Vilnius University Press

Contents lists available at Vilnius University Press

Problemos
2024, vol. 106, pp. 185–200

ISSN 1392-1126 eISSN 2424-6158
DOI: https://doi.org/10.15388/Problemos.2024.106.14

Towards an Applied Semantics for K. Gödel's Ontological Proof: A Russellian Perspective

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Abstract. Amidst the array of criticisms levied against Kurt Gödel's ontological proof, the critique by Randolph Rubens Goldman stands out for its unique emphasis on a hitherto overlooked yet pivotal weakness within the proof – its lack of an adequate applied semantics. Goldman's perspective underscores a significant need: the connection of axioms, definitions, and theorems in the proof with the intended meanings of properties traditionally ascribed to God. However, as Goldman has shown, this attempt poses formidable challenges. The endeavour to establish such a connection renders numerous sentences under the natural language interpretation of the proof meaningless, thus undermining the principle of bivalence. In this article, we analyse different methods to confront this problem. Our final solution is inspired by Bertrand Russell's theory of definite descriptions: namely, we suggest construing sentences under the natural language interpretation of Gödel's proof as conjunctions of formulas. In this way, we can eliminate meaningless sentences and uphold the once unsettled principle of bivalence.
Keywords: Kurt Gödel, ontological proof, applied semantics, natural language interpretation, bivalence

Ieškant taikomosios semantikos K. Gödelio ontologiniam įrodymui: raseliškoji perspektyva

Santrauka. Randolpho Rubenso Goldmano pateikta kritika Kurto Gödelio ontologiniam įrodymui pabrėžė ligi tol praktiškai nepastebėtą šio įrodymo silpnybę. Anot Goldmano, tam, kad samprotavimas būtų iš tiesų sėkmingas, reikalinga sukurti jam taikomąją semantiką. Kadangi Dievą suprantame priskirdami jam konkrečias savybes, viena iš taikomosios semantikos užduočių kaip tik ir yra formalios įrodymo pateikties susiejimas su šiais teologiškai reikšmingais turiniais. Vis dėlto, Goldmano teigimu, mėginimai tai padaryti kelia rimtų iššūkių: bandant išreikšti įrodymą natūralia bei teologiškai tinkama kalba daugybė sakinių joje tampa beprasmiai, todėl pažeidžiamas dvireikšmiškumo principas. Šiame straipsnyje analizuojami skirtingi būdai spręsti šį sunkumą, kaip galutinį siūlymą pateikiant sprendimą, kurio orientyras yra Bertrand'o Russello apibrėžiamųjų deskripcijų teorija: sakinius, figūruojančius šioje natūralios kalbos interpretacijoje, siūloma traktuoti kaip konjunkcijas – tai leidžia atsikratyti beprasmių sakinių bei išsaugoti dvireikšmiškumo principą.
Pagrindiniai žodžiai: Kurtas Gödelis, ontologinis įrodymas, taikomoji semantika, natūralios kalbos interpretacija, dvireikšmiškumas

Acknowledgement. We are deeply thankful to the anonymous reviewers whose insightful comments helped us meaningfully improve the strength and clarity of our argument.

Received: 12/02/2024. **Accepted:** 20/08/2024

Introduction

Ever since Kurt Gödel's ontological proof[1] began to circulate in public, it has been attracting the attention of a wide range of scholars, including logicians, mathematicians, philosophers, theologians, and computer scientists.[2] The proof, formalised in higher-order modal logic, has as its conclusion that there exists a God-like being, or a being that possesses all positive properties. Numerous authors have since endeavoured to refine Gödel's exposition of the proof and confront the difficulties it presents. Within this milieu, this article assumes a particular focus – the question of how this seemingly austere, formal proof may bear theological significance. Speaking more precisely, the gist of this article boils down to an exploration of potential responses to the critique of the proof as presented by Randolph Rubens Goldman in his works of 2000 and 2014.

According to Goldman, if we assume that Gödel's proof is not merely a piece of mathematics but a proof that truly establishes the existence of God, an imperative task emerges: the provision of an adequate applied semantics for this proof. A pivotal thing such a semantics should do is to relate the given axioms, theorems, and definitions with the meanings of properties that we usually ascribe to God. However, as demonstrated by Goldman, this attempt proves far from straightforward, and the heart of the challenge lies in the realm of natural language interpretation of the proof. Goldman states that, under a natural language interpretation, we must restrict the first-order domain at least to sentient beings so as to make sense of such predicates as 'is omniscient' and 'is moral'. Consequently, the universe of properties has to be restricted as well. But herein lies a problem: given these restrictions, the definition of essence becomes contingent upon only a subset of properties instead of encompassing all of them, thereby rendering the concept of essence rather peculiar.

The goal of this article is to undertake a somewhat preliminary exploration of this dilemma and delineate plausible resolutions. After investigating two potential remedies, we shall present our preferred proposal rooted in Bertrand Russell's theory of definite descriptions: we will aim to show how this theory provides a clue for dealing with problematic sentences within the natural language interpretation of Gödel's proof.

