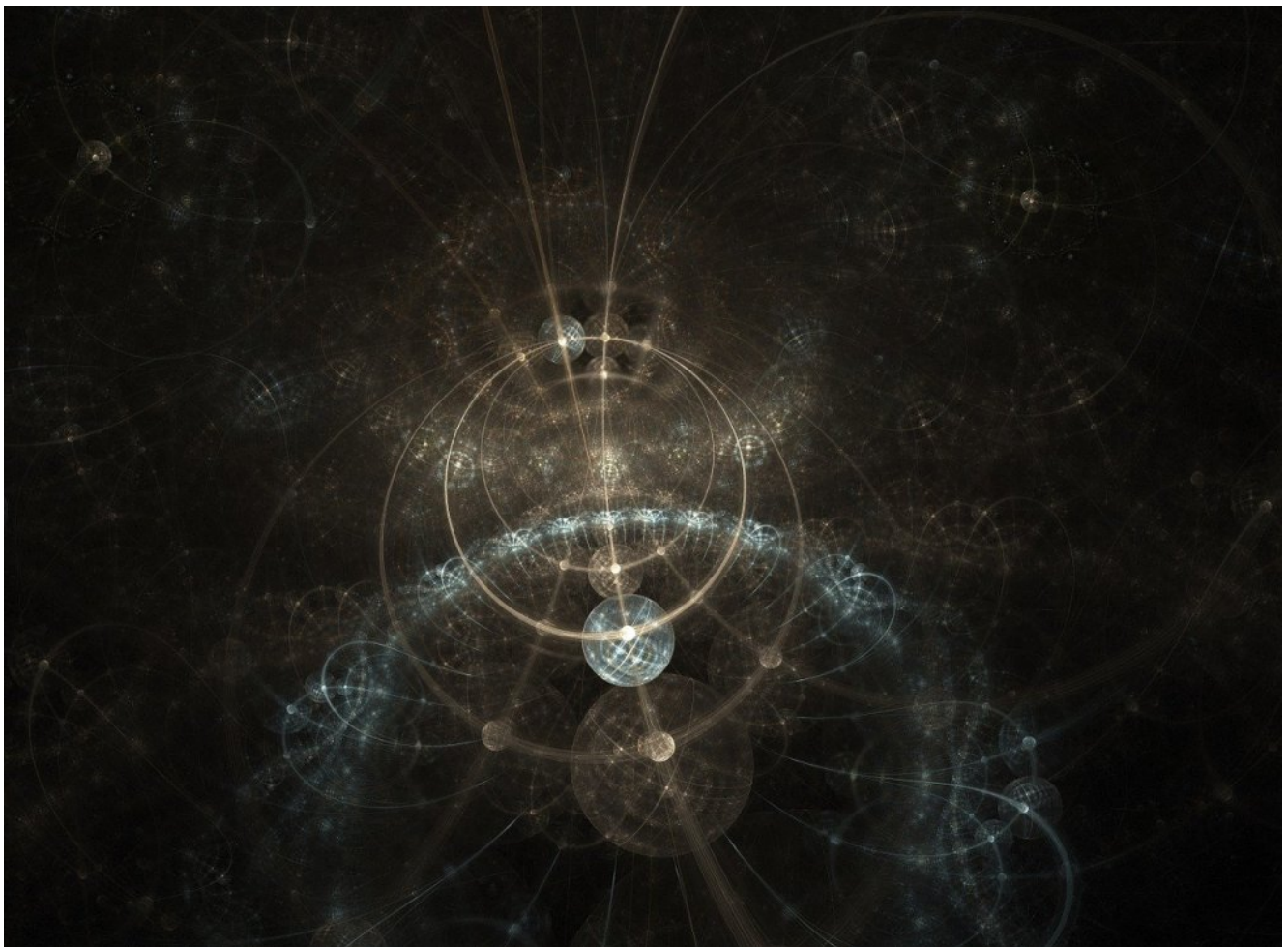


Kant-Man and the Quantumania: How to Misuse Physics in International Relations - Dylan Motin



