

# How are Gödel's conceptual and mathematical realism, his argument against the existence of time, and his ontological argument compatible with a coherent ontology?

## Introduction

Among twentieth-century thinkers, Kurt Gödel stands as a singular figure—a mathematician whose theorems shattered certainties, a philosopher who questioned the very nature of time, and a logician who formalized an argument for God's existence.

Unlike other academics, *"Gödel published comparatively little, but almost always to maximum effect; his papers are models of precision and incisive presentation"* [1]. This economy of expression came from a mind where science and philosophy engaged in *"what can be described as a comprehensive cross-fertilization"* [2]. While his mathematical discoveries *"deepened his philosophical insights"*, and *"questions of a philosophical nature often inspired and directed his mathematical investigations"* [2], he developed several philosophical positions that, at first glance, might appear disparate: a strong conceptual and mathematical realism, an argument against the existence of time, and an ontological argument for God's existence.

Here, we briefly review these philosophical positions and arguments and subsequently explore if and how they can be compatible with a coherent ontology.

## Gödel's Conceptual and Mathematical Realism

An important part of Gödel's philosophy is his commitment to conceptual realism.

*"Throughout his published works, Gödel consistently maintained that concepts exist independently of human constructions and definitions"* [3, page 189].

In his paper, *"Russell's Mathematical Logic"* [4], he states that *"classes and concepts may be conceived as real objects [...] existing independently of our definitions and constructions...[I]... it seems to me that the assumption of such objects is quite legitimate as the assumption of physical bodies and there is quite as much reason to believe in their existence"* [3, page 189].

Additionally, in his *"Gibbs Lecture"* [4], Gödel elaborates on mathematical realism, saying:

*"The objects and theorems of mathematics are as objective and independent of our free*

*choice and our creative acts as the physical world. It determines, however, in no way what these objective entities are—in particular, whether they are located in nature or in human mind, or neither of the two. These three views about the nature of mathematics correspond exactly to the three views about the nature of concepts” [3, page 189].*

A careful analysis by Mertens [3, page 198], “of Gödel’s remark on page 16 of his *Max Phil XI Notebook*” shows “the specific status that Gödel attributes to concepts (especially to those that are logical), and strongly supports his conceptual realism: these conceptual entities are beings which exist as animate beings. Therefore, concepts have a triple existence, which holds for all that exists: they exist in God’s consciousness, in human consciousness, and in the real. It is true that for Gödel, their ‘true’ existence is in God’s consciousness. But this pre-eminence of the objective existence doesn’t rule out that they have some kind of existence in the real and in subjective stages. The different relations of expression described between the stages of existence lead us to think that effectively, not only the notion of objective existence is being considered, but also real and human consciousness as well.”

This “*Ladder of all that exists*” [3, page 191] plays an important role, as we will see later in our analysis.

In conclusion, we have seen a glimpse of Gödel’s philosophical perspective as a conceptual and mathematical realist, which shows how his “*exact philosophy is anchored*” [5, page 33] in realist commitments regarding concepts and mathematical entities [6].

## Gödel’s Argument Against the Existence of Time

In 1949, in a *Festschrift* honoring Einstein, Gödel published “*A Remark About the Relationship Between Relativity Theory and Idealistic Philosophy*” [7], which challenged the objective reality of time [7].

Gödel discovered solutions to Einstein’s field equations of General Relativity [7], which permitted closed causal chains in a rotating universe. “*In such a universe, if event E leads to event L, but L also leads back to E, the relations ‘earlier than’ and ‘later than’ lose their objective character*” [8]. These relations are essential to the reality of time, and hence “*the significance Gödel attributed to his discovery of the Gödel universes was, that in them*

*it was provable on physical grounds that time in the intuitive sense fails to exist [...] and (via his modal argument) also in the actual world" [9].*

Essentially, we see here the existence of time being treated by Gödel not as a contingent but as a necessary truth: if it is not true in one world (e.g., in Gödel's rotating universe), then it cannot be true in any other world, and hence is especially not true in the universe we are experiencing, see also [20].

This emphasis on necessary vs. contingent truth with respect to time is expressed by Gödel in his last sentence in "*Remark About the Relationship between Relativity Theory and Idealistic Philosophy*" [7], where he says "*that accepting the objective lapse of time exists depends on a particular way in which matter and its motion is arranged in the world, is not a straightforward contradiction, but nevertheless, a philosophical view leading to such consequences can hardly be considered as satisfactory*" [7].

