

Challenging Umberto Eco's Logical Critique of Theism via *Physica Mutabilis* and *Omnis Verum Simul*

Patricio Venegas-Aravena*
Independent Researcher, Concepción, Chile
(Dated: May 15, 2025)

The traditional dispute regarding the existence of God has historically hinged upon the foundations of logic and epistemology, wherein principles such as causality and non-contradiction have proven crucial for arguments both supporting and opposing divine attributes. Umberto Eco's critique of theism, representative of Western rationalism, assumes a classical logic of universal and timeless validity. However, recent advancements in multiscale thermodynamics, specifically the concepts of *Physica Mutabilis* (changing physical laws) and *Scientia Præteriti* (structural time lag between knowledge and the physical present of the universe), could potentially alter the very structure of logic. This paper explores a scenario wherein logic itself becomes contextually dependent, rendering the coexistence of a proposition and its negation (*Omnis Verum Simul*) an ontological possibility. Furthermore, it analyzes how this perspective challenges classical logical objections to the existence of God (omnipresence, omniscience, and omnipotence) as advanced by Eco, suggesting that logic, anchored to a particular set of physical laws, lacks absolute universality. The resolution of apparent contradictions in divine attributes, such as simultaneous presence and absence, within asynchronous causal frameworks is discussed. Moreover, the idea of external forces, characteristic of the *Principium Luxuriæ* which permits *Physica Mutabilis* and the dynamics of the entities composing the universe, is posited as a factor that could enable the simultaneity of presence and absence in an entity. Ultimately, while this work does not constitute proof of God's existence, it is argued that a dynamic universe necessitates a reconsideration of fundamental philosophical distinctions and the very notion of existence under a temporally displaced logic, thereby reopening the metaphysical plausibility of the divine and challenging the limits of a metaphysics predicated upon a static logic.

Keywords: Multiscale Thermodynamics, Logical critique of Theism, Evolving Physical Laws, *Omnis Verum Simul*, *Principium Luxuriæ*, *Scientia Præteriti*.

I. INTRODUCTION

Throughout the history of Western thought, the question of God's existence has been profoundly intertwined with the developments of logic and epistemology (the branch of philosophy that studies knowledge) (e.g., [1, 2]). In particular, the principle of causality (everything has a prior cause) and the principle of non-contradiction (the idea that a proposition and its negation cannot both be true at the same time) have served as cornerstones for philosophical and theological structures (e.g., [3–5]) historically employed to defend the internal coherence of divine attributes such as omnipresence, omnipotence, and omniscience (e.g., [6–8]).

From Plato and Aristotle, who suggested the necessity of an entity that orders pre-existing chaos (the Demiurge) and the unmoved mover that sets everything in motion (e.g., [9, 10]); through the attempts of Saint Anselm, who sought to demonstrate divine existence through ontological arguments (the study of being and its properties) as a logical necessity (e.g., [11]); and Thomas Aquinas with his first cause within his *Quinque viæ* (e.g., [12]), to

Gómez Pereira, who points to a superior and necessary principle based on our self-awareness and knowledge, evidencing an immaterial substance that cannot originate from the physical world, these are examples of efforts to rationally ground the existence of God or an equivalent entity (e.g., [13, 14]). Nevertheless, logical mechanisms have also underpinned the refutation of such an entity. Along these lines, Kantian objections underscored the limits of pure reason by arguing that we cannot apply the idea of cause and effect beyond the realm of experience (e.g., [15]). Therefore, it is logically unsound to deduce a "first cause" (such as God) for the universe considered as a whole, since that "whole" is not a possible object of experience. This view was shared by David Hume, who argued that the principle "everything that begins to exist must have a cause" is not a necessary truth but a belief induced by experience (e.g., [16]). Consequently, it cannot be used as a logical premise. From a similar standpoint, Bertrand Russell ventured to attack the concept of causality itself, considering it not a universal logical truth [17, 18]. He then argued that there is no logical necessity for the universe to have a cause, let alone a conscious or divine one. More recently, Richard Dawkins has argued that a being capable of designing the universe would, in principle, have to be at least as complex as the universe itself and, therefore, less probable from a statistical or Bayesian probability perspective

* plvenegas@uc.cl,
https://orcid.org/0000-0003-3777-0941

[19]. Despite this dismantling of logic as a representation of reality, figures such as Galileo Galilei entered the debate centuries ago by asserting that the world must possess a rational and ordered structure that could, in principle, be described mathematically (e.g., [20]). For him, logic and mathematics reflected a deeper reality, harmonizing with his Platonic worldview [21]. This argumentation aligns with modern physical descriptions of reality, which allow for the establishment of the universe's causal relationships through physical equations with great precision (e.g., [22]). This appreciation for the branches of physics led Antony Flew, who was for decades one of the most influential atheist philosophers, to change his stance by accepting the existence of an intelligence or deity, although not the personal God of classical theism [23]. He reasoned that the complexity of the universe, and especially the origin of life, required an explanation that, in his view, could not be adequately found in materialism or absolute chance.

