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## ORIGINAL ARTICLE

# Modal-epistemic arguments for the existence of God based on the possibility of the omniscience and/or refutation of the strong agnosticism

Fábio Maia Bertato [ID]

Centre for Logic, Epistemology, and the History of Science, University of Campinas, Campinas, SP, Brazil
Email: fbertato@unicamp.br

## Abstract

In this article I present some modal-epistemic arguments for the existence of God, based on the possibility of omniscience. For this, I provide modal formal systems that allow obtaining the existence of God as a theorem. Moreover, based on what I assume as reasonable premises, they show that the strong agnostic position is contradictory, since it allows the conclusion both that God exists and that God does not exist.

**Keywords:** existence of God; omniscience; strong agnosticism; modal; logic

## Introduction

In Rutten (2012) and Rutten (2014), Emanuel Rutten has proposed a new argument for the existence of God. In a simplified form, his argument has two premises:

(1) *all possible truths are knowable*, and
(2) *it is impossible to know that the proposition that God does not exist is true.*

It follows logically from these premises that *God exists*. As Stefan Wintein observes, '[a]n interesting feature of the argument, which caused quite a stir, is that it does not fall within any of the traditional categories of arguments for God's existence' (Wintein (2018)). Because the first premise involves the notions of *possibility* and *knowability*, Rutten called his argument the *Modal-Epistemic Argument* (MEA). Remarkably, it was enthusiastically considered by some philosophers such as Pruss and the good reception gave the argument some notoriety.

Naturally, evidence for and against the premises of the argument was presented. Rutten and Pruss have considered some of it, and Wintein has maintained that the argument is flawed (Wintein (2018)). In particular, the first premise is quite strong if it means that all possible truths can be known to human beings. Although many philosophers have maintained that reality is intelligible, such an interpretation seems to overestimate the epistemic capabilities of human beings. A theist would be expected to subscribe to the second premise, for if he admits that God's existence is true, then he could not at

the same time hold that it is possible to know that God does not exist. Interestingly, such a premise is also accepted by some agnostics and atheists.

In this article, I present some versions of MEA, based on the construction of a formal system **ME1** that admits axioms that can be considered quite intuitive, from which the premise about the knowability of truths is derived as a theorem. So, in a formal approach, it can be proved that, assuming a few modal and epistemic axioms, the possibility of an epistemic agent's omniscience implies that if a proposition $\alpha$ is the case, then it is *knowable* (in symbols: $\diamond K\alpha$).[1] This does not mean to assume *a priori* that there is an omniscient being $\theta$, but only that omniscience is possible. The formula schema that expresses this attribute of *omniscience* is as follows:

$$(OS)\ \alpha \rightarrow K_\theta \alpha,$$

for every well-formed formula (*wff*) $\alpha$, where $K_\theta \alpha$ means that '*agent $\theta$ knows that $\alpha$*'.

It is easy to see that any instance of this formula schema OS is consistent. Just take the semantics for $K_\theta$ given by:

$$[K_\theta]{:}\omega \vDash K_\theta \alpha \text{ if, and only if, } \omega \vDash \alpha.$$

Since a first-order modal theory that has a model is consistent, the theory that has only OS as its axiom is consistent. Given that OS is not contradictory, an OS instance is a possible formula.[2] In this way, one of the axioms of our theory will be $\diamond (\alpha \rightarrow K_\theta \alpha)$, which means that omniscience is possible and from which it derives $\alpha \rightarrow \diamond K\alpha$, which corresponds to the first premise under dispute.

I begin by introducing the modal system **ME1**, in which, based on more or less intuitive premises, it is possible to show that God exists, through a modal-epistemic argument. As a consequence, given this context, it is possible to show that the position of strong agnosticism is contradictory. Then, I introduce the system **ME2**, which allows showing that from the assumption that it is impossible to know that God exists, it can be proved that God does not exist. I next consider the validity of an important assumption for the discussion in this article. Some alternatives to the assumption are presented and it is possible to verify that leaner systems would be able to corroborate the existence of God or to prove the inconsistency of the strong agnosticism. Then, I consider omniscience expressed by strict implication, which might be considered more appropriate when relating truths and the knowledge of an omniscient agent. Finally, I discuss the conclusion that strong agnosticism cannot be sustained if the underlying modal logic is **S5**. Furthermore, I show how in this case some conclusions are stronger than those initially obtained.