Before diving into the main discussion, it must be emphasised that this article does not intend to provide a fully developed applied semantics for the proof. We only aim at explicating and addressing one specific issue – that is, the question of how the formal language of the proof can be interpreted through the lens of natural language in such

[1] There are various attempts to prove the existence of God, and not all of these are treated as ontological proofs. The distinctive feature of ontological proofs is that they are meant to establish the existence of God in terms of pure logic (see Fitting 2002: 133). In other words, the idea behind ontological proofs is that we do not need to explore the world in order to come to know that God exists – we only need to apply correct principles of reasoning.

Gödel's version of the ontological proof is typically taken to be a descendant of that of Gottfried Leibniz. Both proofs share the same two-part structure: prove that God's existence is necessary if possible, and prove that God's existence is possible (*ibid*.: 138).

[2] Prominent computer-assisted analyses of Gödel's ontological proof were conducted by Christopher Benzmüller and Bruno Woltzenlogel Paleo (2014, 2015, 2016).

a way that we could make sense of the meanings of properties attributed to God. It is by no means a comprehensive analysis of the range of problems Goldman poses in his works; indeed, even given the specific target of our work, we view it only as a primary step towards a complete and rigorous resolution of the problem, and we do not approach Gödel's ontological proof from a formal perspective within this article.

Finally, it is worth mentioning that, when examining Gödel's ontological proof in the aforementioned works, Goldman is in fact referring to the version of this proof as given by C. Anthony Anderson (1990).[3] That is because, as Goldman (2014: 115–116) notes, the latter at least escapes the modal collapse afflicting Gödel's own formulation (i.e., its axioms entail that every truth is a necessary truth, and that everything that exists does so necessarily[4]). Nevertheless, nothing substantial hinges on this nuance since the problem we are discussing here is relevant to both Gödel's and Anderson's statements of the proof (to view Gödel's one, refer to Gödel (1995)).

1. Exposition of the problem

In his works of 2000 and 2014, Goldman introduced a distinctive challenge to Gödel's ontological proof. Rather than pursuing the conventional path of amending some of its axioms or definitions, Goldman has turned our attention to the fact that the proof was missing an adequate applied semantics. Within the aforementioned works, Goldman offers several points with respect to what he means by 'applied semantics'. Among its essential requisites, a satisfactory applied semantics must explain the modal operators as well as provide a natural language interpretation of a plurality of properties arising from the use of the property abstraction operator employed by Gödel.[5] In this article, however, we only concentrate on one specific role Goldman assigns to an applied semantics for Gödel's ontological proof – namely, to relate the formal representations of the proof with the meanings of properties traditionally ascribed to God. It is crucial in the sense that only when this has been achieved, we can claim to have a proof that bears genuine theological relevance. Nonetheless, Goldman has demonstrated that attempts to link the formal language of Gödel's proof with the meanings of the basic properties God is supposed to possess entangle us in a range of difficulties. Their examination and quest for potential solutions is where we shall now proceed.

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[3] This version itself was later amended (see Anderson, Gettings 1996).

[4] It is scarcely surprising that many find this result unacceptable (some even treat modal collapse as implying a rejection of the free will). For a comprehensive explanation of modal collapse in Gödel's ontological proof, refer to Sobel (1987: 250–253; 2009: 132–135). Related considerations and attempts to solve this problem can be found in Hájek (1996); Kovač (2003); Szatkowski (2005, 2011); Koons (2006); Sobel (2006a, 2006b).

[5] As Goldman (2014: 138–139) puts it, "[i]n Gödel's system, for every formula with free individual variables, there must be a property associated with that formula'. Hence, '[t]hrough the use of the property abstraction operator in Gödel's system, many new properties can be created." As Goldman shows, providing natural language interpretations to some properties created this way, as well as understanding what it means for them to be positive (or not) is a challenging task. Yet, it must be noted that Goldman discusses this difficulty specifically in the context of Anderson's version of the ontological proof, which, according to Goldman (2000: 125), is committed to possibilism (i.e., the view that there are merely possible objects).

Before going into details, however, it is important to dwell a little on the very distinction between applied semantics and pure semantics. According to Christopher Kirwan (1978: 100, 107), a pure semantics is an abstract semantics that is "a subject of mathematical study." Yet, as things stand, a pure semantics is not a semantics in the 'real' sense – that is because words and symbols used within a pure semantics must themselves be explicated, and that is exactly what we expect from an applied semantics. An applied semantics, thus, is a semantics that assigns meaning to the language of pure semantics itself.