Within this context that validates logic as a tool for discerning the existence of God, Umberto Eco, like modern philosophers such as Graham Oppy, aligns with one of the most critical lines of thought, pointing to internal logical tensions within the classical attributes of the theistic God, particularly the apparent contradiction between simultaneous presence and absence as a negation of omnipresence, which undermines other theistic properties such as omniscience and omnipotence [24, 25]. Consequently, Eco's line of argumentation stands as one of the most robust regarding the non-existence of God within the framework of logic.

Despite this, few thinkers, such as the aforementioned Russell, have delved into considering logic as an insufficient tool to explain the origin of the universe. However, these arguments are based on experience rather than the incorporation of recent advances in physics. For example, the work of Venegas-Aravena and Cordaro [26] has proposed, based on multiscale thermodynamics, that human knowledge of reality is intrinsically out of sync with the present time, as they posit that the dynamic evolution of physical laws could alter our conception of the world. In this way, the amount of knowledge is related to a physical constraint inherent to the universe and not to an epistemological inability or one related to experience. Therefore, this work explores how a non-stationary physics and temporally displaced knowledge reconfigure the relationship between logic, causality, and metaphysics, potentially altering the validity of the principles upon which arguments like Eco's are based. To this end, section II presents Eco's logical arguments regarding the non-existence of divine entities, while section III describes the changes in logic within a universe with evolving physical laws. Sections IV and V present the discussions (implications) and conclusions, respectively.

II. FOUNDATIONS OF ECO'S CRITIQUE

Umberto Eco's critique of the existence of God, particularly concerning the traditional attributes of theism (omnipotence, omniscience, omnipresence), is framed within a rationalist tradition that employs classical logic as a criterion for internal coherence [24]. That is, Eco assumes that classical logic is an absolute and immutable frame of reference, applicable to both human discourse and metaphysical entities. By this means, Eco does not empirically demonstrate that God does not exist, but rather points to the logical impossibility of a being possessing self-contradictory attributes. His critique is therefore a *Reductio ad Absurdum* (reduction to the absurd) of the classical concept of God: if the definition leads to internal logical contradictions, then the concept is invalid or unrepresentable.

Specifically, Eco relies on the principle of non-contradiction, originally formulated by Aristotle (e.g., [27, 28]), according to which a proposition (P) and its negation ($\sim P$) cannot both be true simultaneously. This principle is a cornerstone of classical logic and formal coherence:

$$\sim (P \wedge \sim P) \quad (1)$$

Based on this, Eco argues that divine omnipresence (the attribute according to which God is present in all places) logically breaks down if it is argued that God is in a place without being perceived. This allows for the establishment that if God is everywhere but is not perceived anywhere, His presence becomes indistinguishable from His absence, implying that He "is and is not" simultaneously.

This formulation implies a direct formal contradiction under the principle of non-contradiction:

- $P(x)$ = "God is present in place x "
- $\sim P(x)$ = "God is no present in place x "

Consequently, asserting that both propositions are simultaneously true in the same sense and with respect to the same place violates the principle of non-contradiction. Therefore, according to Eco, this attribute proves to be self-contradictory. From the critique of omnipresence, Eco deduces the inconsistency of the other traditional divine attributes:

- If God is not everywhere, then He cannot know everything that occurs in those places (limitation of omniscience).
- If He does not know everything and cannot access all places, His power of intervention or control is restricted (limitation of omnipotence).

Eco's logic at this point is deductive and moves from the base attribute (omnipresence) to the derived ones,

applying a principle of systemic consistency: if one attribute falls into contradiction, all those that depend on it are also compromised. Thus, his critique is not based on a lack of empirical evidence, but on the logical impossibility of entities defined by internally contradictory properties existing.

From this perspective, incoherence can be established using causality. Within his logical framework, if God is the ultimate cause of everything that exists (A), then He should be logically coherent with the effect (B), such that:

$$A \Rightarrow B \quad (2)$$

is entirely valid. However, if the cause (an omniscient, omnipotent, and omnipresent being) necessarily leads to contradictory effects (presence and absence, knowledge and ignorance, power and limitation) given by $\sim B$ (a universe governed by contradictory attributes), then causality breaks down as a coherent logical relation, which is described as:

$$A \Rightarrow \sim B \quad (3)$$

Since proposition A cannot imply both B and $\sim B$ at the same time (they cannot both be simultaneously true), God cannot be established as the first cause.

