, such a worldview may contribute to the evolution of the human species, that is, the appearance of a planetary form of consciousness that may bring a radical transformation of our world.

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Brain Wars. How the Military Is Failing Its Wounded. While military statistics show that more than 115,000 soldiers have suffered mild traumatic brain injuries, unpublished research suggests that such injuries have gone undiagnosed in tens of thousands of troops. Even when the injuries are diagnosed, at one of the largest U.S. Army bases, soldiers have had to fight to get the appropriate care.Â Brain specialists say Army's training may make soldiers more vulnerable to head injuries on the battlefield. by Joaquin Sapien. Aug.