## The system ME1

First, my goal is to build a very economical modal-epistemic system **ME1** with regard to the axioms to be assumed, that is, I intend to use a reduced number of assumptions about the modal possibility operator and epistemic operators. Thus, in terms of modality, I employ a modal system **T**, adding the axiom **K**$\diamond$ (**K** for the operator $\diamond$).[3] This last axiom does not hold for normal modal systems, but it seems to correspond to a certain intuition about possibility, at least when we consider implication as it has been used in practice in the philosophical tradition. As a matter of fact, **K**$\diamond$ is only not valid in the usual modal systems because a counter-model can be built from the peculiarities of the material implication of contemporary logic. The fact that a true material implication is obtained from the false antecedent, regardless of the truth value of the consequent,

has not ceased to be the object of discussion and criticism. Assuming $K\diamondsuit$ can be interpreted as imposing a strict implication concerning possibility.[4]

Thus, let us consider a modal system **ME1**, which contains the epistemic operators $K_\theta$, $K$, and the possibility operator $\diamondsuit$. In the corresponding language, the formula $G$ represents the sentence that affirms the existence of God. The Greek letter $\theta$ indicates an individual with which the operator $K_\theta$ is associated. In **ME1**, it is not *a priori* assumed that an omniscient agent $\theta$ actually exists, only the possibility that this is the case.

The formal formulas below can be understood as abbreviations for the following standard semantics in natural language:

$K_\theta\,\alpha :=$'*the agent $\theta$ knows that $\alpha$*'.
$K\alpha :=$'*it is known that $\alpha$*'.
$\diamondsuit\,\alpha :=$'*it is possible that $\alpha$*'.
$\diamondsuit\,K\alpha :=$'*$\alpha$ is knowable*'.
$G :=$ '*God exists*'.

The axioms of **ME1** are as follows:

## Axioms

**A1.** $\diamondsuit\,(\alpha \rightarrow K_\theta\alpha)$
(*The omniscience is possible.*)
**A2.** $\diamondsuit\,K_\theta\alpha \rightarrow \diamondsuit\,K\alpha$
(*If it is possible that an agent $\theta$ knows that $\alpha$, then $\alpha$ is knowable.*)
**A3.** $\neg\,\diamondsuit\,K\neg G$
(*It is impossible to know that God does not exist.*)
**A4.** $\diamondsuit\,(\alpha \rightarrow \beta) \rightarrow (\diamondsuit\,\alpha \rightarrow \diamondsuit\,\beta)$
(*If it is possible that $\alpha$ implies $\beta$, then $\alpha$ being possible implies that $\beta$ is possible.*)
**A5.** $\alpha \rightarrow \diamondsuit\,\alpha$
(*If $\alpha$ is the case, then it is possible that $\alpha$.*)

Axiom **A1** admits that omniscience is possible. Thus, for every *wff* $\alpha$, it is possible that if $\alpha$ is the case, then $\alpha$ is known to an epistemic agent $\theta$. Notice that a semantics has been imposed on $G$ without specifying which concept of God is assumed. If we consider that the concept in question must include omniscience, then denying axiom **A1** for some true formula $\alpha$ would be equivalent to saying that the existence of an omniscient being is impossible. Therefore, it would be impossible for God to exist. But if it is impossible for God to exist, then it would be possible to know that there is no such being whose existence is impossible. And it is against the assumption that it is impossible to know that God does not exist.[5]

Axiom **A2** states that if $\alpha$ can be known by $\theta$, then $\alpha$ can be known *tout court*. **A3** expresses the premise of the impossibility of knowing that God does not exist. Axiom **A4** relates the possibility of an implication to an implication of possibilities. **A4** is valid for the necessity operator $\square$, but not for the possibility operator $\diamondsuit$. I discuss the reasonableness of such an axiom, as well as alternatives, in a proper section. Axiom **A5** assumes that it is the case that $\alpha$ implies that it is possible that $\alpha$. If the accessibility relation between possible worlds considered is reflexive, then **A5** is a valid *wff*.