III. DYNAMICS OF PHYSICAL LAWS AND TEMPORAL DISLOCATION OF KNOWLEDGE

From the perspective of thinkers such as Leibniz, Alfred North Whitehead, Charles Sanders Peirce, or Roger Penrose, mathematical logic has a non-arbitrary origin that reflects objective structures of the world, implying that they are not merely formal conventions or human constructs [29–32]. Within this current of thought is Jean-Yves Girard, who suggests that logic may have a closer correspondence with the behavior of physical systems, such as thermodynamics [33]. Within this discipline, the dynamics of thermodynamic systems composed of multiple scales and subjected to an excess of external energy have been studied, which they termed *Principium Luxuriæ* [34]. Their findings suggest that the universe can be described by a parameter D (see Venegas-Aravena et al. [35] and appendices in Venegas-Aravena et al. [36] for the derivation of this parameter) which evolves over time, suggesting that, to explain the complexity of the universe dictated by the parameter D , the laws of physics might change [26]. This concept of changing physical laws is termed *Physica Mutabilis* from the Latin 'changing physics'. Note that other authors such as Bassani and Magueijo [37] have also independently concluded the *Physica Mutabilis* or changing physical laws. A profound consequence of this model is that the knowledge that can be had of the universe is never synchronized with its current state. That is to say, only knowledge of the past is available (in Latin, *Scientia Præteriti*).

Formally, the authors describe this desynchrony as follows: if $R(t)$ represents physical reality at an instant t and $K(t)$ the human knowledge available at that same instant, then (in their Equation 7 in Venegas-Aravena and Cordaro [26]),

$$\lim_{t \rightarrow t_2} K(t) = R(t_1) \neq R(t_2) \quad (4)$$

This equation implies that at each instant t_2 , the knowledge we possess actually corresponds to the state of reality at a prior instant t_1 . Therefore, there exists a structural and non-epistemic time lag between reality and knowledge.

This framework allows for a reinterpretation of the type of logical problem that Umberto Eco poses regarding the contradiction in divine properties, particularly omnipresence. To illustrate this connection, consider two physical events E_1 and E_2 , where E_1 occurs at time t_1 and E_2 at a later time t_2 . If both events belong to physical reality ($E_1 \in R(t_1)$, $E_2 \in R(t_2)$), our knowledge of them will inevitably be delayed: we will only know of E_1 at t_2 (that is $K(E_1, t_2)$) and of E_2 only at t_3 (that is $K(E_2, t_3)$), with $t_1 < t_2 < t_3$.

In a universe with stable physical laws, if E_1 causes E_2 , then the logical implication:

$$E_1 \Rightarrow E_2 \quad (5)$$

(based on the laws we knew up to t_1) is universally valid. However, if physical laws change after t_1 , it may occur that E_1 no longer implies E_2 , but even its negation:

$$E_1 \Rightarrow \sim E_2 \quad (6)$$

(if the laws have changed such that E_2 no longer occurs or its negation occurs as a consequence of E_1). This means that at time t_3 it is known that Equation 6 was valid for time t_2 . However, at t_2 the available knowledge is still $K(E_1, t_2) = R(t_1)$, so both implications 5 and 6 are logically possible from the point of view of the available information. That is to say that E_2 and its negation $\sim E_2$ are logically possible at the same instant of knowledge t_2 . Then, we will say '*Omnis Verum Simul*' when E_2 and $\sim E_2$ are valid, which means from Latin that everything is true simultaneously.

In this context, the apparent logical contradiction (E_2 and $\sim E_2$) does not arise from an epistemological error or a limit in human experience, but from an ontological property of the universe: the variability of its laws. That is, the logical coexistence of E_2 and $\sim E_2$ at t_2 , although contradictory from the point of view of classical logic, is physically consistent. Since t_2 is an arbitrary time, the *Omnis Verum Simul* condition is met at every instant of time.

This can be schematically observed in Figure 1, where the horizontal axis represents time. Prior to time t_2 , the universe adheres to a logic wherein E_1 implies E_2 (lower

greenish-yellow rectangle). However, from time t_3 onwards, the universe exhibits a logic where E_1 does not imply E_2 (upper greenish-yellow rectangle). Consequently, time t_2 represents the moment at which both implications are valid, which is depicted by the overlap between the two rectangles indicated by the vertical dashed black curves.

This example reveals that the stability of causal implications (a necessary condition for $E_1 \Rightarrow E_2$ to have universal logical validity) depends on the immutability of physical laws. In particular, the principle of non-contradiction must be understood relative to the system of physical laws that governs at each instant. If such immutability is not sustained, as Venegas-Aravena and Cordaro suggest, the logic derived from them cannot remain fixed either, causing inferences based on classical logics (such as those used by Eco) to lose their universality. Thus, if logic is conceived as a representation of real relationships between physical events, and if in a universe with dynamic laws these relationships can adopt forms that classical logic classifies as contradictory, then classical logic itself becomes insufficient. This means that Eco's logical criticisms, built on a metaphysics of stable laws, of the idea of God (based on principles such as non-contradiction and stable causality) might not be valid in a universe whose physical nature admits non-classical logical transitions.

