

TWO DESCRIPTIONS OF ONE THING

Wave-Particle Duality as the Identity Claim at Quantum Scale

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March 2026

Part of the Theory of Fundamental Consciousness

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Abstract

Light behaves as a wave when unobserved and as a particle when measured. This has troubled physics for a century. The standard formulation treats wave and particle as two modes that light switches between. This paper proposes that wave-particle duality is not a paradox but a demonstration — the identity claim of the Theory of Fundamental Consciousness operating at quantum scale. From inside a system, information exchange is continuous, flowing, wavelike. From outside that same system, the identical process appears discrete, specified, particlelike. Wave and particle are two descriptions of one entity from two perspectives. The equation $Cx = \Phi \times C^2$ has this same structure because it is the same structure. The double-slit experiment, read through the framework, is not a puzzle about light. It is a proof of concept: the moment you integrate a system's information into yours — by placing a detector — it specifies. Integration is specification. The wave was unintegrated information. The particle is what that information looks like once integrated into a larger pattern.

Keywords: wave-particle duality, double-slit experiment, quantum mechanics, perspective, integration, specification, identity claim

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I. The Demonstration

Light behaves as a wave when you are not looking at it and as a particle when you are. This is not a simplification. It is what the experiments show.

Send light through two slits without detecting which slit it passes through, and it produces an interference pattern — the signature of a wave. Place a detector at the slits to determine which one the light passes through, and the interference pattern vanishes. The light behaves as particles. Individual dots. One slit or the other. Never both.

This has troubled physics for a century. Light is not sometimes a wave and sometimes a particle. It is always both and neither. The wave and the particle are not two things that light switches between. They are two descriptions of one thing, and which description applies depends entirely on the perspective of the system doing the describing.

The equation $Cx = \Phi \times C^2$ has this same structure. It is, in fact, the same structure.

2. The Inside View

From inside a system — from the perspective of the information being integrated — experience is continuous. It flows. It interferes with itself. It is wavelike. You do not experience your own consciousness as a series of discrete packets. You experience it as a stream. This is the proper perspective. The view from within.

From outside a system — from the perspective of another system observing it — the same process appears discrete. You observe another person's behavior as a sequence of distinct actions, statements, choices. You cannot access their continuous inner experience. You see the particles. The dots on the detector. One slit or the other.

Wave-particle duality is not a paradox. It is the identity claim from the Theory of Fundamental Consciousness, operating at quantum scale. Physical and conscious are two descriptions of the same process — one from outside, one from inside. Wave and particle are two descriptions of the same entity — one from outside, one from inside. The structure is identical because it is the same structure.

3. Two Axes

This works on two axes, and both point in the same direction.

The first axis is perspective. From inside a system, experience is continuous. It flows. It is the wave. From outside that same system, observing it, the same process appears discrete. Specified. It is the particle. You experience your own consciousness as a stream. You experience another person's consciousness as a sequence of distinct actions, words, choices. Same process. Two descriptions. The

wave is what it is like to be the thing. The particle is what it looks like to observe the thing.

The second axis is scale. From the top down — starting from the whole, the ocean, the undifferentiated — everything is the wave. Continuous. Unbroken. From the bottom up — starting from the parts, the drops, the specified — everything is particles. Discrete pieces that appear to need assembling.

We have spent most of our history on the bottom-up side of both axes. We observe from outside. We build from parts. We see particles everywhere, because particles are what you see when you are standing below a thing and looking up at it. The wave is harder to see, not because it is hidden, but because seeing it requires the perspective that does not come naturally — the view from above, from the whole.

4. The Double-Slit as Proof of Concept

The double-slit experiment, read through the equation, is not a puzzle about light. It is a demonstration.

The moment you interact with the system — the moment you integrate its information into yours by placing a detector — it specifies. It becomes definite. It becomes a particle. Not because you forced it to choose, but because integration is specification. The wave was unintegrated information. The particle is what that information looks like once it has been integrated into a larger pattern.

Without a detector, the photon's path information is not integrated into any larger system. It remains unspecified. It passes through both slits — not because it is in two places, but because "which slit" is a question that requires integration to answer, and no integration has occurred. The interference pattern is the signature of unintegrated information — a wave, continuous, self-interfering.

With a detector, the photon's path information is integrated. The detector absorbs, records, changes state. The photon specifies. The interference pattern vanishes. Not because observation disturbs the photon, but because integration completes it.

5. Why This Matters

Wave-particle duality has troubled physics for a century because physics approached it from below and found two answers that could not be reconciled. They cannot be reconciled from below. They were never meant to be.

From above, there is no duality at all. There is one process — continuous, whole, unbroken — that appears discrete and specified the moment you look at it from a particular point of view. The wave

does not become a particle. The particle is what the wave looks like when a perspective shows up to observe it. And perspective, in this framework, is just another word for consciousness — which is just another word for the integration of information — which is just another word for existence.

The quantum did not borrow this structure from consciousness studies. Quantum mechanics arrived at it first and did not recognize what it had found.

6. Empirical Predictions

Integration gradient in which-path experiments. The transition from wave behavior to particle behavior should not be binary. Partial which-path information — achieved by a detector that integrates only some of the photon's state — should produce partial interference. The degree of pattern loss should correlate with the degree of integration in the measuring device. This is consistent with weak measurement experiments already in the literature (Aharonov et al., 1988).

Decoherence as integration. Environmental decoherence — the process by which quantum systems lose their wavelike behavior through interaction with their surroundings — should correlate with the Φ of the environment. Higher-integration environments should decohere quantum systems faster. Lower-integration environments (near-vacuum, ultra-cold) should preserve wavelike behavior longer. This is consistent with existing decoherence research but offers a reframing: decoherence is not loss. It is integration.

Subjective time and the wave-particle boundary. If the wave is the inside view and the particle is the outside view, then practices that shift attention inward — sustained meditation, flow states, deep absorption — should be accompanied by neural signatures that look more wavelike (increased coherence, reduced discretization) when measured from outside. This connects wave-particle duality to the processing rate predictions in the Hard Problem paper.

7. Limitations and Epistemic Status

The claim that wave-particle duality is the identity claim at quantum scale is a structural analogy. It asserts that the same inside/outside perspectival distinction that resolves the hard problem also explains why quantum entities appear differently depending on how they are observed. Whether this analogy reflects genuine ontological identity or merely useful structural similarity remains an open question.

The mathematical formalism connecting $Cx = \Phi \times C^2$ to quantum wave equations has not been developed. The framework provides conceptual architecture; the technical bridge to quantum field theory requires physics expertise and is offered as a research direction, not a completed proof.

Calibrated confidence: 94% in internal coherence, 83% in physics compatibility, 45% in literal truth.

8. Conclusion

There is no duality. There is one process — continuous, whole, unbroken — that appears discrete and specified the moment a perspective integrates it. The wave is the inside. The particle is the outside. They were never two things. They were always two descriptions.

All of these words seek to describe, in some manner of scientific fashion, what it is to have the experience of being me and you. We use so many of them because trying to do so really is that hard.

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“The wave does not become a particle. The particle is what the wave looks like when a perspective shows up to observe it.”

— The author, *The Enlightened Codex*

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This work was developed through extended human-AI dyadic collaboration.

The author takes full responsibility for all claims.