## Gödel's Ontological Argument

Ontological arguments have a long tradition stretching back to Anselm of Canterbury. However, Gödel formulated a rigorous modal logical proof for the existence of God [7]. Hao Wang reports "*Gödel's program in philosophy is to find an exact theory of metaphysics, presumably in the form of a monadology. [...] Gödel characterized his philosophical outlook in this way: 0.2.1 My theory is a monadology with a central monad (namely, God)*" [10, page 8].

Here, we see a crucial impact of Leibniz and his *Monadology* [11] on Gödel. Leibniz's Ur-Monad is THE ABSOLUTE, and Gödel takes it as a conceptional input for his ontological argument. Gödel then states axioms regarding "*positive properties: that a property can only be positive if not-having-it is not positive, and that properties implied by a positive property must themselves be positive*" [12]. From these axioms, he concludes that, for any "*positive property, there is possibly a being that instantiates it. After defining God as the being instantiating all positive properties, and 'necessary existence' as a positive property, the argument concludes that God must exist necessarily*" [12]. "*In this argument, God's possible existence is identified with the compatibility of the system of all positive properties, which is identified with the consistency of the system of their corresponding propositions*" [10, page 115].

We note one point of critique, namely that Gödel's ontological argument is based on strong axioms which "*lead to a modal collapse, i.e., every true statement is necessarily true*" [12]. Hence there remains no contingent truth, which might be seen as negating the

concept of free will<sup>1</sup> [12]. However, the modal collapse appears to be a deliberate feature of Gödel's vision when he remarks "*that the necessity of a positive property is positive is the essential presupposition for the ontological proof. If  $\varphi(x) \supset N \varphi(x)$  is assumed [as following from the essence of  $x$ ], then it is easily provable that for every compatible system of properties there is a thing, but that is the inferior way. Rather  $\varphi(x) \supset N \varphi(x)$  should follow first from the existence of God*" [13, page 435].

## Gödel's Unified Vision: A Coherent Ontology

### The Challenge of Coherence

We now return to the central question of this essay: *How are Gödel's conceptual and mathematical realism, his argument against the existence of time, and his ontological argument compatible with a coherent ontology?*

To answer this question, we use a coherent ontology based on the Global Reflection Principle (GRP) [18], Ackermann's Principle (AP) [17], and Necessity (NE) as a fundamental modal category [19].

Rather than viewing Gödel's above-mentioned positions as fragmented, we argue that GRP, AP, and NE provide the structural foundation for a unified ontological vision that not only accommodates but necessitates Gödel's seemingly diverse philosophical positions.

We begin with a high-level introduction<sup>2</sup> of AP and GRP.

### The Ackermann Principle: The Unknowable Absolute

While we understand that AP [17] is firstly a mathematical principle, we perform here a metaphysical extrapolation because Gödel considered this principle to be fundamental:

*"All the principles for setting up the axioms of set theory should be reducible to Ackermann's principle: The Absolute is unknowable. The strength of this principle increases as we get stronger and stronger systems of set theory. The other principles are only*

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<sup>1</sup> Note also that there have been recent computer-supported verification studies on some variants of the ontological argument; see, e.g., Wikipedia [12].

<sup>2</sup> For much more technical detail on GRP and AP, see Wikipedia [16,17], Welch [18], and references therein.

*heuristic principles. Hence, the central principle is the reflection principle, which presumably will be understood better as our experience increases"* [14, item 8.7.9, page 283].

Hence AP [17] provides the philosophical foundation for our coherent ontology and serves several functions:

1. **Explaining Incompleteness:** Gödel's incompleteness theorems demonstrate that no formal system can capture all mathematical truths. This can be understood as a manifestation of AP: the totality of mathematical truth (the Absolute) cannot be fully captured within any formal system.
2. **Justifying the Rejection of Time:** If time were objectively real, it would make the Absolute (God, universe of sets  $V$ ) subject to temporal change, contradicting its absolute nature. By rejecting time's objective reality, Gödel preserves the unchanging nature of the Absolute.
3. **Grounding the Ontological Argument:** Gödel's ontological argument establishes God's necessary existence through logical analysis. This can be understood as demonstrating that, while the Absolute (God) cannot be fully known, its existence can be logically established.