Under this extended logic, the coexistence of the presence and absence of God, as Eco poses it, ceases to be a contradiction and becomes a structurally possible property of the universe. This is not because God exists and does not exist at the same time in the same sense, but because what we call "presence" and "absence" depend on distinct causal frameworks not simultaneously accessible. That is to say that, at a given instant, God might be present in a future logical framework but absent in a present logical framework.

IV. DISCUSSIONS

The question concerning the existence of God has been historically linked to the foundations of logic and epistemology, with principles such as causality and non-contradiction serving as cornerstones for the defense or refutation of divine attributes. The Western rationalist tradition, exemplified by Umberto Eco's critique of the internal coherence of theism, assumes the universal and timeless validity of classical logic as an absolute epistemic framework. However, recent developments in multiscale thermodynamics and the study of complex physical systems, such as those proposed by Venegas-Aravena and Cordaro [26], challenge this assumption by suggesting a structural lag between human knowledge and the physical present of the universe, conditioned by the potential dynamic evolution of physical laws. Consequently, a multiscale universe formed by external forces (*Principium Luxuriæ*) necessarily implies *Physica Mutabilis* and *Sci-*

entia Præteriti, the latter of which entails *Omnis Verum Simul*.

In a universe where the laws governing causality and, by extension, logic, are not static, logical principles cease to be absolute and become contextually dependent on the physical state at a given time (section III). From this perspective, logic acquires a local and temporal character, relativizing the transcendent applicability of principles such as non-contradiction. The apparent contradictions in divine attributes, such as the simultaneity of presence and absence noted by Eco, could be resolved by framing them within distinct, non-synchronic causal frameworks due to the structural lag of possible knowledge. What static logic identifies as a paradox might be an epistemic illusion derived from our inherent inability to synchronize cognition with present reality.

While this line of reasoning does not constitute proof of the existence of a deity, it does erode the solidity of classical logical objections that are based on the presumption of a universal and immutable logic. It is pertinent to consider the persistence of the principle of causality in the physical tradition, from classical mechanics to quantum mechanics. Although reinterpreted in the latter in probabilistic terms, causality remains a fundamental objective structure of the world, independent of human subjectivity. This robustness of causality, even within a quantum framework (e.g., [38, 39]), suggests that causal relations are inherent to the universe, even if their manifestation and our understanding of them may evolve with the underlying physical laws. If physics allows for *Physica Mutabilis*, it would be expected that logic would also allow for *Omnis Verum Simul*.

A. Parallels with Gödel's Formal Logic

It is noteworthy that a parallelism exists between the present work, albeit approached from a novel perspective grounded in physics, and the endeavors of Kurt Gödel to address the existence of God through formal logic. Gödel, akin to thinkers who advocate for an intrinsic connection between logic and the structure of the universe, posited that mathematical logic could unveil profound metaphysical truths [40, 41]. His renowned ontological proof, while controversial and predicated upon a specific axiomatic system, sought to demonstrate the logical necessity of God's existence based on certain definitions and axioms concerning His essential properties [42]. Although the current analysis does not delve into modal logic as Gödel did, it shares the underlying premise that the nature of reality, in this instance influenced by *Physica Mutabilis* and *Scientia Præteriti*, bears direct implications for the validity and applicability of logical systems within metaphysics. That is to say, this work concurs with Gödel's notion that the limitations of a static logical system may not be definitive in comprehending the possibility of divine existence. The proposition of an *Omnis Verum Simul* within a universe characterized by *Physica Mu-*

