



Letter

Quantum Physics and the Mind-Brain Problem

A Response to Godfroid's Gauge Theory

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Godfroid's concept of psychiagenia is an attempt to posit a common root to both brain and mind, a project that has its origins in the philosophy of Spinoza. Godfroid develops Spinoza's work, as well as the neutral monism of Hartmann, by introducing string theory as a means of formalizing psychiagenia. Godfroid does a fine job of introducing the historical background of his work, as well as illustrating both the strengths and weaknesses of his theory.

There are serious difficulties with Godfroid's theory, some of which he has already elucidated. In general, it seems very premature to initiate a link between string theory and the mind-brain problem. The discussion of quantum physics in the field of neuroscience is already theoretically controversial and experimentally unproven. The difference between quantum theory and string theory, however, is that quantum theory has the advantage of being one of the most successful scientific theories ever developed. If we speculate on the connection between quantum physics and brain activity, we are at least drawing a connection between two highly developed and experimentally verified disciplines. This is not the case for string theory. Furthermore, the reduction to string theory takes Godfroid's gauge theory out of the realm of neutral monism—string theory is a physical theory of materialism.

Godfroid stresses that the relationship between psychiagenia and string theory may at this time be more thematic or heuristic rather than actually physical in nature. There are, however,

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difficulties with both that parallel each other. Both string theory and gauge theory are ways of shifting empirical and theoretical problems to other realms where they seem to disappear (Godfroid himself notes this, but it does not appear to disturb him). By positing the third entity of psychiagenia, we obviate the mind-brain duality but we leave ourselves in the precarious scientific position where we can say little and do even less to prove the hypothesis. At least string theory, unlike psychiagenia, has a mathematical formalism on which it can rely. Yet string theory is also undermined by its need for ten dimensions. Granted, this non-intuitive property is no disproof of the theory. Indeed, both relativity and quantum theory forced us to redefine our commonsense notions of space, time, and matter. It seems, however, that the need for extra dimensions (string theory) or extra psychic entities (Godfroid's gauge theory) distorts the subject of study beyond recognition.

Quantum physics does, I believe, shed a heuristic light on the mind-brain problem. Quantum theory is beset by its own conundrum: the wave-particle duality. It is certainly possible to posit a third entity from which both could be derived, similar to what Godfroid does with the mind-brain duality. The third entity in quantum theory that allows the wave and particle to be manifest is not necessarily a deeper reality, but rather *an observer*. Godfroid highlights the observer directly in his paper (Figure 1), but leaves him in the passive position. "Wave" or "particle" are merely answers to different forms of questioning put forth by an intentional consciousness and executed in experiment. Thus, the third entity need not be ontologic but rather epistemologic, i.e. not something related to being but rather to knowing. We define the reality by investigating and theorizing about it.

Consider an example put forth by Godfroid: medical imaging. Godfroid suggests that neuroimaging can break a mind-brain symmetry, obscuring part of psychiagenia and bringing a ten-dimensional reality to a four-dimensional reality. Godfroid does point out that the "exploratory device" (for example, an MRI machine) influences the subject studied. Imaging, whether it be pathologic or radiologic, is a form of interpretation that *creates* the entity of brain for our scientific use. Brain and mind are thus epistemologic constructs rather than entities that have the ontologic status of being "out there" to be manifested from psychiagenia. This highlights that mind and brain are useful tools for the cognitive investigator, just as wave and particle are for the physical one. Also, the mind-brain duality may be an artificial construct. Consider the study of drug abuse as an example. We could talk about the brain mechanisms involved via neuroimaging, or discuss psychodynamic theories that suggest drugs as a way of obscuring trauma or replacing object loss in youth. We need not stop at this dyad, however. We could also see it from a sociologic perspective, or discuss the instinct to alter consciousness from a theologic point of view, or discuss drugs as a tool of quelling the masses in oppressive capitalist society. The point is, "mind" or "brain" or "society" or "spirit" are in this instance many tools we use to address a scientific problem, rather than concrete entities.

This, of course, leaves us in another curious position: psychiagenia, the root to both brain and mind, is the investigating consciousness itself. While this seems to be a *reductio ad absurdum* that assumes what was meant to be proven, 20th-century physics has taught us that observation or consciousness is a limiting factor in physical theory. This form of idealism is



consistent with the philosophical tradition of American pragmatism, a philosophy that also attempted to resolve dualities. In the realm of physical theory, however, it reflects the instrumentalist approach to quantum physics of Niels Bohr and the Copenhagen interpretation.