A somewhat similar elucidation is given by Alvin Plantinga (1974: 126–128). Plantinga illustrates the difference between pure semantics and applied semantics by discussing Kripke semantics for non-classical logics in the context of modal logic (logic of necessity and possibility). Now, within Kripke semantics, we start with a model structure that includes a set and a relation, but this structure, on its own, does not necessarily relate to our modal notions. This is what Plantinga refers to as pure semantics, which includes just any objects in the structure and does not have an apparent relation to our modal notions. To make this structure relevant to our understanding of modal logic, applied semantics is needed. In applied semantics, the set is interpreted specifically as a set of possible worlds, and the relation as a connection between these worlds. What such an interpretation achieves is bridging the conceptual gap and making the model applicable to our thinking about modality.[6]

Goldman actualises the distinction between applied semantics and pure semantics in the context of Gödel's ontological proof. The core idea is that pure semantics is only sufficient if we are happy to treat this proof as a merely mathematical one, where "the only commitment is to set theory or a fragment of set theory" (Goldman 2014: 129). Yet, in case the proof is meant to be an actual proof for the existence of God, something more is needed. Goldman (*ibid*.) states that the intended conception of God is that of a being with certain properties, such as omniscience, moral rectitude, being the cause of the world, or being transcendent to the world (it should be noted that, throughout this article, specifically this Christian conception of God is assumed). Thus, if we treat Gödel's ontological proof as establishing the existence of such a God, we should interpret its axioms, theorems, and definitions through the lens of this intended conception of the divine being.

Let us begin with one specific axiom. Goldman (2000: 130–131) draws our attention to this one – in Anderson's system, it is Axiom 2, whereas, in Gödel's own version, it is marked as Axiom 5 (note that not all symbols of logical operators used here are the ones used by Gödel and Anderson themselves; we have standardised them so that $\rightarrow$ means material implication, $\Rightarrow$ means strict implication (in natural language, the latter corresponds to the term 'entailment'), $\Diamond$ means possibility, $\Box$ means necessity, ϕ and ψ are property variables, x is an individual variable, and P means being positive):

$$(P(\phi) \wedge \Box\forall x(\phi(x) \rightarrow \psi(x))) \rightarrow P(\psi)$$

[6] As is noted in Copeland (1983: 197), it seems that the terms 'pure semantics' and 'applied semantics' were first coined by Plantinga. However, the distinction to which these terms refer is much older.

The question Goldman asks us is this: how could we interpret this axiom for the concept of, e.g., 'having moral rectitude'? That is, what does it mean to say "If the property of having moral rectitude is positive and if necessarily, for every possible object x, if x has moral rectitude then x is just, then being just is a positive property?"[7] According to Goldman, it seems that, for many values of x, the statement "x has moral rectitude" is neither true nor false, but simply meaningless, thus breaking down the principle of bivalence. Let us take, for example, stones or electrons. They neither have moral rectitude nor lack it – it simply does not make sense to say of these objects that they (fail to) exemplify such a property. The same goes for a host of other objects that we do not treat as moral subjects. Therefore, Goldman (2014: 140–141) claims that the domain of objects would have to be, at the very least, restricted to sentient beings. But, in that case, the universe of properties would have to be restricted as well (i.e., we would only have properties that are applicable to sentient beings in our system).

At this point, another problem emerges. When we look at the definitions of God-likeness, essence and necessary existence, we see that they are all defined in terms of universal quantification over all properties:[8]

Definition 1 (God-likeness): $G(x) \equiv \forall\phi[\Box(\phi(x)) \equiv P(\phi)]$

Definition 2 (Essence): $\phi\text{Ess}(x) \equiv \forall\psi[\Box(\psi(x)) \equiv \forall x[\phi(x) \Rightarrow \psi(x)]]$

Definition 3 (Necessary existence): $E(x) \equiv \forall\phi[\phi\text{Ess}(x) \rightarrow \Box(\exists x\phi(x))]$

But if the universe of properties was restricted, the domains of these second-order properties would be restricted too – that is, instead of consisting of all properties, they would consist of only *some* properties (i.e., those that are in principle applicable to sentient beings).

Perhaps this would not be troublesome with respect to the definition of God-likeness, but there is a problem in connection with the definition of essence. Goldman (*ibid*.: 141) observes that, in order to capture the notion of essence in its intended sense, we must define it in terms of all properties and not just some of them. According to the definition of essence as given by Gödel, essence is a property of an individual that entails every property that individual has (whereas, for Anderson, essence is a property of an individual that entails all and only those properties that are possessed necessarily by that individual). Now, if we restricted the universe of properties to only those properties that are applicable to sentient beings, by this definition we would only mean these specific properties. In other words, we would define essence exclusively in terms of properties that can be meaningfully ascribed or denied to sentient beings. But this seems just wrong. Essence as such is something that is defined in terms of *all* properties and not in terms of some restricted domain of them.

[7] As was already noted, Goldman refers to Anderson's amended version of Gödel's ontological proof, which, according to Goldman, is committed to possibilism. Nonetheless, the problem we are discussing now is equally relevant under the assumption that the domain of objects is only constituted by actually existing entities.