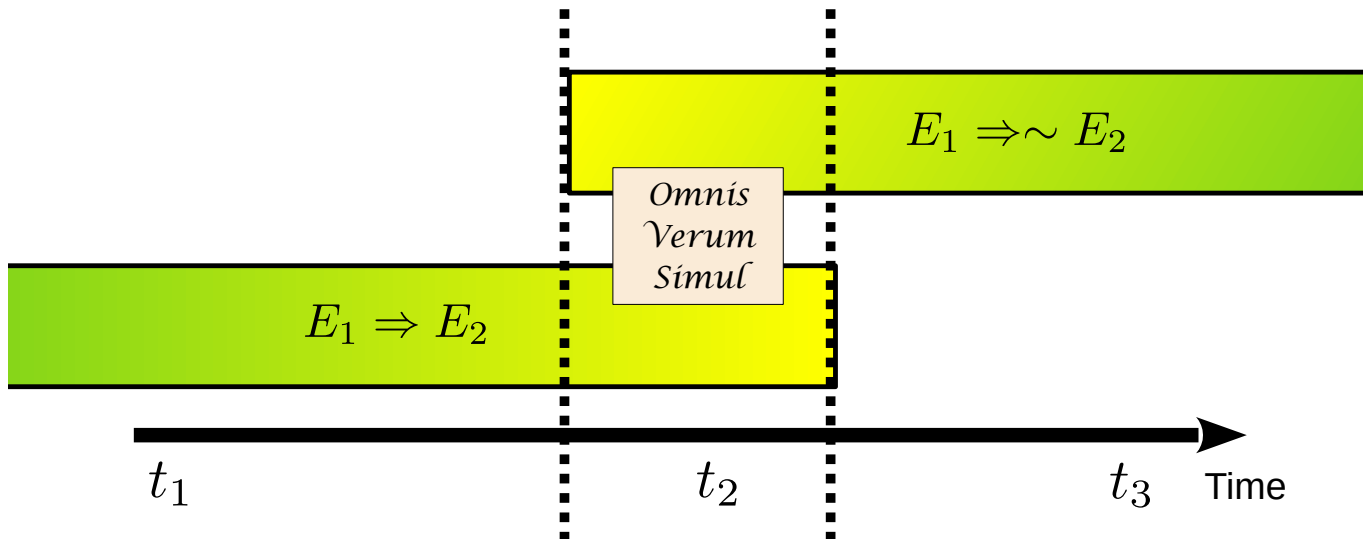


FIG. 1. Schematic representation of the *Omnis Verum Simul* within a universe governed by *Physica Mutabilis*.

tabilis could be interpreted as a means of transcending the apparent contradictions that arise within a fixed logical framework, mirroring the spirit of Gödel's pursuit of coherence in a metaphysical domain.

B. Implications of the Principium Luxuriæ and Cosmic Complexity

From this vantage point, the vast structural complexity of the universe, manifested in the emergence of self-organizing systems and multiscale hierarchies, could potentially harbor as yet unknown physical structures that functionally equate to a divine entity under the principle of *Omnis Verum Simul*. It is pertinent here to underscore the physical nature of the *Principium Luxuriæ*, which originates from open systems subjected to external forces. Consequently, the dynamics of the universe, and thus the behavior of its constituent entities, arises as a means of dissipating this surplus of external energy. In the case of the universe itself, there ought to exist an entity external to the universe that triggers the observed complexity and its sustained temporal dynamics, thereby engendering the *Physica Mutabilis* and the *Scientia Præteriti*. Indeed, it has been demonstrated that the probability of assembling complex molecules diminishes in the presence of an external force, thereby validating the notion that an external force can generate the observed complexity within the universe. Therefore, following this line of reasoning, the property that Eco critiques, concerning an entity characterized by simultaneous presence and absence, is plausible when a universe is subject to external influences. In other words, the *Omnis Verum Simul* is realized due to the presence of an external force acting upon the universe, over which there is consequently no control.

C. The Principium Luxuriæ and the Origin of Biological Complexity

This has significant implications, as the emergence of complex structures within the framework of the *Principium Luxuriæ* arises from the influence of external forces that diminish both the probability and, notably, the time required for their assembly. This is of paramount importance, given that researchers such as Stuart Kauffman indicate that the time needed to generate a complex structure, such as a single simple protein composed of 200 amino acids, through mere randomness is on the order of the age of the universe multiplied by ten to the power of thirty-seven [43]. This occurs because systems must explore all possible configurations (an ergodic system), a process that requires a greater amount of time for systems composed of a larger number of elements. The physics inherent to the randomness of the universe consumes a quantity of time that is entirely unsustainable, as our very existence serves as a refutation thereof. The basis of this analysis is also shared by natural selection, which relies on the randomness of events such as the formation of mutations and interaction with the environment (e.g., [44]). Therefore, if the *Principium Luxuriæ* reduces the formation time of complex systems by decreasing the probability of generating complex configurations due to an external force [45], it becomes a more parsimonious explanation than the randomness of natural selection. Consequently, the argumentation of some thinkers, such as Graham Oppy and other critics, who maintain that evolution by natural selection is a sufficient explanation for biological complexity and does not necessitate the intervention of an intelligent designer, stems from ignoring the non-ergodicity necessary to sustain living organisms, which originates from the existence of external forces given by the *Principium Luxuriæ*. While

these external forces correspond to other subsystems and not necessarily to the intervention of a divine being or guided design as noted by Alvin Plantinga or Richard Swinburne [46, 47], at the scale of the universe, this external force is unknown, thus precluding the dismissal of an intervention by some entity. In this way, the *Omnis Verum Simul*, upon which Eco's logic falters, also weakens Oppy's argumentation.