In addition to the formula substitution rule (Sub), as inference rules, I assume modus ponens (MP), the contrapositive (CP), the double negation (DN), and the hypothetical syllogism (HS).

### Rules

MP: $\alpha,\ \alpha \to \beta \vdash \beta$
CP: $\alpha \to \beta \vdash \neg\beta \to \neg\alpha$
DN: $\neg\neg\alpha \vdash \alpha$
HS: $(\alpha \to \beta) \wedge (\beta \to \gamma) \vdash \alpha \to \gamma$

From the assumed axioms and rules, we can prove the formula $G$ (which says that God exists) as a theorem in the system **ME1**.

**T1.** $\vdash_{\mathbf{ME1}} G$
(*God exists.*)

**Proof.**

| | | |
|---|---|---|
| 1. | $\Diamond\,(\alpha \to K_\theta \alpha)$ | : A1 |
| 2. | $\Diamond\,(\alpha \to K_\theta \alpha) \to (\Diamond\,\alpha \to \Diamond\,K_\theta \alpha)$ | : A4 |
| 3. | $\Diamond\,\alpha \to \Diamond\,K_\theta \alpha$ | : MP 1, 2 |
| 4. | $\Diamond\,K_\theta \alpha \to \Diamond\,K\alpha$ | : A2 |
| 5. | $\Diamond\,\alpha \to \Diamond\,K\alpha$ | : HS 3, 4 |
| 6. | $\alpha \to \Diamond\,\alpha$ | : A5 |
| 7. | $\alpha \to \Diamond\,K\alpha$ | : HS 6, 5 |
| 8. | $\neg\,\Diamond\,K\neg G$ | : A3 |
| 9. | $\neg\,\Diamond\,K\alpha \to \neg\alpha$ | : CP 7 |
| 10. | $\neg\,\Diamond\,K\neg G \to \neg\neg G$ | : 9, Sub $\alpha/\neg G$ |
| 11. | $\neg\neg G$ | : MP 8, 10 |
| 12. | $G$ | : DN 11    ∎ |

It can be said that the sequence of formulas in lines 7–12 of the above derivation constitutes a formal version of a proof for MEA.

The proof of theorem **T1** can summarized as follows:

*(i) It is possible for an epistemic agent θ to be omniscient.* [A1]
*(ii) If it is possible for an epistemic agent θ to be omniscient, then the possibility that α is the case implies that it is possible α be known by θ.* [A4]
*Hence, (iii) if α is possible, then α is knowable.* [Modus Ponens, A2]
*But (iv) if α is the case, then α is possible.* [A5]
*Therefore, (v) if α is the case, then α is knowable.* [Hypothetical Syllogism]
*Then, (vi) if α is not knowable, then α is not the case.* [Contrapositive]
*But (vii) the non-existence of God is not knowable.* [A3]
*Therefore, (viii) the non-existence of God is not the case.* [Substitution rule, Modus Ponens]
*Therefore, the existence of God is the case.* [Double negation]

The above shows that, assuming the other axioms of **ME1**, admitting that it is impossible to know that God does not exist (**A3**) implies the conclusion that God exists ($G$). In other words, if one holds the remaining axioms of **ME1**, then such a person cannot admit

**A3** through a truly agnostic attitude. This leads us to consider the position somewhat opposed to **A3**, which would be to claim that it is impossible to know that God exists. In the next section, I discuss such a position and how it relates to strong agnosticism.

## Strong agnosticism

In this section, I consider that *strong agnosticism* is characterized by the following thesis (SA):

(SA) *'It is both impossible to know whether God exists and to know whether God does not exist'.*

Using the language of **ME1**, we can express such a thesis by the following formula:

$$(SA)(\neg \Diamond KG) \wedge (\neg \Diamond K\neg G)$$

Analogously to a theist who would subscribe to axiom **A3**, it seems reasonable to assume that an atheist would also admit the following proposition:

**A3\*.** $\neg \Diamond KG$
(*It is impossible to know that God exists.*)

By admitting that God does not exist, such an atheist could not maintain that it is possible to know that God exists. The verification of the coherence of such a position can be obtained through the system **ME2**, through a slight modification of **ME1**, when substituting the axiom **A3** by **A3\***.