[8] Again, Goldman cites Anderson's definitions here, but the problem we are addressing touches Gödel's definitions in the same way.

Maybe there would not be a problem if we invoked some restricted notion of essence, such as *the essence of sentient beings*, and not essence as such. However, it is clear that within the context of Gödel's ontological proof, the latter is had in mind. Moreover, even if we contended that the given definition of essence only captures the essence of sentient beings, it would inevitably entail the challenge of redefining the essence of all other entities. The question that looms, then, is how such a redefinition would unfold.

All of this suggests that, with respect to the definition of essence, confining the universe of properties presents notable challenges. We note further that, within the given system, necessary existence is defined in terms of essence (Anderson takes this from Gödel). Hence, if we chose to define essence in terms of just some properties, this would render the concurrent definition of necessary existence inadequate as well.

On the other hand, should we opt to leave the domain of objects (and so the domain of properties) unrestricted, we inevitably revisit the problem initially posed by Goldman: that is, we then allow to ascribe or deny such predicates as 'being omniscient' and 'being moral' to all objects without exceptions, including inanimate ones. This unfettered approach leaves us in trouble if we assume that, e.g., a necessary condition for being (or failing to be) moral is having reason and will. Hence, we find ourselves ensnared in a deadlock: both restricting the domain of objects and leaving it unrestricted present their distinct quandaries.

2. Potential solutions and the final proposal

2.1. Solution 1

One possible solution is simply to bite the bullet and leave the domain of objects unrestricted. Following this path, we would be led to a scenario where attributions or negations of such traits as being moral or being omniscient can be ascribed meaningfully to all entities, encompassing not only sentient beings but also inanimate objects like chairs, stones, and electrons.[9] Perhaps advocates of this stance could posit an alternative understanding of morality, one that does not deem possessing reason and will as an obligatory prerequisite for a moral status or its absence.

Here, it may be useful to look at the account of meaning as proposed by Richard Swinburne. According to Swinburne (2016 [1977]: 14, 17–19), our comprehension of the meanings of words and sentences evolves through the assimilation of syntactic and semantic rules governing their usage. A semantic rule for the use of a word or an expression is a rule that indicates paradigm objects or properties to which the word or the expression applies, whereas a syntactic rule for the use of a word states some of its mini-entailments, i.e., it specifies what a speaker is committed to by that particular word or expression. For instance, 'table wine' mini-entails 'a beverage', 'fermented once', 'made from fruits', etc. The same goes with regard to sentences: "John is older than James" mini-entails "James

[9] We assume that there is a set containing all objects.

is younger than John," "He is over 6 feet tall" mini-entails "He is over 5 feet tall," etc. Within this framework, those contending that any object can possess or lack moral standing might suggest that a somewhat different notion of morality is brought in. This alternative perspective, as they would posit, implies that the assertion "*x* is moral" or "*x* is a moral subject" does *not* mini-entail "*x* is a being endowed with reason and will."

However, envisioning the coherency of such a notion presents a considerable challenge. The widespread understanding of morality has to do with desires, beliefs, responsibilities, and similar attributes, primarily, if not exclusively, ascribed to human beings. The idea that a table or an electron are things that may (fail to) be moral would go so far away from the usual usage of the words 'moral' and 'morality' that it could hardly be seen as a coherent view. In order for it to even claim to be intelligible, a comprehensive account elucidating the exact sense in which a table or an electron might possess or lack morality must be offered. That is, we would need a list of specific mini-entailments of such words as 'good', 'honest', 'virtuous', and the like, along with an explication of how these mini-entailments imply that these and related linguistic expressions pertaining to the term 'morality' can be meaningfully ascribed or denied to all objects unrestrictedly. Not to mention that the proposed solution appears simply undermotivated. Revolutionising the prevailing notion of morality[10] merely to circumvent a singular proof-related concern is notably *ad hoc*.

Yet, there can exist different rationales for leaving the domain of objects unrestricted in the natural language interpretation of Gödel's ontological proof. Theological considerations, for instance, could underpin such a choice. Someone could argue that we are not required to invoke the conception of God according to which God enjoys moral rectitude, omniscience, omnipotence as well as all the other traditional divine properties. Rather, one might suggest that we simply lack knowledge as to what *specific* properties God possesses, for perhaps this is something 'too big' for a finite mind to grasp. Consequently, we would not need to bring in notions such as morality or omniscience within the context of Gödel's proof at all. In this way, we could easily escape the previous upshot that even entities like a stone or an electron can possess or lack moral traits: by remaining silent with regard to concrete properties God is meant to possess, we would elude the need to reflect some specific meanings in the supposed natural language interpretation of the proof.

