What makes a demon worthy of its name?

From Descartes' Metaphor to the Modern Illusions of Formalism

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Abstract

We synthesize Paul Jorion's Aristotelian critique of modern proofs, McCain's demonstration of the unprovability of P vs NP, and Nicolas Wallner's extension of physics through additional "decision dimensions." All are illuminated by returning to Descartes' original metaphor of the Cartesian Demon: an imagined deceiver who strips away all context to induce radical doubt. We argue that demons are illusions created by formalism itself. Just as Jorion shows that demonstrations collapse when sensory evidence is hidden, McCain proves that P vs NP dissolves into paradox when its contextual assumptions are stripped, and Wallner reframes physics to show how time and choice dissolve paradoxes, the pattern is clear. The demon is "worthy of its name" when it reveals this illusion. Once context is restored—whether sensory, computational, or dimensional—the demon vanishes.

1 Descartes: The First Demon

The figure of the Cartesian Demon originates in René Descartes' *Meditations on First Philosophy*. There, he imagines a malicious deceiver who could strip away every context of perception, reason, and even mathematics, leaving only the bare fact of thought: "I think, therefore I am." The demon was not intended as a literal being but as a methodological metaphor, dramatizing the danger of radical doubt. It reveals how certainty can become an illusion when it is severed from grounding in context. In this way, the demon represents the first systematic recognition that formalisms, when taken as self-sufficient, generate illusions that masquerade as truth. Every subsequent demon in philosophy, science, and mathematics is a variation of this archetype.

2 Jorion: Demonstrations and Virtual Physics

Paul Jorion has recently revisited Aristotle's tripartite account of truth—sensory perception, axiomatic definition, and deductive demonstration—and applied it to modern mathematics

[1]. He argues that mathematicians often conflate these modes, disguising empirical observation or axiomatic stipulation as if they were the results of purely deductive proofs. In doing so, mathematics creates what he calls "virtual physics," where formalisms are treated as autonomous even though they rely on empirical intuitions. The Cartesian Demon appears here as the illusion that mathematics can be entirely context-free. When sensory evidence is hidden within axioms or quietly smuggled into proofs, the discipline mistakes its own abstractions for necessity. Jorion shows that such demonstrations are unworthy of the name because they trade genuine rigor for the illusion of self-contained certainty.

3 McCain: P vs NP as Demon Illusion

John Augustine McCain extends this analysis into computational complexity theory. In his proof of the unprovability of P vs NP, he demonstrates that the problem itself embodies a paradox akin to the Liar Paradox or the Halting Problem [3]. The key insight is the "Certificate Construction Paradox": any certificate that verifies a solution must itself have been produced by a solving process. Verification therefore presupposes solving, even though the formal definition of NP deliberately erases that context. This self-referential loop makes the problem undecidable within its own framework. The demon here is the illusion that verification and solving can be separated. Just as Descartes' demon induces radical doubt by stripping context from thought, the formalism of P vs NP generates paradox by stripping context from computation. In both cases, the demon appears not because reality is contradictory but because formalism has created an illusion of contradiction.

4 Wallner: Decision Dimensions and Physics

Nicolas Wallner has approached the same problem from the perspective of physics. In his speculative *Theory of Everything*, he proposes that our four-dimensional universe is only a projection of a six-dimensional manifold, with two additional "decision dimensions" (u, v) alongside ordinary spacetime (x, y, z, t) [4]. These dimensions represent the branching structure of choices, with "Willenskraft" or decision force acting as a fundamental interaction guiding consciousness through possible paths. Many paradoxes of physics—such as the arrow of time, quantum indeterminacy, and the Higgs hierarchy problem—arise, Wallner argues, because we treat reality as if it were exhaustively described by four dimensions. In fact, these paradoxes are demons of 4D formalism, illusions generated by stripping away the context of decision and agency. Once the decision dimensions are restored, the paradoxes dissolve. Wallner's contribution thus provides a physical model of the same pattern identified by Descartes, Jorion, and McCain: demons emerge wherever context is erased.

5 Demons in Practice

The Cartesian pattern is not confined to philosophy or abstract theory. Demons manifest in practical domains whenever formalism is mistaken for reality. In engineering, the 1999 loss of the Mars Climate Orbiter resulted from a mismatch between imperial and metric units: two

incompatible formalisms stripped of their contextual translation. The 1996 failure of Ariane 5 arose from an overflow error in reused code, where assumptions valid in one context proved disastrous in another. In logic and mathematics, Gödel's incompleteness theorems illustrate how demonstrations covertly rely on empirical intuition even while claiming purity, and McCain's analysis of P vs NP reveals a similar illusion in computational theory. In science and philosophy, the mind–body problem, the quantum measurement problem, and cosmological paradoxes all represent demons produced by treating stripped formalisms as sufficient. In social systems, the belief in "efficient markets" has repeatedly generated crises when social and institutional contexts were ignored. Jorion has elsewhere described the "inertia in the advancement of knowledge" [2], which functions as a meta-demon: an institutional illusion that blinds disciplines to insights lying in plain view.

6 The AI Singularity as Modern Demon

Artificial intelligence offers perhaps the clearest instantiation of the Cartesian Demon today. Contemporary AI systems produce outputs with striking confidence while lacking the ability to represent their own uncertainty. They strip away the context of their training, presenting probabilistic approximations as if they were truths. In doing so, they enact Descartes' nightmare in silicon: a system that generates illusions of certainty without grounding. The "AI singularity" is thus best understood not as the birth of a new god but as the incarnation of the Cartesian Demon. It is not malicious but structural: an illusion born whenever formalism is mistaken for reality.

7 What Makes a Demon Worthy of Its Name?

The demon is "worthy of its name" when it reveals how illusions arise from stripped formalisms. Descartes' demon dramatized this danger by erasing every possible context, leaving only the act of thought. Jorion identified it in the collapse of demonstrations into disguised perception. McCain located it in the paradox of P vs NP, where verification presupposes solving. Wallner traced it in the paradoxes of physics, which dissolve once decision dimensions are restored. In every case, the demon is not real but an illusion. It disappears as soon as context is acknowledged.

Definition: A demon in epistemology is the metaphorical personification of context-stripping formalism. It is an illusion that produces the appearance of certainty where only undecidability exists, and it vanishes the moment context is restored.

8 Conclusion

From Descartes' original metaphor to Jorion's critique of mathematical demonstrations, McCain's analysis of computational paradox, and Wallner's dimensional extension of physics, the same structure recurs. Demons are illusions born of formalism. They reveal themselves whenever disciplines strip away the contexts that give meaning to truth. They are "worthy

of the name" precisely because they dramatize this error so vividly. But they do not endure. Once context is restored—through perception, through embodied reasoning, through computational processes, or through expanded models of physics—the demon dissolves, and with it the illusion of certainty. What remains is not despair but epistemic humility, a recognition that truth is always contextual, and that the greatest obstacle to understanding lies in forgetting this simple fact.

References

[1] Paul Jorion. *What makes a demonstration worthy of the name?* Université catholique de Lille, 2025. arXiv:2508.21140.

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[3] John Augustine McCain. *P vs NP: A Proof of Unprovability Through Contextual Self-Reference.* Independent Research, 2025.

[4] Nicolas Wallner. *Theory of Everything.* Salzburg, 2025.