

## Consciousness and Brain: Some reasons why psychophysical reductionism must fail

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Generally, science regards *falsification* as a criterion distinguishing science from pseudoscience. A hypothesis that in principle cannot be tested, i.e. falsified, is not scientific. Neurobiology has, for more than 100 years, built on the basic hypothesis that consciousness is generated by brain activity, a hypothesis upon which psychophysical reductionism is built. However, how this is done – or even possible in principle – continues to be "the hard problem of neurobiology."

Is it possible to test this hypothesis? I would argue that it indeed is, and that there already exist several falsifications, based on logical reasoning as well as empirical findings. Four examples will briefly be outlined:

1. *The information problem*: the nerve impulses that lead from sensory receptors (in the eye, the inner ear, etc.) into the respective sensory centres of the brain, are not *codified*, i.e. they carry no differentiated information corresponding to the perceptions they are supposed to generate. The same applies to the motoric nerve impulses, which are presumed to organize our informed movements.
2. *The problem of rationality & free will*: According to the current scientific opinion, physical processes, including those that occur in the brain, are either deterministic or (at least at the subatomic level) indeterministic. Rationality & rational actions must (for pure logical reasons) be ascribed to a third principle – one of free self-determination & ability to act upon reasons rather than causes – that cannot be subsumed under or derived from deterministic and/or indeterministic processes.
3. *Consciousness without brain*: Extreme cases of hydrocephalus demonstrate examples of people with virtually no brain, who nevertheless have normal abilities of perception and cognition. In the most extreme cases, "the neuronal machinery" is reduced to a layer of neural tissue of about 1 mm between CSF and skull.
4. *Consciousness without brain activity*: There have been demonstrated cases – e.g. in several NDE studies – of clear consciousness, including verifiable physical perceptions, when all neuronal activity has ceased.

These examples call for a radical reconsideration of the relationship between consciousness and the brain.