At the same time, however, we would be meant to assume that the properties possessed by God (whatever they are) can be meaningfully ascribed or denied to all other objects as well. That is, even without specifying the precise properties belonging to God, maintaining an entirely unrestricted domain of objects would imply that identical predicates can equally apply to both God and every other entity. It is worth recalling the following axiom once again:

$$(P(\phi) \wedge \Box\forall x(\phi(x) \rightarrow \psi(x))) \rightarrow P(\psi)$$

[10] Analogous considerations apply to the notion of omniscience as well as the notions of other properties commonly ascribed to God.

This axiom states that any property entailed by a positive property is itself a positive property. Under the present account, we would simply refuse to tell what precise properties ϕ and ψ could represent. Nevertheless, assuming that this is a proof for God's existence, we would be supposed to hold that ϕ and ψ denote something that can be meaningfully ascribed or denied to God, and, because of the use of the universal quantifier – to every other object as well.

But this is clearly problematic in light of the Christian concept of God, for it says that God differs greatly from such creatures as non-human animals, not to mention inanimate objects. For instance, Thomas Aquinas (ST I, q. 93, a. 2) claims that intellectual creatures[11] alone can be truly regarded as made in God's image since it is unique to them to enjoy the capacity for the highest good. The assertion that only some creatures bear a significant resemblance to God indicates that God is markedly dissimilar to many things he has created, and it is thus natural to hold that various attributes that can be meaningfully applied to God (whatever their content) must be simply inapplicable to a multitude of other entities.

In addition to this, it is worth noting that, within the Christian belief, a prevailing perspective holds that we do have the ability to name at least some of God's properties, such as omnipotence, omniscience, and moral perfection. Further, the contention that we cannot know any properties of God appears prone to some conceptual perplexities. For example, it seems that the view that God's properties are something too complex for a finite mind to grasp must itself stem from the belief that God is, in contrast, an infinite being. But this already means knowing at least one of God's properties. Similarly, one may argue that saying that God's properties are unknown to us hints at a specific property of God – namely, being such that his properties are unknown to us.[12]

Hence, we can conclude that the suggestion to leave the domain of objects unrestricted on the grounds that some alternative notions of properties typically ascribed to God could be invented or that we do not know what God's properties are is ultimately unsatisfactory.

2.2. Solution 2

If we refuse to leave the domain of objects unrestricted, then, clearly, some objects must be left out of it. But, in this case, as has been noted, a problem with regard to the definition of essence arises: in case we restrict the domain of objects, the domain of properties has to be restricted as well, and then we confront the counterintuitive outcome that essence is defined in terms of a select subset of properties rather than the entirety of them.

Furthermore, the precise contours of the restrictions that should be imposed in this context remain elusive. As previously indicated, Goldman advocates for, at a minimum, limiting the domain of objects to sentient entities. Now, even though it is not easy to obtain a precise definition of the concept of sentience, the consensus, according to Joyce D'Silva

[11] For Aquinas, these amount to human beings and angels.

[12] Cf. William Alston's (1956) insights on the paradoxical nature of the doctrine of God's ineffability as well as Plantinga's (1980: 23–26) attack on the view that our concepts do not apply to God because God transcends human experience.

(2006: xxiii), seems to be that "sentient creatures are those who have feelings – both physical and emotional – and whose feelings matter to them."[13] Let us say we decide to restrict the domain of objects to sentient beings, relying on this characterisation. A potential drawback of this choice is that it would likely remain unclear what objects the set of sentient beings actually consists of, given the lack of consensus among scientists concerning which biological species truly possess sentience (see, e.g., Kirkwood (2006: 19–20)).

Of course, we may rate this issue as irrelevant to the problem at hand. We may argue that an alternative way to restrict the domain of objects is needed as the set of sentient beings is still too wide for our purposes. For it seems that even if we attribute some type of knowledge or the capacity to act on moral grounds to (some) non-human animals (Monsó et al. (2018) present a comprehensive array of empirical studies demonstrating moral behaviour in certain non-human animals), we may nonetheless want to retain the perspective that their knowledge and moral character are in some significant sense different from those of human beings or God.

Also, let us recall that we base our considerations on Christian theism here, and a specific hierarchical worldview is inherent to it. As Yujin Nagasawa (2017: 45) puts it, this is the idea that all beings can be ranked in accordance with their relevant properties. For instance, within this framework, plants hold a higher rank than inorganic matter by virtue of possessing life, while non-human animals[14] supersede plants due to their possession of will. Nagasawa (*ibid*.) provides the following schema:

God: life, will, reason, immortality, perfection

Angels: life, will, reason, immortality

Humans: life, will, reason

Non-human animals: life, will

Plants: life

Inorganic matter: none

According to Nagasawa, this hierarchical schema finds frequent application among philosophers and theologians when engaging in discourse concerning God, or the perfect being, who occupies the top of this hierarchy. Within the framework of the natural language interpretation of Gödel's ontological proof, a somewhat analogous principle could be introduced: i.e., it could be posited that the predicate 'is omniscient' can exclusively be ascribed (or denied) to an object possessing reason, and similarly, the predicate 'is moral' can only be attributed (or denied) to an object that has both reason and will. Essentially, we could adopt a perspective, such as this hierarchical approach, enabling a clear delineation of the set of objects to which predicates like perfect goodness, omniscience, and omnipotence can be meaningfully ascribed or negated.

