



[Home](#)

A PHENOMENOLOGICAL APPROACH TO QUANTUM MECHANICS

Steven French

Reviewed by
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[A Phenomenological Approach to Quantum Mechanics: Cutting the Chain of Correlations](#)[□]

Steven French

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In *A Phenomenological Approach to Quantum Mechanics*, Steven French offers what he says will be his final words on two key issues that he has for decades been trying to get across to the philosophy of physics community, one historical and one theoretical.

The historical issue primarily concerns London and Bauer's ([1939]) text *La Théorie de L'Observation en Mécanique Quantique* (The Theory of Observation in Quantum Mechanics). French argues persuasively that this text has been systematically misinterpreted (he catches me out on it; Chalmers and McQueen [2022]). Through detailed historical analysis, French shows that this text is not just a lens through which to view von Neumann's ([2018]) classical text, nor is it a version of Wigner's ([1962]) consciousness-causes-collapse hypothesis, as many have believed. In bringing this to light, French shows that discussions of 'orthodox' quantum mechanics more generally have been fraught with misinterpretation and historical inaccuracy. French corrects, for example, the common misrepresentation of von Neumann as postulating an objective wave function collapse (let alone caused by consciousness). Readers also gain insight into Bohr, Heisenberg, Schrödinger, and many others. Nearly every page has several footnotes that allow the reader the choice of going deeper into the relevant historical context. This is a thoughtfully organized and well-researched book with an extensive (twenty-two page) bibliography. It is a great contribution to our understanding of the history of quantum physics.

The theoretical issue is that, for French, this misinterpretation has deprived us of London's unique and original phenomenological approach to quantum mechanics. Thus, this is not just historical correction, it is 'an exercise in intellectual exploration' (p. 1), which brings forth a distinctive way of thinking about quantum mechanics. In addition, the book aims to contribute to the phenomenological branch of philosophy and especially to Husserl scholarship, as French argues that 'in the context of London and Bauer's work, [quantum mechanics], properly understood, represents, in fact, the scientific completion of Husserl's great project' (p. 108). Indeed, in recognizing that contemporary philosophy of physics is typically done in the 'analytic' tradition and not the 'continental' tradition to which phenomenology is associated, French hopes that 'this book will also contribute to a reappraisal of the division and perhaps an appreciation of the "Continental" tradition as also offering a set of potential resources for understanding modern physics' (p. 1).

But in his preface, French frets that despite his effort, 'philosophers of physics will look askance at the phenomenology, and philosophers of the latter inclination will recoil from all the physics!'. I cannot speak on behalf of the latter philosophers (in the continental tradition), only to say that far from recoiling, I suspect they will welcome the concise prose through which quantum mechanics is explained in the first four chapters (I count only two equations in the whole book; pp. 144–45). And they may also jump to chapter 5, where discussions of phenomenology take off. It may be a rewarding intellectual journey for such readers to learn quantum physics by thinking through how it 'completes Husserl's great project'.

What about philosophers of physics? Here, I see a problem. But before explaining it, let me note that chapters 1, 2, and 4 offer much historical insight into physics and philosophy of physics. Meanwhile, chapter 3 critically examines a fascinating debate between philosophers Putnam and Shimony, on the one hand, and physicists Wigner and Margenau, on the other, about quantum mechanics, its completeness, and whether consciousness plays a role in it. French rigorously re-evaluates this debate using contemporary research on consciousness-causes-collapse models. So, there is already much here of interest to analytic philosophers.

The 'division' between the analytic and continental philosophers is not merely geographical or stylistic. Many analytic philosophers have argued against key ideas in the continental tradition. And the kind of

'transcendental idealism' advocated by Husserl is often viewed as logically unrigorous, hence why philosophers of physics might 'look askance'. To genuinely provide a 'reappraisal of the division', I think French could have considered some of these challenges and been more critical of Husserl. Indeed, the fate of a 'phenomenological approach to quantum mechanics' seems to depend on these debates. Let us then look closer at chapter 5's discussion of Husserl.

