

Peer Review

Review of: "The Interaction Problem and Mental Causation: A Quantum Field Theoretical Perspective"

Carles Salazar¹

1. Universitat de Lleida, Lleida, Spain

This is an interesting and scholarly paper on one of the most fundamental problems in contemporary science and philosophy, the problem of accounting for mental causation and interaction between mind and matter. Dualist ontologies face the problem of how matter and mind can interact, as they obviously (apparently) do when we make a simple movement with our bodies, such as raising our hands. Physicalist ontologies simply dismiss the existence of such a problem, for nothing non-physical is supposed to exist in a physicalist ontology. Therefore, either the mind is some kind of physical stuff, or it simply does not exist. Masi's proposal, if I understood him correctly, seems to side with the physicalist approach but with a very important qualification. This is a qualification that has to do with the very concept of the 'physical'. He cleverly discards the equivalence between 'physical' and 'material,' for it is very clear in contemporary physics that non-material entities, such as electromagnetic or gravitational waves, can interact with matter. But now it so happens that the very ontology of physical things turns out to be very uncertain. There is 'no universally accepted definition of what constitutes the "physical," (p. 5),' Masi contends. His point is that the ambiguity of the (concept of the) physical can make room for the introduction of mental causation. But how? What sort of physical stuff is the mind made of? He makes use of quantum mechanics and quantum field theory to foster a non-deterministic ontology that would support a kind of universal mental causation akin to panpsychist approaches (pp. 18 and 20 n.2). In a nutshell, there should be no problem with accounting for mental causation in, say, the movements of the human body by the human mind, because mental causation is everywhere in nature, and the indeterminacy of QM and QFT is the proof. Hence, the raising of one's hand by a mental event (such as the intention to raise one's hand) would be analogous to the collapse of the wave function caused by an act of measurement or the spooky action at a distance between entangled particles.

The problem is that QM indeterminacy and mental causation are very different kinds of phenomena. As a matter of fact, mental causation is not indeterminate; it is determinate by the subject's intentions, whereas it is unclear what the role of intentionality is in the production of quantum events. Masi writes: 'This means there is still room (limited by statistical variance), which raises the possibility that Nature may "choose" which events within a state of potentiality will manifest into actuality and when that will happen' (p.15) and 'volition that can permute the sequence of possible quantum events' (p. 18). Other than metaphorically, I fail to see in what sense Nature may 'choose' anything or that 'volition' can permute the sequence of possible quantum events (whose 'volition?'). Of course, we can define 'volition' and 'choosing' in whatever way we wish, but it is hard to see in what way the volition and choosing of a living organism, such as a human being, is in any way analogous to the probabilistic indeterminacy of quantum events according to Born's rule or the violation of Bell's inequality in entangled particles. This looks very much like the composition problem in panpsychism: once we have granted mental properties to everything, we are at pains to account for the difference between the mental properties of a living organism, such as a human being, and the alleged mental properties of electrons and quarks.

Maybe one possibility that Masi does not consider is that the problem with mental causation is precisely the 'interaction problem', i.e., the alleged causal relations between mental states and physical events. The relationship between mind and matter can be seen as analogous to the relationship between math and the laws of physics. We understand the laws of physics by means of mathematics, but this does not mean that physical events are 'caused' in any way by mathematical equations. We understand certain physical phenomena (those that we link with the performance of an action, such as raising one's hands) by postulating the existence of a mental cause, an 'intention'. But this does not mean that the intention is causally responsible for the raising of my hand *as a physical phenomenon*. Only the neural circuits that connect my brain with the muscles of my arm (a physical event) have caused the movement of my arm (another physical event). My intention (a mental event) is only causally responsible for my *action* of raising my hand, say, because I want to call someone's attention (another mental event). To conclude: there is no interaction between mind and matter in the same way as there is no interaction between mathematical equations and physical events. We explain certain physical events, such as the raising of one's hand, by mental events, such as one's intention to raise one's hand, in the same way as a physicist explains physical events by means of mathematical equations. Clearly, a physicist might argue that there is certainly physical stuff outside the equations she uses to make sense of it. But how can anyone have

access to, i.e., explain, that physical stuff other than by means of those equations? Similarly, how can we explain human actions other than by means of their underlying mental states?

Declarations

Potential competing interests: No potential competing interests to declare.