Throughout the last decades, a growing number of International Relations (IR) scholars endeavored to introduce quantum mechanics to social science. This new field aims “to ‘quantize international relations’, in the sense of applying the fundamental concepts of quantum theory to the discipline” (Der Derian & Wendt, 2020, p. 400). IR quantum notably takes inspiration from Barad (2007) to bridge

the gap between physics and social science. These IR quantum theorists aim for either two research goals but usually only reach a third. The most ambitious quantumists believe that IR could be an extension of physics; others see it as a framework to borrow to build new theories (Murphy, 2020). Both approaches are problematic, and all attempts at quantum international relations end up making mere metaphors.

In this article, I argue that quantum mechanics deals with inanimate particles and cannot scale up to human affairs. I challenge some of the main claims on the physics made by IR quantumists. For the quantum turn to produce valuable insights, I suggest that IR quantum scholars should: (1) justify their use of physics; (2) justify their use of quantum theory as a social theory; or (3) drop flimsy physics and stick to social-science compatible theories. Some of my criticisms have been made by others (Donald, 2018; Hutchings, 2022; Kydd, 2022; Sjoberg, 2020). Kydd (2022), especially, shows well how Wendt's (2015) landmark *Quantum mind and social science: Unifying physical and social ontology* devolves from bad physics to near mysticism. Nonetheless, criticizing IR quantum and its flaws appears necessary since it continues on its trend to exit from academia and approach esotericism. Flimsy physics couched in quantum jargon often becomes a scientific varnish to make mystical arguments. If quantumists do not reflect upon their scientific bases and aims, they risk devolving into an intellectual dead end and a fringe fitting in neither positivist (due to the lack of science) nor interpretivist IR (due to the claim of applying hard science).

The Problem with IR Quantum's Claims

Associating creativity and imagination with international relations can be a laudable enterprise, but this must not be done in the name of physics. IR quantum may diminish people's belief in science by seemingly using physical concepts to designate their personal interpretations of the world. IR quantumists give great importance to the measurement problem — the problem of the wave function collapse. Quantum mechanics has reportedly shown “that *observation* by the scientist is not a passive enterprise, but an activity: to put it metaphorically, the particles somehow ‘emerge knowing’ that they are being observed” (Arfi &

Kessler, 2018, p. 68). For Wendt (2015, p. 284), “the Measurement Problem, in which the observation of sub-atomic phenomena in some way participates in what actually happens, such that we cannot safely assume that the latter is independent of the former.”

This point allows a discussion of the human mind. Due to the quantum nature of the brain, one’s mind is constantly in flux; the “superposition of these vectors does not collapse into an actual type until a measurement (interaction) occurs, whether on one’s own or on someone else’s initiative” (Der Derian & Wendt, 2020, p. 407). “Quantum brain theory takes known effects at the sub-atomic level and scales them upward to the macroscopic level of the brain,” and quantum mechanics imply that the physical world has a mindlike aspect — “matter is intrinsically minded” (Wendt, 2015, p. 31). This leads to the claim that “human beings are walking wave functions” (Wendt, 2015, p. 37).

In a recent piece, Wendt makes the case that the burden of proof does not apply to quantum theory. He acknowledges that his work “is highly speculative” (Wendt, 2022, p. 120). Yet, speculation does not bother him, and he justifies the mild reception of quantum theories in IR by obtuse scholars too focused on accumulating knowledge; “quantum social science is subversive of all orthodoxies” (Wendt, 2022, p. 120). Wendt (2022, pp. 123–125) then commits a logical fallacy — an argument from ignorance: since scientists do not understand well how the human mind works, it cannot be explained materially; hence, it must be quantic. If the brains “were quantum, why would the standard of rationality be classical, given the vastly greater, almost ‘super-rational’ computational powers of a quantum brain?” (Der Derian & Wendt, 2020, p. 407).