For French, the 'core features of phenomenology' (p. 186) are 'the subjective stance' and 'correlationism'. Section 5.2 explains the former under 'The Epoché'. In this stance, we refrain from postulating an external 'objective' world. After bracketing such metaphysical assumptions, we may then 'grasp the true significance of the role of consciousness and appreciate the nature of that role which is otherwise concealed from us' (p. 112). This 'grasping' happens through an act of 'essential seeing', which is neither introspection nor intuition, but which is 'a form of reflective *regard-to'* that, for London and Bauer, 'occurs in the measurement of the quantum system'. This 'essential seeing' is made analogous to how a mathematician just sees that a general mathematical proposition is true.

Section 5.3 suggests that this essential seeing of phenomenology excludes some metaphysical positions, thereby providing us with a positive metaphysical view, 'correlationism'. There is a similarity here with Descartes' famous 'method of doubt' to find the indubitable truth, 'I think therefore I am'.

Section 5.4 tries to explain correlationism. Here is a quote, where French (following Zahavi [2017]) explains why Husserl is a correlationist, and what that amounts to:

Indeed, Husserl himself talked of the 'transcendental correlation between world and world-consciousness' [...] where 'we only ever have access to the correlation between thinking (theory) and being (reality) and never to either in isolation from or independently of the other' [...] **As a result**, mind and world should be seen as 'bound constitutively together' [...] and the conceptual centrality of this notion of correlation implies that it is the relation that is constitutive of its relata, rather than the other way around. (p. 116)

I have added boldface to emphasize an inference from premise to conclusion. However, the premise is epistemological (what we have access to), while the conclusion is metaphysical (what constitutes what), and so may not be valid. In fact, I think it's an instance of a logical 'gem fallacy', one that has plagued idealist literature throughout the history of philosophy (Musgrave [1999]; Franklin [2002]). The gem fallacy occurs when a non-tautology is inferred from a tautology. In the above quote, correlationism is the non-tautology, while (to paraphrase) our not being able to think of things without thought is the tautology. The tautologies can sometimes be difficult to identify in idealist texts, but Musgrave suggests the proliferation of 'hyphenated entities' are a symptom, such as Kant's noumenal 'things-as-they-are-in-themselves' and Husserl's transcendental 'world-consciousness'.

Whether or not Husserl gave any good argument for correlationism, it may still be a self-consistent position that yields a fresh approach to quantum mechanics. French compares it to ontic structural realism, whereby 'all that exists is structure, conceived of in relational terms, and that physical objects are constituted by these relations'. So, correlationism seems to imply that the objective world and the subjective 'world-consciousness' are emergent but grounded in their relation. French says that 'what should appear on Husserl's bumper sticker is "No object without a subject and no subject without an object"' (p. 119).

Chapter 6 examines London and Bauer's ([1939]) text and reads correlationism into it instead of von Neumann's or Wigner's views. This amounts to 'a rejection of dualism and, in particular, of the idea that the nature of this relationship is a causal one' (p. 117). French continues: 'what the [quantum mechanics] formalism captures is precisely that correlation that holds between the observer and the system observed, but insofar as it is only the correlation that "we" have access to, we cannot strictly speak of "observer", "system", or "relation" holding between them, prior to separation of the first from the second' (p. 117).

Is this a well-defined phenomenological approach to quantum mechanics? It is not clear, for later French concedes that 'there is no fully-fledged "London interpretation" of quantum mechanics to be considered alongside the well-known alternatives' (p. 186). To evaluate it we can consider its verdicts in Wigner's friend scenarios. Wigner's friend performs a measurement. If the measurement objectively causes collapse, then Wigner is wrong to represent his friend in a superposition. According to London's actual view, as French interprets it, there is no objective collapse. For we are 'bracketing' an objective world. And we are treating wave-function collapse more subjectively, as an updating of one's knowledge. But then how can Wigner and Wigner's friend ever agree on the outcome of the friend's measurement?