Making the corresponding changes in the proof of **T1**, one can easily prove that in **ME2** the negation of $G$ is a theorem, as follows.[6]

**T1\*.** $\vdash_{\textbf{ME2}} \neg G$
(*God does not exist.*)

**Proof.**

| I. | $\Diamond (\alpha \rightarrow K_\theta \alpha)$ | : A1 |
|---|---|---|
| 2. | $\Diamond (\alpha \rightarrow K_\theta \alpha) \rightarrow (\Diamond \alpha \rightarrow \Diamond K_\theta \alpha)$ | : A4 |
| 3. | $\Diamond \alpha \rightarrow \Diamond K_\theta \alpha$ | : MP 1, 2 |
| 4. | $\Diamond K_\theta \alpha \rightarrow \Diamond K\alpha$ | : A2 |
| 5. | $\Diamond \alpha \rightarrow \Diamond K\alpha$ | : HS 3, 4 |
| 6. | $\alpha \rightarrow \Diamond \alpha$ | : A5 |
| 7. | $\alpha \rightarrow \Diamond K\alpha$ | : HS 6, 5 |
| 8. | $\neg \Diamond KG$ | : A3* |
| 9. | $\neg \Diamond K\alpha \rightarrow \neg \alpha$ | : CP 7 |
| 10. | $\neg \Diamond KG \rightarrow \neg G$ | : 9, Sub $\alpha/G$ |
| II. | $\neg G$ | : MP 8, 10 ∎ |

**T1\*** shows the dual of what was discussed above, that is, assuming the other axioms of **ME1**, admitting that it is impossible to know that God exists (**A3\***) implies the conclusion that God does not exist ($G$). An immediate consequence of this fact is that in the context of **ME1**, strong agnosticism is contradictory.

Let us consider a new system **ME+**, obtained from **ME1** plus **A3\*** as an axiom. So, we have that the strong agnostic thesis (SA) represented by the formula $(\neg \Diamond KG) \wedge (\neg \Diamond K\neg G)$ is true in **ME+**.

Since both $G$ and $\neg G$ can be obtained as theorems in **ME+**, then **ME+** is inconsistent.

Thus, if one assumes axioms **A1**, **A2**, **A4**, and **A5**, then one concludes that strong agnosticism cannot be sustained. Furthermore, it is clear that in this context only one of the two formulas **A3** or **A3\*** can be assumed and that, indirectly, such an assumption already corresponds to the theist or atheist position.

## About the validity of A4 and alternatives

Despite the axiom **A4** not being a valid formula in normal modal logics, it seems reasonable to assume it, considering that its admission has to do with the following reasoning:

> *If it is possible that my office door has been forced open implies that my computer was stolen, then the possibility that my office door has been forced open implies that it is possible that my computer was stolen.*

Given that a forced door may imply theft, if someone communicates to me with not much certainty the impression of having seen my office door forced, the possibility that my computer has been stolen immediately comes to mind. In other similar cases, the invoked principle seems to be quite reasonable. Even though, it may seem that **A4** demands too much.

Although in the proof of **T1**, the axiom **A4** has served to show the plausibility of the first premise of MEA, as formulated by Rutten, notice that for the proof of $G$, it would be enough that the instance of **A4** involving $\neg G$ and $\neg \Diamond K\neg G$ was assumed to be true. So, an alternative would be to assume as an axiom the formula

**(A4∗)** $\Diamond (\neg G \rightarrow K_\theta \neg G) \rightarrow (\Diamond \neg G \rightarrow \Diamond K_\theta \neg G)$.
(*If it is possible that the non-existence of God implies that the non-existence of God is known by $\theta$, then the possibility of the non-existence of God implies that it is possible that the non-existence of God is known by $\theta$.*)

Such a proposition seems to be in full agreement with the possibility of omniscience and how this would relate to the knowability of the non-existence of God.