[13] A more detailed definition of sentience is given in Broom (2014: 5).

[14] Nagasawa himself uses the term 'animals', but we stick to the usage of the term 'non-human animals' throughout this article.

But, even in this case, there would still remain the previously mentioned problem concerning the concept of essence. As previously alluded to, restricting the domain of objects also makes us restrict the universe of properties, and thus the domains of second-order properties, including that of essence. Yet, according to the intended sense of essence, it is meant to be defined in terms of all properties, not a select few. Perhaps the easiest way to settle this problem is to abandon the notion of essence altogether. Now, let us recall that necessary existence is defined in terms of essence in Gödel's system. Thus, if we choose to do away with essence, we must somehow change the definition of necessary existence.

A proposal of this sort has already been provided by Graham Priest (2018: 267). According to him, necessary existence in Gödel's system could be defined as $\Box E(x)$[15] or, alternatively, as $\Box\exists y(y = x)$.[16] As Priest notes, we then get very simply that if something is God, God necessarily exists (given that necessary existence is treated as a positive property, and God is treated as a being possessing all positive properties).[17] That is, we have the conditional $(\exists xG(x)) \rightarrow \Box(\exists yG(y))$ as in the original proof, and the remaining part is also the same. From the conditional above, we derive $\Diamond(\exists xG(x)) \rightarrow \Diamond\Box(\exists yG(y))$ (because, within any modal logic at least as strong as *K*, if $p \rightarrow q$ is valid, $\Diamond p \rightarrow \Diamond q$ is valid too). Then, by modal logic *S5* (where $\Diamond\Box p \rightarrow \Box p$ is valid), we arrive at $\Diamond(\exists xG(x)) \rightarrow \Box(\exists yG(y))$. After demonstrating that it is possible that a God-like being exists (this is proven by Gödel), we come to the conclusion that it is necessary that there exists a God-like being.

Needless to say, an obvious shortcoming of this solution is its radical departure from the original proof. Given that the notion of essence stands as one of the most distinctive features in Gödel's ontological proof, its abandonment and the suggested simplification of the proof appear to come at quite a substantial price. On this basis, we may conclude that the solution just discussed is eventually inadequate as well.

2.3. Final solution

What remains evident, then, is that both discussed options – restricting the domain of objects and leaving it unrestricted – are inherently flawed. Our final solution, however, will be to leave the domain of objects unrestricted while at the same time reinterpreting propositions containing such predicates as 'is omniscient' or 'is morally perfect'. Our proposal is guided by Russell's theory of definite descriptions:[18] in parallel to Russell's assertion that propositions of the form 'The *F* is *G*' can be translated into the language of first-order logic as conjunctions of formulas, we will maintain that, within the system of Gödel's ontological proof, propositions containing such predicates as 'is omniscient' or

[15] *E* stands for the existence predicate.

[16] As indicated by Priest (2018: 267 n. 44), $\forall x\Box\exists y(y = x)$ is a logical truth in constant-domain modal logic, while in variable-domain modal logic it is not. The choice between the aforementioned definitions thereby depends on the selected interpretation of quantified modal logic.

[17] It should be noted that Priest does not present this suggestion as a remedy to the problem we are currently addressing – rather, he simply points out that such a treatment of necessary existence allows us to avoid, in his words, a needless complexity in Gödel's proof.

[18] Unlike indefinite descriptions (ones of the form 'an *F*') which refer to an entity of a particular kind, definite descriptions (ones of the form 'the *F*' or 'my/yours/etc. *F*') point to a unique or specific individual or object.

'is morally perfect' can be similarly construed as strings of conjuncts, and that, in such a way, we would be able to get rid of meaningless propositions in the system. Before discussing the solution in more detail, however, we shall briefly illuminate Russell's theory of definite descriptions and the main motivations behind it.

2.3.1. Russell's theory of definite descriptions and its fundamental underpinnings

Russell's theory of definite descriptions arose in response to a perplexing philosophical puzzle concerning sentences of the form 'The *F* is *G*'. Normally, such sentences are meant to be unproblematic. For example, "The chancellor of Germany is a politician" or "The Pope of the Catholic Church is a child" pose no challenge in discerning their truth or falsity – we can easily tell that the former is true, while the latter is false. This is because such sentences simply reflect how things factually are. The quandary emerges when we try to determine the truth-value of sentences like "The present king of France is bald." Since there is no king of France at the moment, both ideas – the sentence quoted being true or its being false – appear to be equally confusing. While it is evident that this sentence should not be considered true, labelling it as false does not seem to work either. That is because labelling it as false implies the existence of a present king of France who is not bald (i.e., $\exists x(Kx \wedge \neg Bx)$) – an assertion fundamentally at odds with our intended meaning.