Building on that, Fierke and Mackay (2020) enter the realm of quantum mysticism. At first, quantum looks like a mere metaphor, as “memory represents an entanglement with the past” (Fierke & Mackay, 2020, p. 450), but the research’s “method relies on several quantum assumptions [...] and a quantum understanding of time” (Fierke & Mackay, 2020, p. 456). We learn that the “quantum effects that arise from the relational map, or more specifically the patterned expressions of affect that emerge out of the mapping process, point to a

non-local field of resonance that is microscopic, while having macroscopic effects” (Fierke & Mackay, 2020, p. 458). Then comes magical thinking. The authors claim that “trauma represents an entanglement with the past, this article seeks to explore the quantum notion that to ‘see’ an entanglement is to break it” (Fierke & Mackay, 2020, p. 451). As usual in quantum IR, there is a back and forth between quantum as actual physics, as a comparative framework, and as a mere metaphor.

The existence of a human ‘field of resonance’ — a collective unconscious — floating in the ether is taken as a given — “measurement transforms an unobservable field of resonance into language” (Fierke & Mackay, 2020, p. 461). This course is unsurprising as, for the authors, quantum mechanics means that “the analyst cannot be separated from the apparatus of measurement, and the measurement itself arises from an act of seeing” (Fierke & Mackay, 2020, p. 452). No demonstration of any of those claims is given, as the “objective is to explore a conceptual problem rather than the experiment itself, or the results arising from it, not least owing to the difficulty of communicating an experiential method in language” (Fierke & Mackay, 2020, p. 451).

IR Quantum’s Lack of Results

This peculiar understanding of physics has offered little analytical benefit to date. One of the only empirical claims about international relations is that quantum theory can explain indeterminate events, which the existing scholarship cannot grasp. Yet, even this claim is problematic. How do we know that some event was truly indeterminate? How can we be sure that the problem lies in the quantum realm rather than our inability to explain it properly? IR quantum appeals to ignorance and not demonstration. One must first demonstrate that an event is indeterminate for an indeterminacy-based argument to be convincing.

When quantum theory serves as a yardstick or framework of understanding, it is often to make trivial arguments. For instance, Orrell notices that “like a quantum particle, a word’s meaning cannot usually be reduced to a single definition”

(2020, p. 482). Here, quantum vocabulary is introduced to make the trivial case that words can have many senses; quantum is a mere metaphor. After that, he states that money is not “either loosely analogous to quantum physics or somehow reducible to quantum processes, it is better understood as exhibiting its own version of quantum properties” (Orrell, 2020, p. 483). Thus, it is not a physical quantum phenomenon but works like a quantum system. But all this quantic build-up concludes that money is a social construct and that financial markets and politics are intertwined. What does the quantum yardstick add to the discussion of money if it only serves to repeat points made by constructivist or critical scholars for decades?

To his credit, Pan (2021; 2022) rises to the challenge of applying quantum theory to a case study. He argues that China and the United States are holographically entangled substances. Concretely, the quantum researcher should study socio-historical relations before considering interstate relations. China and the United States — among themselves and with the world — are entangled through webs of cultural, economic, historical, and human connections. But the quantum holographic demonstration stops here. What did this quantic argument bring to understanding China-US relations?

Amidst their fabulous claims, Fierke and Mackay note that their insights resonate “with Buddhist or African Ubuntu philosophy but also with a feminist ethic of care” (2020, p. 461). If so, why not ground their arguments in these existing schools of thought instead of falling into quantum mysticism for no analytical gain?

What Does Physics Say?

Some IR quantum scholars insist their claims are grounded in physics, not mere metaphors or analogies. However, they seem to borrow from the early twentieth-century understanding of quantum mechanics instead of recent scientific advances (Arfi, 2018, pp. 111-112). IR quantumists’ leading ideas that human observation creates reality and that society obeys quantum mechanics have no

foundations in contemporary physics.