Moreover, it is interesting to note that, to present a counter-model for **A4**, one can assume that $\alpha$ is true in the actual world and false in the possible world where omniscience occurs, $\alpha$ not being known in any of the accessible worlds. This is due to material implication, in which an implication with antecedent and consequent both false is true.[7] However, assuming omniscience in a possible world only seems to make sense if the *wff* $\alpha$ is true in such a world. Therefore, a slight alteration in **A1** and **A4** is enough to maintain the results discussed in the previous sections, by obtaining **A1\*** coherent with the omniscience and a valid formula **A4\*\***. Thus, we would have:

**A1\*.** $\Diamond (\alpha \wedge (\alpha \rightarrow K_\theta \alpha))$
(*The omniscience is possible.*)
**A4\*\*.** $\Diamond (\alpha \wedge (\alpha \rightarrow \beta)) \rightarrow (\Diamond \alpha \rightarrow \Diamond \beta)$

(*If it is possible that α is the case and α implies β, then α being possible implies that β is possible.*)

Since **A4\*\*** is a valid formula in a normal modal system, then the change would reside only in the conception of omniscience established in **A1\***, which says that it is possible that α be the case and knowable by θ.

Thus, a new system **ME1\*** having **A1\***, **A2**, **A3**, and **A5** as axioms would be able to provide the same results previously discussed in this article.

I am aware that the assumption of **A4** can be considered controversial. However, I hope that the discussions carried out in this section show that there is some basis for taking it or its variations as a premise, since, despite being invalid in the usual modal systems, it is contingent, so its assumption does not lead to a contradiction. Furthermore, as mentioned, we can consider an interpretation of implication that is distinct from material implication, at least concerning the possibility in general or even just the possibility of omniscience. The game played so far has only considered the possibility operator and, in some sense, weaker systems than normal modal systems. Next, I use the strict implication properly said, which aims to more directly relate the content of the antecedent with the consequent of an implication. As far as omniscience is concerned, this seems to be an adequate approach.

## Omniscience expressed by strict implication

As mentioned, the material implication has certain peculiarities that do not correspond to more traditional philosophical insights or practices in natural language discourse.[8] The strict implication is an interesting way to avoid this problem and thus more effectively translate certain statements. The way of expressing omniscience (OS) presented in the introduction allows that, in a certain scenario, an agent can 'know' all the true formulas by mere chance since the material implication does not establish a strong relationship between antecedent and consequent. As regards the connection between a truth and the knowledge of a legitimately omniscient agent, it can therefore be expressed by a strict implication, which is obtained by combining the material implication with the modal operator of necessity. So, we have a new version of OS:

$$(\text{OS}*) \ \Box \left( \alpha \rightarrow K_\theta \alpha \right),$$

for every *wff* α, where $K_\theta \alpha$ means that '*agent θ knows that α*'.

We can then build a new system **ME1□**, obtained from **ME1**, replacing, respectively, the axioms **A1** and **A4** by:

**A1□**. $\Diamond \left( \Box \left( \alpha \rightarrow K_\theta \alpha \right) \right)$
(*The omniscience is possible.*)
**A4□**. $\Diamond \left( \Box \left( \alpha \rightarrow \beta \right) \right) \rightarrow \left( \Diamond \alpha \rightarrow \Diamond \beta \right)$
(*If it is possible that it is necessary that α implies β, then α being possible implies that β is possible.*)

It is easy to see that by discussions and variations similar to what was done above, the same main results can be obtained. The advantage of this approach is that the axiom **A4□** is a valid formula in a normal modal system whose accessibility is assumed to be Euclidean. So, in particular, if we take **S5** as the underlying modal system, from the proper axioms **A1□**, **A2**, and **A3**, we have the existence of God (*G*) as a theorem. Furthermore, if we also consider **A3\*** also as an axiom, we can also obtain ¬*G* as a theorem, which shows that the thesis of strong agnosticism would also lead to a contradiction.

I make some considerations about the strong consequences of assuming **S5** as a modal system underlying the discussions carried out in the context of this article in the next section.