## The Global Reflection Principle: The Principle of Knowledge

GRP [18] formalizes the idea that the universe of sets ( $V$ ) reflects down to set-sized structures. At the metaphysical and conceptual level, GRP can explain<sup>3</sup> how limited beings can have knowledge of an ultimately unknowable Absolute. Just as GRP allows properties of  $V$  to be reflected in smaller structures, our knowledge of the stages of the *"Ladder of all that exists"* [3, page 191] can be gained by applying GRP, as this Principle of Knowledge reflects aspects of the Absolute (God) without exhausting it. Here, the *"Ladder of all that exists"* [3, page 191] explains that *"concepts have a triple existence,*

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<sup>3</sup> We use GRP as a bridge between the Absolute and limited human knowledge. We note that its viability hinges on rigorous answers to ontological and epistemic challenges [21]. Answering those challenges can evolve GRP into a robust part of the proposed coherent ontology - one that respects both human limits and the Absolute's transcendence. To explain the mechanism of GRP beyond its set theoretic origin we propose to study modern physics' Holographic Principle [22] and see how it can be applied to enrich GRP's explanatory scope.

which holds for all that exists: they exist in God's consciousness, in human consciousness, and in the real. It is true that for Gödel, their 'true' existence is in God's consciousness. But this pre-eminence of the objective existence doesn't rule out that they have some kind of existence in the real and in subjective stages" [3, page 198]. Applying GRP, we now begin to understand how limited beings can at all gain knowledge about concepts in the real and in human consciousness: it is the Absolute (God's consciousness) that reflects down to those lower stages of the ladder.

GRP serves several functions:

1. **Unifying Mathematical and Theological Reality:** Just as the GRP allows properties of  $V$  to be reflected in smaller structures, God's necessary existence (as established in the ontological proof) can be understood as reflecting the divine nature in the created world.
2. **Explaining Gödel's Argument Against the Existence of Time:** The GRP's static, hierarchical structure provides a framework for understanding how a timeless reality can appear temporal to limited beings. Just as a  $V_i$  reflects properties of  $V^4$  without being  $V$ , our temporal experience reflects aspects of timeless reality without capturing its true nature.
3. **Resolving the Tension Between Absoluteness and Knowability:** GRP facilitates partial knowledge through reflection. This resolves the tension between Gödel's position on the objectivity of mathematical and theological truth and his recognition of the limitations of human cognitive abilities.

## Necessity: The Emergence of a Coherent Ontology

Now that we have introduced GRP and AP as two central principles and understood how limited beings can gain knowledge about the lower stages of the "*Ladder of all that exists*" [3, page 191], we take a more in-depth look at the ontological structure.

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<sup>4</sup> In the sense of  $V := \bigcup_i V_i$  with  $i$  ranging over all ordinals.



The ontology is structured hierarchically, with the “Absolute” (God, the universe of sets  $V$ ) at the top, reflecting down to increasingly limited domains of the “*Ladder of all that exists*” [3, page 191]. Each level reflects properties of higher levels, but incompletely, embodying AP—the unknowability of the Absolute.

However, what replaces temporal modalities in Gödel’s vision? This is where our third component, NE, emerges.

Kovač argues that “*causality is Gödel’s explicitly intended primary ontological concept, from which all other ‘categories’ should be derived*” [19].

We conclude that, for Gödel, the more fundamental relationship is not temporal succession but causal necessity, and that ultimate reality is not temporal but necessary: things do not simply happen in time; they exist by necessity.

This aligns with Gödel’s statement [19] that “*the positive and the true statements are the same, meaning what is true is necessarily true by virtue of its positive nature.*”

Necessity replaces temporal modalities as the fundamental modal category and thus captures an important part of Gödel’s unified vision. His ontological proof (where God exists necessarily) and his argument against the existence of time are not disparate philosophical projects or statements but interconnected expressions of a singular perspective where necessity supplants temporality.

## Conclusion: A Coherent Ontology for Gödel’s Philosophy

Gödel’s conceptual and mathematical realism, his argument against the existence of time, and his ontological argument can indeed be integrated into a coherent ontology based on GRP, AP, and NE.

This ontology is:

1. **Hierarchical:** Structured from the Absolute (God) down to increasingly limited domains
2. **Reflective:** Each level reflects properties of higher levels, but incompletely
3. **Necessitarian:** Replacing temporal modalities with necessity
4. **Conceptually Realist:** Grounding reality in the objective existence of concepts

GRP, AP, and NE together establish an ontological framework that reflects Gödel’s lifelong pursuit of what he called “*a scientific (exact) philosophy and theology, which deals with*

*the concepts of the highest abstractness*" [14, item 9.4.17, page 316]. It represents his vision of a unified framework where mathematics, physics, and theology converge in a single, coherent picture of reality. In this vision, his conceptual and mathematical realism, his argument against the existence of time, and his ontological argument are revealed not as disparate but as necessary components of a unified philosophical system—one that approaches the Absolute through reflection while acknowledging its ultimate unknowability.