D. Reopening the Space of Metaphysical Plausibility

It is important to emphasize that while this possibility of encountering an entity situated within a non-classical logical framework that validates *Omnis Verum Simul*, aligning with the ideas of Michael Rea or Edward Feser [48, 49], does not constitute a categorical affirmation of God's existence. Rather, it represents a reopening of the space of metaphysical plausibility that traditional logical arguments had tended to foreclose. For instance, some authors have contended that quantum mechanics allows for the incorporation of a global consciousness that could be analogous to that of a God [50], thereby permitting a deeper exploration into the realm of physics less accessible to common experience. From the standpoint of *Scientia Præteriti*, the inherent uncertainty existing at a quantum level has been linked to the fact that we do not possess complete knowledge at any given moment [26]. Consequently, the existence of "complex mechanisms giving rise to complex structures" quantum scales could be a natural consequence of broadening the metaphysical discussion through transitions in physical laws, suggesting a fundamental organizing principle that transcends our current logical understanding based on temporally displaced knowledge and not necessarily contingent upon a divine presence.

Consequently, this work problematizes the legitimacy of denying the possibility of the divine by exclusively appealing to traditional formal logic. If the physical conditions underpinning logic are inherently dynamic, the conclusions derived therefrom lack an absolute character. The concept of God, particularly if conceived as an emergent structure or a principle of order within a dynamic universe, regains plausibility as a possibility compatible with non-stationary physics.

This reformulation carries broad philosophical consequences, urging a revision of fundamental distinctions such as necessary and contingent, logical and physical, real and cognizable. In a scenario where knowledge is structurally delayed with respect to reality, even ontological questions about "existence" require re-evaluation under broader conceptual categories than those offered by classical logic. What is considered an incoherence within a timeless logic, such as the coexistence of being and non-being at the same spatiotemporal point, might find coherence within a temporally displaced logic, where events are distributed across asynchronous causal frame-

works. This not only opens a physical possibility for the existence of a deity but also invites a radical reconsideration of the limits of metaphysics founded on a static logic.

V. CONCLUSIONS

Eco's critique of divine attributes, such as omnipresence, is predicated on classical logic and the principle of non-contradiction, which is assumed to possess universal validity. However, if fluctuating physical laws (*Physica Mutabilis*) deviate from classical logical causality, engendering a disparity between knowledge and reality (*Scientia Præteriti*), the co-occurrence of an implication and its negation at a specific time becomes permissible (*Omnis Verum Simul*). Consequently, the strict application of classical logic to metaphysical concepts is attenuated. While this does not constitute proof of God's existence, it weakens classical logical objections, portraying logic as a contextual instrument anchored to a particular, rather than universal, set of physical laws. Therefore, the issue of God's simultaneous "presence" and "absence," as identified by Eco, might be resolved by considering a logic within the present state of knowledge that dictates God's "absence," whereas "presence" would be determined by a future logic for the same given time. The framework in which *Omnis Verum Simul* occurs, termed *Principium Luxuriæ*, is characterized by the presence of external forces, suggesting that the possibility of an entity being simultaneously present and absent can be achieved through the existence of an external force acting upon the universe. Thus, a dynamic universe compels a reconsideration of philosophical distinctions and the very notion of existence under a temporally displaced logic, opening a physical possibility for deity and challenging the limitations of static metaphysics.

ACKNOWLEDGMENTS

P.V.-A. acknowledge the continuous academic and scientific support of the Pontificia Universidad Católica de Chile.

FUNDING

This research received no external funding.

DATA AVAILABILITY STATEMENT

No applicable

CONTRIBUTIONS

P.V.-A. contributed to the first idea, scientific discussion, model, writing, and editing process.

COMPETING INTERESTS

The author declare no competing interests.

