Review of: "The Brain as a Filter: Introducing a Quantum Ground into Integrated Information Theory"

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The article explores the possibility of introducing an intrinsic phenomenal component, based on Russelian monism, as a unified ground, into the IIT theory of consciousness, with the aim of providing a way around the hard problem of consciousness. To do this, the author builds on the aspect of quantum entanglement, which has been suggested to ground the integrated/holistic properties of the universe. This leads the author to propose a filter version of IIT, in which the brain links external stimuli with phenomenal properties in the unified quantum ground. The author argues that this filter version of IIT can better account for challenges generated by psychedelic and meditation research and may even allow it to account for observed ESP phenomena.

While the paper is quite "unconventional," I found its reading stimulating, and I appreciated the links to the diverse literature it builds on. In particular, I thought that the idea of using an intrinsic Russelian component in consciousness theories based on recent developments in quantum theory is an interesting and potentially promising approach. One difficulty here (which I expect many readers will have) is that many of the quantum theory concepts (key to this model) are probably not well known and hard to follow (for example, “wave-function realism,” or “the ontological deeper ground” of Ismael & Shaffer). While the article contains useful citations to this literature, the paper could benefit from some explanation of these concepts. For example, it would help to address the following simple question on how we could conceive of this intrinsic unified phenomenal ground:

Usually, we think of conscious states (colors, pain, pleasure, envy) as being triggered in a brain in response to external stimulation. In the filter version, those phenomenal states are filtered from the cosmic phenomenal unified ground. So **should we think of this ground as containing a composition of all possible such phenomenal properties independent of any external stimulation ? (does the cosmic ground contain pleasure and pain, happiness and envy, at any moment, simultaneously)?**

Also, please explain the (potentially related) statement:

pp. 8-9: “the notion of the quantum ground…might obviate the need for superposed states”

Below, I list a number of additional issues on which clarifications would be helpful.

i) Integration in consciousness and in the cosmic ground.

The integration is presented as the common property of conscious processes (according to IIT) and the cosmic ground

(based on quantum entanglement). To support the former, the author writes that:

p. 1: “This notion of integrated information follows an intuition based on prior work that suggested conscious experience is associated with the more integrated areas of the brain."

Some citations are obviously needed here. (Personally, I find the integration aspect of consciousness not very obvious, once we accept its compositional aspect: What would be the nature of the visual experience of a red circle on top of a blue circle, if conscious experience was not integrated?)

p. 14: “research has found that psilocybin disrupts the organization of neural integration, and yet somehow produces an overall effect of increasing the degree of integration in the neural system (Gallimore 2015)”.

How can these opposite effects be independently established?

ii) Accounting for data in psychedelic and meditation research.

The challenge is that in both domains, a reduction in activity in integrated brain areas results in the enhancement of conscious states (which are wider or deeper). The following explanation is provided (p. 14):

"The overall effect might be unclear given a reduction of some aspects of cognition under such episodes, while overall integration is increased (Gallimore 2015). Further, incorporating a high-dimensional, highly integrated ground along the lines I suggest into the calculation of Φ is arguably not possible. Perhaps we might view Φ as a lowball estimate of conscious experience if cases of deeply meaningful or profound states of experience are associated with a deeper source or ground of consciousness."

I am afraid that this is not very clear.

iii) Accounting for data in ESP research.

p. 17: "Radin and his colleagues have invoked the “consciousness collapses the wave function” interpretation of quantum mechanics to explain the results. They find that focused attention results in greater concentration in the diffraction pattern, which they interpret to support the view, associated with Von-Neumann and Wigner, that consciousness collapses the superposed wave function into the experimental outcomes. However, I suggest the results are also consistent with an alternative interpretation: that focused attention by the experiment’s participants influences the system’s wave function as a whole (altering the Born probabilities) and thus leads to a more concentrated diffraction pattern. That is, the participant’s focused intention toward hitting the center of the target could influence wave function probabilities such that the likelihood of hitting the center is increased, thus narrowing the diffraction pattern".

I am afraid that this is not very clear, either. I believe that without a mathematical theory that can make specific predictions, verbal explanations of this type will do little to convince the skeptics…

iv) Finally, it could be helpful to contrast this theory with the Penrose & Hameroff Orch ORC theory…

Missing Reference

I could not find Cardena (2018) in the REF list.