## The non-support of strong agnosticism in S5 and other consequences

The above observations are sufficient to support the conclusion that strong agnosticism cannot be sustained with **S5** as the underlying modal logic. If we consider an **S5**-theory **MES5** whose proper axioms are **A1□** and **A2**, then only one between **A3** and **A3\*** could also be assumed. Thus, if one assumes **A3**, the new theory is a theistic system. However, if **A3\*** is assumed, the corresponding theory is an atheistic system.

Notice that still considering the possibility of omniscience, as expressed by **A1□**, we could use a version of axiom **5** of **S5**, namely $\diamond \square \alpha \rightarrow \square \alpha$ (**5\***), to construct a new proof of $G$ from **A3** (also using **A2** and **A5**).

Assuming **5\*** and **A1□** further implies that if omniscience is possible (which is assumed consistently with **A3**), then omniscience is the case. So, in all possible worlds if $\alpha$ is true then $\alpha$ is known. This is much stronger than that obtained in **ME1**, namely that all truths can be known. In any case, such a conclusion would be consistent with a theistic system.

## Final remarks

The discussion and the formal approach presented above allow us to verify that, given some reasonable premises assumed, one can, on the one hand, defend the existence of God through a modal-epistemic argument, and, on the other hand, present a refutation for the thesis of the strong agnosticism, which holds that it is impossible to know whether or not God exists. By considering some formal modal systems, it can be seen that such a thesis is contradictory. Moreover, in such a context, it is evident that only one of its opposite components can be assumed, that is, either it is assumed to be impossible to know that God exists, or that it is impossible to know that God does not exist. I tried to show that, given the premises assumed in this article, such components implicitly correspond to the atheist and theist assumptions, respectively. The possibility of the omniscience is used here as the main strategy to defend the proposition that all possible truths can be known, which is a very important complementary result. If the omniscience were not possible, there would already be a denial of the existence of the God of classical theism. However, it is not consistent with the premise that it is impossible to know that God does not exist and that is accepted by several philosophers.

## Notes

**1.** The Greek letter $\alpha$ is used in this text as a meta-variable only for non-contradictory formulas because a contradiction cannot be known.

**2.**  The possibility of omniscience is closely linked to the Logical Problem of Evil. If some of the divine attributes of classical theism were contradictory, it would follow that there cannot be a being with such attributes. See Bertato (2020), da Silva and Bertato (2019), da Silva and Bertato (2020), and Tooley (2021).

**3.**  In the system **ME1** to be built, **T** corresponds to axiom **A5** and **K◇** to axiom **A4**.

**4.**  I discuss the suitability or otherwise of using **K◇**, as well as weaker versions in a separate section. A logical discussion about the reasonableness of a modal system that has **K◇** as an axiom is beyond the scope of this article. It should be noted, however, that the validity of axiom **K** for the operator □ is due to a certain perspective on implication and necessity. It seems to me that **K◇** might represent a legitimate option as far as possibility is concerned. However, as I argue, the assumption of **K◇** can be replaced by more specific versions and the intended results of this article still hold. It will be noted that some conclusions obtained here from the assumption of **K◇** are weaker than the one that can be obtained from a normal system such as **S5**, for example, which is well established in the literature.

**5.**  Once a concept of God is fixed, one cannot simultaneously and consistently hold both that one cannot know that God does not exist and that one of the divine attributes is impossible. This is because if God exists, then there is a being that possesses the attribute in question. But if the attribute is impossible, then there is no being that has such an attribute. Therefore, it is concluded that God does not exist, which implies, in turn, that it is possible to know that God does not exist.

**6.**  Other proofs are omitted in this article but are analogous to those presented for theorems **T1** and **T1\***. *Mutatis mutandis*, they are practically the same.

**7.**  The counter-model appears to validate the antecedent by vacuity (nothing is known), thus denying the consequent. This, however, does not correspond to the notion of omniscience.

**8.**  I am referring here to the so-called 'paradoxes of material implication', which constitute a set of formal formulas containing implication whose translations into natural language are intuitively false. See von Fintel (2011).

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