-
- [1] S. Davis, Logic and the nature of god, Library of Philosophy and Religion. Palgrave Macmillan London, UK 10.1007/978-1-349-06352-9 (1983), <https://doi.org/10.1007/978-1-349-06352-9>.
 - [2] D. Dombrowski, A history of the concept of god: A process approach, SUNY Press, USA 10.1515/9781438459387 (2016), <https://doi.org/10.1515/9781438459387>.
 - [3] P. Janz, Divine causality and the nature of theological questioning, *Modern Theology* **23(3)**, 317–348 (2007), <https://doi.org/10.1111/j.1468-0025.2007.00386.x>.
 - [4] A. Hollingsworth, The eternal relations of origin, causality, and implications for models of god, *Religions* **15(1)**, 1–12 (2024), <https://doi.org/10.3390/rel15010035>.
 - [5] I. Silva, Causal and non-causal explanations in theology: the case of aquinas’s primary–secondary causation distinction, *Religious Studies* **1(1)**, 1–13 (2024), <https://doi.org/10.1017/S0034412523001166>.
 - [6] G. Keene, Omnipotence and logical omniscience, *Philosophy* **62(242)**, 527–528 (1987), <https://doi.org/10.1017/S0031819100039097>.
 - [7] W. Wainwright, Omnipotence, omniscience, and omnipresence, In: Taliaferro C, Meister C, eds. *The Cambridge Companion to Christian Philosophical Theology*. Cambridge Companions to Religion. Cambridge University Press **1(1)**, 46–65 (2010), <https://doi.org/10.1017/CCOL9780521514330.004>.
 - [8] J. Hoffman and G. Rosenkrantz, Omnipresence, *The Encyclopedia of Philosophy of Religion*. Wiley-Blackwell 10.1002/9781119009924.eopr0279 (2021), <https://doi.org/10.1002/9781119009924.eopr0279>.
 - [9] P. Bassani and J. Magueijo, The good or the demiurge: Causation and the unity of good in plato, *Apeiron* **28(29)**, 113–140 (1995), <https://doi.org/10.1515/APEIRON.1995.28.2.113>.
 - [10] R. Olson, Aristotle on god: Divine nous as unmoved mover, In: Diller, J., Kasher, A. (eds) *Models of God and Alternative Ultimate Realities*. Springer, Dordrecht 10.1007/978-94-007-5219-1_9 (2012), https://doi.org/10.1007/978-94-007-5219-1_9.
 - [11] M. Duží, St. anselm’s ontological arguments, *Polish Journal of Philosophy* **5(1)**, 7–37 (2011), <https://doi.org/10.5840/pjphil2011511>.
 - [12] T. Pawl, The five ways, In Brian Davies (ed.), *The Oxford Handbook of Aquinas*, Oxford Handbooks 10.1093/oxfordhb/9780195326093.013.0010 (2012), <https://doi.org/10.1093/oxfordhb/9780195326093.013.0010>.
 - [13] G. Pereira, Antoniana margarita, Medina del Campo, Spain (1554).
 - [14] J. García-Valverde and P. Maxwell-Stuart, Gómez pereira’s antoniana margarita (2 vols): A work on natural philosophy, medicine and theology, Brill publishers Leiden, the Netherlands (2019).
 - [15] J. Caputo, Kant’s refutation of the cosmological argument, *Journal of the American Academy of Religion* **42(4)**, 686–691 (1974), <https://www.jstor.org/stable/1461135>.
 - [16] A. Kraal, The problem of god in david hume, Cambridge University Press, UK 10.1017/9781009270243 (2023), <https://doi.org/10.1017/9781009270243>.
 - [17] B. Russell, On the notion of cause, *Proceedings of the Aristotelian Society* **13(1912)**, 1–26 (1912), <http://www.jstor.org/stable/4543833>.
 - [18] G. Clay, Russell and the temporal contiguity of causes and effects, *Erkenntnis* **83(6)**, 1245–1264 (2018), <https://doi.org/10.1007/s10670-017-9939-6>.
 - [19] R. Dawkins, *The god delusion*, Houghton Mifflin Harcourt, Boston, MA, USA 10.1007/978-1-349-06352-9 (2006), <https://doi.org/10.1007/978-1-349-06352-9>.
 - [20] R. Rojas, The language of mathematics: The stories behind the symbols, Princeton University Press, USA 10.2307/jj.17634947 (2025), <https://doi.org/10.2307/jj.17634947>.
 - [21] T. Girill, Galileo and platonistic methodology, *Journal of the History of Ideas* **31(4)**, 501–520 (1970), <https://doi.org/10.2307/2708257>.
 - [22] N. Ramsey, Quantum mechanics and precision measurements, *Physica Scripta* **T59(1)**, 26–28 (1995), <https://doi.org/10.1088/0031-8949/1995/T59/002>.
 - [23] A. Flew and V. RA, *There is a god: How the world’s most notorious atheist changed his mind*, Harper Collins Publishers, NY, USA (2008).
 - [24] U. Eco, *The limits of interpretation*, Indiana University Press, USA (1990).
 - [25] G. Oppy, *Arguing about gods*, Cambridge University Press, Cambridge, UK (2009).
 - [26] P. Venegas-Aravena and E. Cordaro, On the limits of knowledge and the evolution of the physical laws in non-euclidean universes, *PhilSci-Archive* **2(1)**, 1–18 (2025), <https://philsci-archive.pitt.edu/24663>.
 - [27] S. Cohen, Aristotle on the principle of non-contradiction, *Canadian Journal of Philosophy* **16(3)**, 359–370 (1986), <https://doi.org/10.1080/00455091.1986.10717124>.
 - [28] D. Coren, Why does aristotle defend the principle of non-contradiction against its contrary?, *The Philosophical Forum* **49(1)**, 39–59 (2018), <https://doi.org/10.1111/phil.12176>.
 - [29] R. Raspe, *Œuvres philosophiques, latines et françoises, de feu Mr. de Leibnitz, tirées de ses manuscrits, qui se conservent dans la bibliothèque royale à Hanovre, Amsterdam et Leipzig* (1765).
 - [30] D. Pegg, On a new list of categories, *Proceedings of the American Academy of Arts and Sciences* **7(1)**, 287–298 (1867).
 - [31] A. Whitehead, *Process and reality: An essay in cosmology*, he Free Press, NY, USA (1929).
 - [32] R. Penrose, *The road to reality: A complete guide to the laws of the universe*, Vintage Books, NY, USA (2004).
 - [33] J. Girard, The blind spot: Lectures on logic, *European Mathematical Society* 10.4171/088 (2011),

