



BP – Consciousness as Causal

Nobel neuroscientist, [Roger Sperry](#): *“Current concepts of the mind-brain relationship involve a direct break with the long established materialist and behaviorist doctrine that has dominated neuroscience for many decades. **Instead of renouncing or ignoring consciousness, the new interpretation gives full recognition to the primacy of inner conscious awareness as a causal reality.**”*

On these new terms, science no longer upholds a value-empty existence, in which everything, including the human mind, is driven entirely by strictly physical forces of the most elemental kind... This new outlook leads to realistic, this-world values that provide a strong moral basis for environmentalism and population controls and for policies that would protect the long-term evolving quality of the biosphere.”

From the book *Science, Order and Creativity* by physicists [David Bohm](#) and [David Peat](#): *“The causal interpretation of quantum physics was developed by David Bohm over a period of several decades beginning in the 1950’s...it provides an account of how actual quantum processes may take place. Moreover it does not require a conceptual or formal separation between the quantum system and its surrounding “classical” apparatus...there is no fundamental “incommensurability” between classical and quantum concepts. **In developing the discussion it is necessary to introduce some new ideas, such as the notion of active information, which becomes important in explaining the ideas of [generative order](#).**”*

*“Causal” should not be taken as a form of complete determinism. Indeed **this interpretation opens the door for the creative operation of underlying, and yet subtler, levels of reality.** Within Newton’s physics, a classical particle moves according to Newton’s laws of motion, and the forces that act on the particle are derived from a classical potential V . **The basic proposal of the causal interpretation is that there also acts a quantum potential Q .***

*In the causal interpretation, the electron moves under its own energy, but the information in the form of the quantum wave directs the energy of the electron. Clearly the term causal is now being used in a very new way from its more familiar sense...Information within quantum potential will determine the outcome of a quantum process...it is useful to extend this idea to what could be called active information...**The quantum wave carries “information” and is therefore potentially active everywhere, but is actually active only when and where this energy enters into the energy of the particle...**”*

Another name for this theory is non-local causation. Or what Einstein called “spooky action at a distance.”



Peat/Bohm: *“There is great reluctance on the part of physicists to consider such non-locality seriously, even though it does lie at the heart of the formal implications of quantum theory. Because theories in terms of local interactions have been so successful over the past few centuries, the concept is now seen as both necessary and inevitable. But **in fact, there does not appear to be in any intrinsic reason to rule out non-local forces. However, a general attitude has arisen out of the tacit infrastructure of ideas over the last few centuries which prejudice scientists against any serious consideration of non-locality...***

***If we say consciousness is a material process that might be fairly accurate up to a point. But it is also more.** Its ground is in the infinite depths of the [implicate and generative orders](#)...This way of looking at the nature of reality can be extended to all life, and even to what is normally called inanimate matter. The root of what is manifest in these forms lies in the ultimate depths of the implicate and generative orders of the totality of matter, life and mind. In this sense even inanimate matter must have some kind of mental aspect. The essential point, however, is that there is no absolute break between consciousness, life, and matter.”*

Explanation, Explanandum, Causality and Complexity: A Consideration of Mind, Matter, Neuroscience, and Physics.

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Wurzman, Rachel; Giordano, James:

*“...it is important to recall that **causality in quantum physics does not necessarily resemble that which is described in classical terms.***

*It may be that quantum physics was so slow to be accepted, despite its practical success, because of a causal ambiguity it presents. It has been referred to as physics’ “skeleton in the closet” that **quantum physics seems to inevitably encounter consciousness by the implications of its assertion that atoms or elementary particles are merely “potentialities or possibilities”** (i.e., an immaterial wave function) until measured or “observed” (although consciousness may be more or less directly encountered depending on the definition of such an “observation”) (Rosenblum and Kuttner, 2006). Measurements are said to “collapse” the waveform (also referred to as the “de-coherence” of a superposition state wave function), meaning that while both states exist at the macroscopic level, after measurement only one is “actualized” (i.e., observed) from the macroscopic perspective.*

While many different interpretations of what constitutes such an observation have varying success at distancing consciousness from the measurement or observation of “collapsed” reality, none at present entirely escape it (Rosenblum and Kuttner, 2006). Consciousness has some causal interaction with quantum physics.”

*“...given that the physical brain is a manifestation of physical particles (albeit described at a higher level in the organizational hierarchy), both quantum and classical physical principles likely apply, depending upon the level of explanation. **This contextualizes the brain to within a unified (and universal) reality, that can be variably described based upon the specific scale at which a given phenomenon is explained.***



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Notably, there are reciprocal relationships only among the formal, final, and efficient causes at the fundamental level. **The material cause *arises from the final cause (by an increase in complexity), akin to how matter arises from an increase in the complexity of quantum information, as described in Lloyd's "universal computer" model of the universe (Lloyd, 2006).*** Similarly, (qualitative) meaning may arise from an increase in the complexity of (quantitative) information. *Therefore, matter cannot be explained without reciprocal reference between causes and levels of a complex hierarchy.* This concept is concretized by Walker's modification of the Dirac equation (Walker, 2000).

... an understanding of an entity as a whole can only be known by reference to its parts, but the "function" of the parts is only understood by knowledge of the entity as a whole. This entails elevating the role of context, meaning, and the subsequent importance of an observer or interpreter. **Meaning in such a causally convergent system is "captured" by an observer, and forged into the system in the "closure of newness" (Crutchfield, 2008, p.272).**

In light of this, it is not surprising that scientifically reductive methods have not been able to close the explanatory gaps relevant to hierarchically-entangled, complex system(s). **Reductionism cannot explain events that encompass dynamics existing across an emergently higher and more (causally) complex system, because it lacks the epistemic toolbox to do so.** Its methods are only equipped for certain kinds of questions that are characteristically reductive and hence only aimed at providing explanations limited to a single level in a complex hierarchy."