IR scholars make it sound like particles take shape thanks to human cognition. But this misconstrues the physics. Quantum instability does not mean that the observer creates the observation. The measurement tool influences the quantum particle because the tool is disturbing it, not because human consciousness has some influence on it. In quantum mechanics, “*any* interaction that is strong enough to measure some aspect of a system is necessarily strong enough to disrupt some other aspect of the same system” (Susskind & Friedman, 2014, p. 12). It is not created by the observer here and there. We do not know the particle’s form unless we check, but the observer merely discovers the outcome of the measurement tool’s influence on the particle. By pretending that quantum is about the human mind bringing matters into existence and creating reality, IR quantumists err closer to ‘the law of attraction’ and *The Secret* than any serious science.

Furthermore, there is little doubt that quantum mechanics do not scale up to human affairs. Scientists know how to extract a particle from the quantic to the classical state and the other way around, turn a particle quantic. Only in a controlled environment of low temperature and free of interferences can very small objects go back and forth from their quantic to their classical state (Haroche, 2013). Any speculation of a quantum brain explaining human thoughts and inter-human entanglement is in the realm of belief or esotericism.

Finally, quantum mechanics do not violate the principle of locality in the sense that it cannot help send someone signals faster than the speed of light; it does not break causality (Siegel, 2020; Susskind & Friedman, 2014, p. 223). It does not allow time travel and backward action of the human mind, contrary to what Fierke and Mackay (2020) imply.

Conclusion

My commitment to realism arguably clouds my assessment of IR quantum's utility. Still, bringing flimsy physics to the discipline has yielded little novel empirical knowledge, often falling back on constructivist and critical insights. Using quantum in IR may be possible, but quantum scholars must justify and explicit their use of physics. If quantum mechanics itself can explain certain IR phenomena, they must explain how it is grounded in actual physics with a clear methodology. Indeed, if they can prove that human beings and governments can be entangled like particles, this would be a scientific revolution of unimaginable consequences. In that case, transdisciplinary research with physicists would be an especially beneficial endeavor to avoid factual errors and misunderstandings.

Der Derian and Alexander Wendt (2020) defend IR quantum by pointing out that classical physics has influenced both the methods and the metaphors used in IR. Although true (Park, 2011), no neorealist or neoliberal scholar ever argued that Russia-US relations= mc^2 or that international institutions are formed by thermonuclear reactions. In any case, the analogy is never the argument itself but a way to explain and illustrate a theory. IR quantum is problematic because it claims that physical theories are directly relevant to understanding international relations only to produce metaphors.

If quantum is a valuable framework or a comparative yardstick, quantumists must demonstrate that states, institutions, or individuals can safely be compared to quantum particles. The best-known example of an IR analogy is Waltz's (1979) use of economics. He explains that anarchy resembles a free market, and a firm pursuing benefit can approximate a state seeking survival (Tong, 2022). In Waltz's case, the model is borrowed from economics, a social science, discussing the influence of a social structure (the market / international anarchy) and human-made agents (firms / states).

If IR quantum theorists do not clarify their positions, their work risks falling outside social science's purview to become mere metaphors or, worse, joining the shelves of pseudoscience alongside Ouija boards and crystal balls. Caricaturing physics in reputable academic journals reinforces 'everything-goes' quantum mysticism, only to give a varnish of science to esoteric speculation. Tellingly,

Wendt compares submitting an article about quantum theory to “submitting an article to a social science journal in which God or the Devil figure as a causal mechanism in your argument” (Wendt, 2022, p. 122). Indeed, failing academic standards, many quantum works simply urge the reader to ‘think anew’ and ‘open their mind.’

If defending either the physics-grounded approach or analogy-based approach is impossible, bringing back proven practices appears more beneficial to the IR discipline. When IR quantum makes empirical discussions, it generally repeats insights already found in constructivism (for instance, the co-constitution of actors) and critical studies. Adding up on existing scholarship would be more productive than persisting in a scientific dead end.

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