One plausible resolution to this problem lies in Alexius Meinong's theory of objects (see his work of 1960 [1904]). According to this theory, the statement "The present king of France is bald" could be considered neither strictly true nor strictly false but rather as ascribing a property to a non-existent object. As is well known, Russell (1905a, 1905b, 1907) rejected Meinong's theory of objects as inconsistent, i.e., as violating the law of non-contradiction. Since, according to the Meinongian account, any object has properties it is characterised as having, we have to conclude, e.g., that the *existent* present king of France both exists and does not exist.

An alternative to Meinong's position is Gottlob Frege's theory of sense and reference. Frege (1948 [1892]) claims that we must distinguish between the sense (the mode of presentation) and the reference (the object designated) of an expression. Now, inasmuch as 'the present king of France' is a description having sense but lacking reference, the sentence "The present king of France is bald" is neither true nor false. However, it is exactly this facet of Frege's theory – i.e., truth-value gaps stemming from the inability to account for the truth-values of sentences with empty descriptions – that Russell (1905a) saw as its fatal flaw.

After criticising Meinong's and Frege's accounts, Russell (*ibid*.: 488–493) presented another method for dealing with definite descriptions. According to Russell's theory, the logical form of 'the *F* is *G*' is $\exists x(Fx \wedge \forall y(Fy \rightarrow x = y) \wedge Gx)$. That is, a sentence of the form 'the *F* is *G*' actually means the conjunction of three statements: 1) that there is an *F* ($\exists x(Fx)$); 2) that there is only one *F* ($\forall x \forall y(Fx \wedge Fy \rightarrow x = y)$); 3) that each *F* is *G* ($\forall x(Fx \rightarrow Gx)$). Accordingly, the sentence "The present king of France is bald" is

equivalent to "One and only one thing is a present king of France and that one is bald" ($\exists x(Kx \wedge \forall y(Ky \rightarrow x = y) \wedge Bx)$). Since there is no present king of France, we can immediately determine that at least one of the conjuncts of this formula is false, thereby rendering the whole sentence false as well (the same applies to the negative version of the sentence, stating that the present king of France is *not* bald). By interpreting sentences containing definite descriptions as involving existence claims, Russell thus proposed a means to save bivalent (two-valued) logic: under his account, all well-formed propositions must be either true or false.

2.3.2. Application of Russell's account

We believe that this particular aspect of Russell's theory, namely, its capacity to preserve bivalence, may also provide a remedy for the issue we are currently tackling. We recall that the problem identified by Goldman is that the natural language interpretation of Gödel's ontological proof renders many sentences meaningless: i.e., sentences like "Mars is omniscient" or "The black chair standing in my room does not possess moral rectitude" hold neither true nor false. Now, the question arises as to how we should understand the logical structure of such sentences. Drawing from Russell's account, we propose interpreting such statements as conjunctions: just like in Russell's theory, our aim is to include a conjunct within them that would straightforwardly render them false, although the manner in which we will do this will depart in some ways from Russell's original conception.

First, our proposal will not involve stating a formula including uniqueness as a conjunct; within the present context, this seems to be superfluous. Second, we introduce what we term 'implicit assumptions'[19] that shall allow us to render the quoted sentences unambiguously false. We take that a part of what is meant by "Mars is omniscient" includes the implicit assumption that the planet Mars possesses an intellectual capacity. In other words, we suggest that the logical structure of the sentence "Mars is omniscient" consists of a conjunction of these statements: 1) that there is Mars ($\exists x(Mx)$);[20] 2) that Mars has an intellectual capacity ($\forall x(Mx \rightarrow Ix)$); 3) that Mars is omniscient ($\forall x(Mx \rightarrow Ox)$) (or, more briefly, $\exists x(Mx \wedge Ix \wedge Ox)$). In this scenario, it becomes evident that at least one of the conjuncts, specifically 2), is false, rendering the whole conjunction false as well. Under such an account, therefore, "Mars is omniscient" is not a meaningless statement – it is simply a *false* one.

Now, the implicit assumption of possessing an intellectual capacity is not a direct entailment of being omniscient, but a necessary condition for the predicate to be mean-

[19] It should be noted that implicit assumptions differ from mini-entailments. Implicit assumptions are properties that we assume a subject must have for a predicate to apply meaningfully. These assumptions are not explicitly stated but are understood to be necessary for the predicate's applicability; in other words, they provide a foundation for understanding the meaning of the predicates involved. On the other hand, mini-entailments are direct logical consequences derived from the given predicates. As previously discussed, according to Swinburne (2016 [1977]: 14, 17–19), a syntactic rule for the use of a word states some of its mini-entailments, i.e., it specifies what a speaker is committed to by that particular word or expression.