Digging deeper into these fascinating topics, may help us to better understand and appreciate Gödel's ambition of an "*exact philosophy*" [14, item 9.4.17, page 316].

## References

- [1] Solomon Feferman, in "Gödel's Life and Work", Kurt Gödel: Collected Works, Volume I: Publications 1929–1936 (1986), p. 1.
- [2] Montgomery Link, in Crocco, G. and Engelen, E.-M. (eds.) (2015). Kurt Gödel: Philosopher-Scientist. Presses Universitaires de Provence, p. 345.
- [3] Amelie Mertens, in Crocco, G. and Engelen, E.-M. (eds.) (2015). Kurt Gödel: Philosopher-Scientist. Presses Universitaires de Provence.
- [4] Gödel, Kurt and Feferman, Solomon (eds.) (1995). Collected Works. 3, Unpublished Essays and Lectures, New York: Oxford University Press.
- [5] Gabriella Crocco, Eve-Maria Engelen, in Crocco, G. and Engelen, E.-M. (eds.) (2015). Kurt Gödel: Philosopher-Scientist. Presses Universitaires de Provence.
- [6] Øystein Linnebo, "Platonism in the Philosophy of Mathematics", The Stanford Encyclopedia of Philosophy (Summer 2024 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = <https://plato.stanford.edu/archives/sum2024/entries/platonism-mathematics/>
- [7] Gödel, K. (1959). "A Remark About the Relationship Between Relativity Theory and Idealistic Philosophy." In P.A. Schilpp (ed.), Albert Einstein: Philosopher-Scientist (pp. 555–562).
- [8] URL = <https://edwardfeser.blogspot.com/2018/05/godel-and-unreality-of-time.html>
- [9] Palle Yourgrau, in Oliver Passon et al. (ed.) (2022). On Gödel and the Nonexistence of Time. Springer Spectrum, pp. 37–49.
- [10] Hao Wang (1974). From Mathematics to Philosophy. Humanities Press, New York.



- [11] Lloyd Strickland (2014). *Leibniz's Monadology: A New Translation and Guide*. Edinburgh University Press.
- [12] Wikipedia contributors. "Gödel's Ontological Proof." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 5 May 2025. Web. 8 May 2025.
- [13] Kurt Gödel (1995). *Texts Relating to the Ontological Proof*. In Feferman, Solomon, ed. *Kurt Gödel: Collected Works Vol. III: Unpublished Essays and Lectures*. Oxford University Press, USA, New York, Oxford.
- [14] Hao Wang (1997). *A Logical Journey: From Gödel to Philosophy*. Cambridge: MIT Press.
- [15] Philip Welch. *Conceptual Realism: Sets and Classes*. URL = <https://people.maths.bris.ac.uk/~mapdw/cambridge3.pdf>
- [16] Wikipedia contributors. "Woodin Cardinal." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 6 May 2025. Web. 9 May 2025.
- [17] Wikipedia contributors. "Ackermann Set Theory." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 22 Apr. 2025. Web. 11 May 2025.
- [18] Philip Welch (2017). "Global Reflection Principles." In I. Niiniluoto, H. Leitgeb, P. Seppälä & E. Sober, *Logic, Methodology and Philosophy of Science - Proceedings of the 15th International Congress, 2015*. College Publications.
- [19] S. Kovač (2015). "Causal Interpretation of Gödel's Ontological Proof." In Świątorzecka, K., ed., *Gödel's Ontological Argument: History, Modifications, and Controversies*. Warszawa: Semper.
- [20] James Robert Brown (2011). *"The Laboratory of the Mind - Thought Experiments in the Natural Sciences"*, Routledge, 2011.
- [21] Bradley, Darren (2018). Carnap's epistemological critique of metaphysics. *Synthese* 195 (5):2247-2265.
- [22] Wikipedia contributors. (2025, May 17). Holographic principle. In Wikipedia, The Free Encyclopedia. Retrieved 18:05, May 27, 2025, from [https://en.wikipedia.org/w/index.php?title=Holographic\\_principle&oldid=1290921333](https://en.wikipedia.org/w/index.php?title=Holographic_principle&oldid=1290921333).