END OF MORE

From the book *The New Physics and Cosmology: Dialogues with the Dalai Lama* (edited by Amherst Physics professor, [Arthur Zajonc](#)):

In the Copenhagen (Neils Bohr and colleagues) interpretation is not explained in terms of a detailed physical model. It is as **Anton Zeilinger**, professor of physics at the University of Vienna, says, "a primary unexplained notion." One alternative is to invoke observation (without explaining what it is) as that which breaks quantum entanglement and leads to the classical readings of our scientific instruments. Another, advanced by the famous physicist Eugene Wigner, **breaks the infinite web of entanglement through human consciousness which produces classical reality when the nonphysical mind of a human observer gets involved.**

David Ritz Finkelstein teaches and studies physics at the Georgia Institute of Technology and edits the international Journal of Theoretical Physics: *"I think of the latest development of physics as the (growth of relativism. Every increase in relativism is an) increase in **our understanding of the complexity of the observer, of a number of possible observers, and of the influence of the observer upon the phenomenon.** Quantum theory is only in the latest stage in this growth of relativism...The hardest part of each dramatic change that has occurred in physics since 1600 has been to become aware of the assumptions of the old theory that had to be given up. The most confusing state of affairs is during the early days of a new theory, when you still cling to some of the old assumptions, and yet some rewards of the new theory are attracting you further."* (From [The New Physics and Cosmology](#))



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Tu Weiming, director of the Harvard-Yenching Institute. He has taught at Princeton and University of California at Berkeley and since 1981 has held the position of Chinese history and philosophy at Harvard: *“The vital role of the observer strongly suggests a new vision of the human person in this whole enterprise. With the emergence of new physics and cosmology, many of the social and cultural values that the classical scientific revolution contributed as part of the enlightenment project of the modern West are now outmoded, or at least problematical...The idea of progress through history has left behind many old forms of knowledge as irrelevant or superseded.”* (From The New Physics and Cosmology)

Jahn and Dunne’s REG research is described in numerous refereed publications, as well as in two books *Margins of Reality* and *Consciousness and the Source of Reality: The PEAR Odyssey*. The article [The PEAR Proposition](#) provides good overview of the entire program, and [Correlations of Random Binary Sequences with Pre-Stated Operator Intention: A Review of a 12-Year Program](#) describes the REG experiments. Both of these, along with several dozen other publications, can be downloaded from the PEAR website at www.princeton.edu/~pear. Jahn and Dunne started an independent lab www.icrl.org

Typically, statistical significance is regarded as any figure that has a probability against chance of 5% or less, or 5 out of 100... 2 or 3 out of 10,000 is well beyond that statistical threshold and constitutes pretty persuasive statistical evidence for a real effect. PEAR has other experiments with comparable results, but the largest database was from the REG experiment, comprising over 2.5 million trials. Probabilities of a few parts per 10,000 with a database of that size are irrefutable.

The Non-Local Universe: New Physics and Matters of the Mind Robert Nadeau and Menas Kafatos: *“...at the end of the sometimes arduous journey lie 2 conclusions that should make the trip very worthwhile. First, there is no basis in contemporary physics or biology for believing on the stark division between mind and world that some have described as “the disease of the Western Mind.” Second, there’s a new basis for dialogue between the humanists-social scientists and the scientists-engineers.”*

Effects of mass consciousness: changes in random data during global events.

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Abstract

A long-term, continuing experiment is designed to assess the possibility that correlations may occur in synchronized random data streams generated during major world events. The project is motivated by numerous experiments that suggest that the behavior of random systems can be altered by directed mental intention, and related experiments showing subtle changes associated with group coherence. **Since 1998, the Global Consciousness Project (GCP) has maintained a global network of random number generators (RNGs), recording parallel sequences of random data at 65 sites around the world. A rigorous experiment tests the hypothesis that data from the RNG network will deviate**



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from expectation during times of "global events," defined as transitory episodes of widespread mental and emotional reaction to major world events. An ongoing replication experiment measures correlations across the network during the designated events, and the result from over 345 formal hypothesis tests departs substantially from expectation. **A composite statistic for the replication series rejects the null hypothesis by more than six standard deviations.** Secondary analyses reveal evidence of a second, independent correlation, as well as temporal and spatial structure in the data associated with the events. Controls exclude conventional physical explanations or experimental error as the source of the measured deviations. The experimental design constrains interpretation of the results: they suggest that **some aspect of human consciousness is involved as a source of the effects.** Copyright © 2011 Elsevier Inc. All rights reserved.

*"We used to think of the universe as "out there", to be observed as it were from behind the screen of a foot-thick slab plate of glass, safely, without personal involvement. the truth quantum theory tells us, is quite different...**the observer is inescapably promoted to participator. In some strange sense this is a participatory universe.**" - John Wheeler, Princeton physics professor at 1981 Nobel conference.*

John Gribbin – Schrodinger's Kittens and the Search for Reality:

"...it seems miraculous, unless we invoke some form of communication and feedback, that the polarization states of two photons flying out on opposite sides of an atom can be correlated in the way that the Aspect experiment reveals. The one big difference, the hurdle that we have to overcome, is the instantaneous nature of the feedback in the quantum world. But that is explained by the nature of light itself."

<https://www.youtube.com/watch?v=wJwsSbiVE2g> **Dean Radin** – Men Who Stare at Photons

Light, photons, and consciousness