

## Peer Review

# Review of: "Toward a Field-Based Model of Awareness: Quantum Trilogy Theory of Consciousness"

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**Review of the article:** *Toward a Field-Based Model of Awareness: Quantum Trilogy Theory of Consciousness (QTTC)*

*"Toward a Field-Based Model of Awareness: Quantum Trilogy Theory of Consciousness"* is a bold and imaginative work that aims to reconceptualize consciousness through a (metaphorical) mapping of quantum field theory (QFT) structures onto cognitive phenomena. The attempt to build a structured theory that bridges phenomenology, cognitive science, and physics is ambitious and timely.

The manuscript offers a rich conceptual narrative, but I have the feeling it falls short of proposing a robust theoretical framework in consciousness science. Below, I outline both the strengths and key areas where improvement is suggested.

## Strengths

### 1. Creative Structural Mapping:

The analogy between QFT concepts—such as symmetry breaking, gauge fixing, and field excitations—and mental processes like intention, selfhood, and subjective experience is original and clearly articulated. Table 1, in particular, offers a helpful comparison that guides the reader through the model's central metaphors.

### 2. Conceptual Reframing of the Hard Problem:

Your proposal to reframe the Hard Problem of Consciousness as one of *structured transformation*

*within an awareness field* rather than computational emergence is thought-provoking. This reframing aligns with a broader philosophical trend that seeks alternatives to reductionism.

### **3. Interdisciplinary Ambition:**

The paper reflects a sincere and thoughtful effort to bridge disparate domains, including cognitive science, quantum physics, and philosophy of mind. QTTC could offer a conceptual bridge for dialogues that are often siloed.

## **Critical Recommendations**

### **1. Strengthen Theoretical Rigor and Discipline**

The central limitation of the paper lies in the conflation of metaphor and theory. While QTTC explicitly claims to be metaphorical, the text frequently slips into quasi-ontological language (e.g., “the awareness field retains configuration history,” “each act of awareness modifies the field”). Without clear epistemic boundaries, these statements risk being misinterpreted as real physical claims.

**Recommendation:** Introduce a disciplined terminology section that explicitly separates metaphorical constructs (e.g., “noëtons”) from theoretical or empirical terms. Clarify the philosophical stance that supports the use of these metaphors.

### **2. Address the Lack of Falsifiability and Empirical Anchoring**

As currently written, QTTC lacks any clear path toward empirical testability. The proposed biological interfaces (e.g., microtubules, DNA as “resonators”) are speculative and unsubstantiated by current biophysical evidence. Moreover, no measurable predictions or conditions are offered under which QTTC could be supported or falsified.

**Recommendation:** Either propose a minimal set of observable phenomena that would support the model (e.g., specific neural correlates, behavioral markers, or anomalies) or reframe the paper explicitly as a speculative philosophical model. Avoid suggesting QTTC could serve as a scientific theory without providing a path toward operationalization.

### **3. Define the Added Value Compared to Existing Models**

While you mention Global Workspace Theory (GWT) and Integrated Information Theory (IIT), the manuscript does not clearly define what QTTC offers beyond these well-developed frameworks. The emphasis on decision-making and awareness modulation is not entirely new and is explored in cognitive control and metacognition literature.

**Recommendation:** Provide a comparative analysis of how QTTC explains phenomena that GWT, IIT, or Predictive Processing models cannot—or does so more elegantly. Without this, QTTC risks being seen as an elaborate metaphor rather than a meaningful alternative.

#### 4. Avoid Overextension of Quantum Analogies

The use of quantum language such as “superposition,” “decoherence,” “observer effect,” and “entanglement” risks misleading the reader into assuming structural precision where there is none. For example, equating pre-decisional indecision with superposition may be metaphorically appealing but lacks formal coherence.

**Recommendation:** Either develop a formal logic that supports these analogies or drastically streamline the use of quantum concepts to avoid superficiality. Currently, the analogies are too broad and too loosely applied to serve as a (scientific) foundation for a theory.

#### 5. Clarify the Role of ‘Noëtons’ and Field Memory

The introduction of *noëtons* as “quantized excitations of awareness” is intriguing but remains opaque. The idea of “field memory” as an imprint of past experiences adds poetic weight but lacks clarity on how it relates to or differs from established models of episodic memory or plasticity.

**Recommendation:** Define *noëtons* more precisely—what are they: are they akin to moments of qualia? Units of phenomenal content? Internal states with duration? And how do they relate to neurocognitive states? Further, what constitutes a “field configuration” in experience, and how might this be traced?

#### Additional (minor) comments

- **Figures and Tables:** Figures 2 and 3 could be improved with more explicit graphical representation of information flow (not just concept alignment). A diagram showing the temporal dynamics of preselection, intention, framing, and decision would help.
- **Literature Integration:** Beyond citing quantum-consciousness theorists (Hameroff, Penrose, Stapp), consider engaging more with critical literature on the limits of quantum metaphor in cognitive modeling (e.g., Atmanspacher, Vitiello, or Tegmark’s critiques of decoherence in warm systems).
- **Terminological Risks:** Phrases like “field-based cognitive science” or “universal awareness” risk sliding into pseudoscientific rhetoric if not carefully constrained. The paper would benefit from epistemological grounding that clarifies what kind of knowledge claims it is making.

#### Final recommendation

QTTC is a creatively conceived and intellectually courageous proposal that seeks to map the logic of quantum field theory onto the domain of consciousness studies. However, to mature into a viable theoretical framework, it requires significant refinement: the metaphors must be better bounded, the conceptual structure must be distinguished from ontological claims, and a clearer pathway to scientific engagement must be articulated. At present, the paper serves more as a philosophical meditation or theoretical prototype than as a scientific contribution.

With revision, clarification, and formal development, QTTC could inspire useful interdisciplinary discussions and possibly novel hypotheses in consciousness research. I encourage the author to continue this line of thought while holding the model to the same rigor expected in both theoretical physics and cognitive science, or explicitly define the limits.

## **Declarations**

**Potential competing interests:** No potential competing interests to declare.