Somehow, it is their 'essential seeing' or 'regard-to' or 'looking at' that allows Wigner and Wigner's friend to agree on their results:

We recall that it is in the reflective regard-to that the ego emerges as one pole of the relationship with the object and insofar as this regard is an act, conceived of as an essential phenomenological device, it cannot of course be described in quantal terms [...] Thus the regard or 'scrutiny' does not change or affect the apparatus, as an object, in any way, and so a 'collective scientific perception' can be created in which a second observer, looking at the same apparatus, will make the same observations [...] Intersubjective agreement is thereby established but it is important to emphasize, again, that this is underpinned by a phenomenological understanding of that 'looking at'. (pp. 160-61)

Section 6.6 then briefly considers 'criticisms of the phenomenological interpretation'. An objection from Alves ([2021]) is considered in detail, but French argues it is based on misunderstandings. In a footnote, French considers an objection from van Fraassen (via personal communication), about this 'looking at'; van Fraassen says, 'There is nothing in the observer's experience that corresponds to this'. French responds that 'the act in question [...] should be understood in terms of spontaneous "I-activity" that makes manifest the relevant correlation, qua such, that then has the ego and the object as distinct poles' (p. 166). I don't quite see how this answers van Fraassen's challenge. For we are left with the question of why to believe in this quantum-state updating 'I-activity' if it corresponds to nothing in our experience.

Chapter 7 argues that quantum mechanics 're-unites nature and consciousness and London and Bauer's "little book" completes Husserl's project' (p. 185). Chapter 8 explains QBism and why intersubjective agreement raises a serious problem for QBism. French then considers how the QBist might draw on phenomenology to 'philosophically underpin their position' (p. 194). French suggests grounding the Born rule (or some underlying coherence rule) 'in our engagement with the "life-world"' (p. 192). But French concludes that this would either involve modifying QBism or excluding correlationism (p. 205). Chapter 9 gives some interesting commentary on Everettian relative state, many worlds, and many minds interpretations, as well as relational quantum mechanics, and tries to draw some connections to phenomenology.

Chapter 10 concludes by distinguishing interpretive and reconstructive approaches to quantum mechanics. The former start with a standard formalism (like von Neumann's) and then add something to solve the measurement problem. These include Bohr's addition of the classical description of the measurement

context, Bohmian additional variables, objective collapses, decision-theoretical principles, and so on. Reconstructive approaches instead try to derive the formalism from some basic postulates, much like how Einstein derived the Lorentz equations from his two basic postulates. QBism is an example of a reconstructive approach. But French argues that in the phenomenological approach to quantum mechanics, 'the line between *reconstruction* and *interpretation* becomes blurred' (p. 231). In fact, it is argued that

[...] the London and Bauer approach, understood phenomenologically as it should be, opens up a third-way between the 'ψ-ontic' and 'ψ-epistemic' accounts and, more generally, between interpretation and reconstruction. It can do this because, as we have observed, it takes [quantum mechanics] to be, not just a piece of physics, but a theory of knowledge itself. (pp. 232–33)

Here French argues that correlationism offers a loophole to proofs aimed at showing that the wave function must either be ψ-ontic or ψ-epistemic. If correct, this seems to be an interesting result whatever we think of phenomenology. So, I agree with French that this 'idea of [quantum mechanics] as both a theory of physics and a theory of knowledge deserves further consideration' (p. 233).

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References

- Alves, P. [2021]: 'Fritz London and the Measurement Problem: A Phenomenological Approach', *Continental Philosophy Review*, 54, pp. 453–81.
- Chalmers, D. J. and McQueen, K. J. [2022]: 'Consciousness and the Collapse of the Wave Function', in S. Gao (ed.), *Consciousness and Quantum Mechanics*, Oxford: Oxford University Press, pp. 11–63.
- Franklin, J. [2002]: 'Stove's Discovery of the Worst Argument in the World', *Philosophy*, 77, pp. 615–24.
- London, F. and Bauer, E. [1939]: *La Théorie de L'Observation en Mécanique Quantique*, Paris: Hermann.
- Musgrave, A. [1999]: 'Conceptual Idealism and Stove's Gem', in *Language, Quantum, Music*, Dordrecht: Springer, pp. 25–35.
- von Neumann, J. [2018]: *Mathematical Foundations of Quantum Mechanics*, Princeton, NJ: Princeton University Press.
- Wigner, E. [1962]: 'Remarks on the Mind–Body Question', in I. J. Good (ed.), *The Scientist Speculates*, Portsmouth, NH: Heinemann, pp. 284–302.
- Zahavi, D. [2017]: *Husserl's Legacy*, Oxford: Oxford University Press.
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