[20] Assuming, of course, that asserting the existence of the subject in such sentences is not problematic. Otherwise, the existential quantifier could be interpreted as not carrying existential import.

ingful. In other words, we introduce implicit assumptions based on the necessity of certain properties for the meaningful application of specific predicates. These criteria are derived from the conceptual analysis of the predicates involved.

Let us look at the other example. We propose construing the statement "The black chair standing in my room does not possess moral rectitude" as a conjunction of the following propositions: 1) that there is a black chair standing in my room ($\exists x(Bx)$); 2) that the black chair standing in my room is a moral subject ($\forall x(Bx \rightarrow Mx)$); 3) that the black chair standing in my room does not possess moral rectitude ($\forall x(Bx \rightarrow \neg Rx)$) (or, more briefly, $\exists x(Bx \wedge Mx \wedge \neg Rx)$). Once more, the crux of the matter lies in proposition 2). That is, we can readily discern that 2) is inherently false, consequently rendering the entire conjunction false. In such a way, "The black chair standing in my room does not possess moral rectitude" becomes a false statement.

What we propose, then, is a means by which we can eliminate meaningless expressions within the natural language interpretation of Gödel's proof, thus upholding the principle of bivalence. The core of our proposal is to assert that predicates such as 'is omniscient' or 'is morally perfect' involve implicit assumptions about a subject's possession of intellectual capacity or moral subjecthood. Consequently, once we unveil the complete logical structure of statements like "Mars is omniscient" or "The black chair standing in my room does not possess moral rectitude," their interpretation ceases to pose challenges: inasmuch as such objects fail to enjoy intellectual capacity and moral subjecthood, sentences of this sort, whether affirmative or negative, will consistently be regarded as false.[21] As a result, there is no longer a need to restrict the domain of objects within the context of the proof, and the issue – as depicted by Goldman – seems to be resolved.

Before proceeding to the conclusion, however, one remaining point requires our attention. One may wonder how our proposed analysis could accommodate modal sentences such as "Possibly, Mars is omniscient." Is it tenable to take that "Mars is omniscient" *can* be a true statement despite being actually false? Now, one may hold that, plausibly, what objects possess intellectual capacity or moral subjecthood is unchangeable. In other words, it is not the case that, e.g., Mars could in principle attain intellectual capacity despite lacking it in fact; and so it follows that sentences of the form "*x* has an intellectual capacity" or "*x* is a moral subject" are always necessarily true if true, as well as necessarily false if false. Now, given that "Mars has an intellectual capacity" is a false, and, thus, a necessarily false statement, it follows that "Mars is omniscient" as such is necessarily false as well (for, clearly, the conjunction is only true if all of its conjuncts are true in a given possible world, so if one conjunct is necessarily false, the conjunction cannot be true in any possible world). From the fact that "Mars is omniscient" is necessarily false, we can thus infer that "Possibly, Mars is omniscient" is a false statement (of course, the

[21] We shall clarify that while the examples of implicit assumptions here apply to specific objects ('Mars', 'the black chair standing in my room'), the same principles can be generalised to similar instances. In other words, we suppose that implicit assumptions like intellectual capacity or moral subjecthood do not vary from one object to another but are universally applied based on the nature of the predicates involved.

same would apply for negative sentences such as "Possibly, the black chair standing in my room does not possess moral rectitude").

Yet, this is not ultimately satisfying. For, in contemporary modal logic, it clearly does not follow from the fact that something is *unchangeable* ($Hp \wedge p \wedge Gp$)[22] that it is *necessary* ($\Box p$). That is, something might still be possible *despite* the fact that its non-holding is unchangeable, and so the consideration provided above is at best lacking. If we truly want to establish that sentences such as "Mars is omniscient" are not even possibly true, some other account is needed – which is a task we leave for future investigations to address.

Conclusion

In this article, our objective was to examine the criticism posited by Goldman on Gödel's ontological proof. Our focus was on a particular facet of this critique: namely, the question of what restrictions upon the domains of objects and properties should be imposed under the natural language interpretation of the proof. Goldman posited that, in order to make sense of predicates associated with properties traditionally attributed to God, the first-order domain must be delimited, but this gives rise to an issue concerning the definition of essence. We have presented and analysed three potential resolutions to this problem, by concluding that only one proved satisfactory. Our proposal advocates leaving the domain of objects (and thus, the domain of properties) unrestricted, while simultaneously advocating a reinterpretation of propositions encompassing predicates like 'is omniscient' or 'is morally perfect'. Drawing inspiration from Russell's theory of definite descriptions, we maintained that such propositions can be construed as conjunctions. In this manner, sentences ascribing or denying quoted predicates to inanimate or non-sentient entities become false and shed their semantic opacity. This Russellian perspective, thus, appears suitable to address at least one particular aspect of Goldman's extensive critique concerning Gödel's ontological proof.

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[22] Where the operator H means "It has always been the case that …" and the operator G means "It is always going to be the case that …".

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