- <https://doi.org/10.4171/088>.
- [34] P. Venegas-Aravena and E. Cordaro, The multiscale principle in nature (principium luxuriæ): Linking multiscale thermodynamics to living and non-living complex systems, *Fractal and Fractional* **8(1)**, 1–43 (2024), <https://doi.org/10.3390/fractalfract8010035>.
 - [35] P. Venegas-Aravena, E. Cordaro, and D. Laroze, Natural fractals as irreversible disorder: Entropy approach from cracks in the semi brittle-ductile lithosphere and generalization, *Entropy* **24(10)**, 1–18 (2022), <https://doi.org/10.3390/e24101337>.
 - [36] P. Venegas-Aravena, E. Cordaro, and D. Laroze, Fractal clustering as spatial variability of magnetic anomalies measurements for impending earthquakes and the thermodynamic fractal dimension, *Fractal and Fractional* **6(11)**, 1–13 (2022), <https://doi.org/10.3390/fractalfract6110624>.
 - [37] P. Bassani and J. Magueijo, How to make a universe, *General Relativity and Quantum Cosmology*, arXiv **1(1)**, 1–12 (2025), <https://doi.org/10.48550/arXiv.2502.00081>.
 - [38] D. Pegg, Causality in quantum mechanics, *Physics Letters A* **349(6)**, 411–414 (2006), <https://doi.org/10.1016/j.physleta.2005.09.061>.
 - [39] G. Giarmatzi, Rethinking causality in quantum mechanics, Springer Theses, Switzerland 10.1007/978-3-030-31930-4 (2019), <https://doi.org/10.1007/978-3-030-31930-4>.
 - [40] K. Gödel, Über formal unentscheidbare sätze der principia mathematica und verwandter systeme i, *Monatshefte für Mathematik und Physik* **38(1)**, 173–198 (1930), <https://doi.org/10.1007/BF01700692>.
 - [41] K. Gödel, Russell’s mathematical logic, *Philosophy of Mathematics Selected Readings* **1(1)**, 447–469 (1944), <https://doi.org/10.1017/CBO9781139171519.024>.
 - [42] K. Gödel, Kurt gödel collected works, vol. 3: Unpublished essays and lectures, Eds. Feferman S, Dawson JW, Goldfarb W, Parsons C. Oxford University Press, UK. (1944).
 - [43] S. Kauffman and A. Roli, The world is not a theorem, *Entropy* **23(11)**, 1–9 (2021), <https://doi.org/10.3390/e23111467>.
 - [44] A. Kleinman, The basic science and mathematics of random mutation and natural selection, *Statistics in Medicine* **33(29)**, 5074–5080 (2014), <https://doi.org/10.1002/sim.6307>.
 - [45] P. Venegas-Aravena and E. Cordaro, The nath-luxuriæ principles: Unified thermodynamic framework for molecular assembly and non-ergodicity via atp synthesis/hydrolysis example, *Biosystems* **1(1)**, 1–11 (2025), <https://doi.org/10.1016/j.biosystems.2025.105481>.
 - [46] R. Swinburne, The argument from design, *Philosophy* **43(165)**, 199–212 (1968), <https://doi.org/10.1017/S0031819100009189>.
 - [47] A. Plantinga, Where the conflict really lies: Science, religion, and naturalism, Oxford University Press, UK (2011).
 - [48] E. Feser, Five proofs of the existence of god, Ignatius Press, San Francisco, CA, USA (2017).
 - [49] M. Rea, Essays in analytic theology, Oxford University Press, UK (2020).
 - [50] S. Priest, Quantum physics and the existence of god, *Religions* **15(1)**, 1–24 (2024), <https://doi.org/10.3390/rel15010078>.