

# The Kalām Cosmological Argument and the Infinite God Objection

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**Abstract** In this article, we evaluate various responses to a noteworthy objection, namely, the *infinite God objection* to the kalām cosmological argument. As regards this objection, the proponents of the kalām argument face a dilemma—either an actual infinite cannot exist or God cannot be infinite. More precisely, this objection claims that God’s omniscience entails the existence of an actual infinite with God knowing an actually infinite number of future events or abstract objects, such as mathematical truths. We argue, however, that the infinite God objection is based on two questionable assumptions, namely, (1) that it is possible for an omniscient being to know an actually infinite number of things and (2) that there exist an actually infinite number of abstract objects for God to know.

**Keywords** Kalām cosmological argument · Omniscience · Actual infinite · Platonism

## Introduction

In this article, we evaluate various responses to a noteworthy objection, namely, the *infinite God objection* to the kalām cosmological argument (hereafter KCA). The KCA is a traditional argument in favour of the existence of the theistic God, and it may be formulated as follows:

1. Everything that begins to exist has a cause of its existence.
2. The universe began to exist.
3. Therefore, there is a cause for the existence of the universe.<sup>1</sup>

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<sup>1</sup>By way of the conceptual analysis of the argument’s conclusion, the proponents of the argument attempt to illustrate that the cause of the universe must possess various God-like properties, such as being beginning-less, space-less, immaterial, changeless, personal and extremely powerful.

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The KCA is based on philosophical arguments that attempt to demonstrate that it is not possible for the temporal regression of events to be infinite. In view of the fact that modern cosmology did not evolve before the twentieth century, mediaeval thinkers were forced to rely on philosophical arguments and not on either scientific facts or cosmological theories (such as the Big Bang theory) to support the claim that the universe began to exist. Thus, a crucial argument in support of premise (2) is the philosophical argument about the impossibility of the existence of an actual infinite. According to this argument, if the universe were eternal, there would have been an actually infinite series of past events, each caused by the event immediately prior to it. However, the existence of an actually infinite number of things (such as past events) is impossible and, thus, the series of past events must be finite and must have had a beginning. Accordingly, the universe began to exist.

In order to better understand this argument, the proponents of the KCA distinguish between the potential infinite and the actual infinite. The *potential infinite* denotes a boundless quantitative process, such as endless addition, endless division and endless succession. For example, counting all the natural numbers (1, 2, 3, ...) resembles a potential infinite, for it is impossible to complete this counting process because once a number has been counted, another always follows. Thus, a potentially infinite series is a series that increases endlessly towards infinity as a limit but never reaches it. Strictly speaking, the very nature of the potential infinite is that it is never complete and it is always finite at any given point. On the other hand, the *actual infinite* denotes a boundless, completed totality of infinitely many distinct elements. Mathematicians today define an actually infinite series as a series that may be placed in a one-to-one correspondence with a part of itself (Huntington 2003, p. 6), i.e., each member in the series may be paired with one and only one member of a subclass of the series. An example of an actual infinite would be the completed collection comprising every possible natural number (1, 2, 3, ...). Thus, by describing an actual infinite as a 'completed totality', we mean that it is an unbounded collection whose members are, nevertheless, present all at once. The fundamental difference, then, between the potential infinite and the actual infinite is that the former is not a completed totality whereas the latter is. It is important to bear this distinction in mind when discussing the KCA as the KCA does not deny the existence of a potential infinite but, rather, it denies the existence of an actual infinite.

Furthermore, to support the claim that an actual infinite is impossible, proponents of the KCA generally use thought experiments to demonstrate that certain absurdities would result if an actual infinite were instantiated in the real, spatio-temporal world. For example, al-Ghazālī (1058–1111), the notable jurist, theologian, philosopher and mystic, asks us to suppose that Jupiter completes two and a half revolutions for every one revolution that Saturn completes (al-Ghazālī 2000, pp. 18–19). al-Ghazālī argues that, if both these planets have been revolving constantly from eternity, then, both of them would have completed the same number of revolutions. This is clearly absurd because Jupiter has completed two and a half more revolutions than Saturn has completed. al-Ghazālī raises a further difficulty by asking: 'Is the number of the rotations even or odd, both even and odd, or neither even nor odd?' (al-Ghazālī 2000, p. 18). According to al-Ghazālī, the supporter of the actual infinite is forced to affirm that the rotations are neither even nor odd and this, again, is absurd. al-Ghazālī concludes, therefore, that, since the actual infinite leads to absurdities, the actual infinite cannot exist.

In this article, we do not attempt to examine fully whether or not the thought experiments used in support of the KCA successfully illustrate the impossibility of an actual infinite. On the contrary, we assume that these thought experiments are successful and we investigate whether or not the proponents of the KCA may confidently maintain that the actual infinite is impossible in light of one of the most ingenious objections to the KCA. We term this objection the ‘infinite God objection’ (hereafter IGO) as the objection insists that the argument about the impossibility of the existence of an actual infinite conflicts with the orthodox conception of God as infinite. More precisely, this objection claims that the Christian<sup>2</sup> proponents of the KCA face the following dilemma: either an actual infinite cannot exist or God’s nature or divine attributes cannot be infinite. In the main part of this article, we address two versions of this objection, both of which may be categorised according to their focus, namely, God’s infinite nature and God’s infinite knowledge. We respond first to the former objection and conclude that it fails to undermine the KCA. We then evaluate three distinct responses to the latter objection and conclude that the third response offers a solution that, although not without its difficulties, appears plausible and, therefore, merits further research.

### **The Objection from God’s Infinite Nature**

The first version of the IGO maintains that the impossibility of an actual infinite causes difficulties as regards the general nature of God. Traditionally, theists have held that God is both unlimited and infinite. However, critics argue that if the actual infinite cannot exist, then, God cannot be infinite and if God is infinite, an actual infinite does exist. Thus, arguments against the actual infinite imply that, as Graham Oppy remarks, ‘When we come to consider an orthodoxly conceived monotheistic god and its attributes, we cannot then say either that an orthodoxly conceived monotheistic god is, or that an orthodoxly conceived monotheistic god’s attributes are actually infinite’ (Oppy 2006, p. 139).

This objection, however, uses the term ‘infinite’ in the mathematical or quantitative sense, whereas theologians generally use this term in a qualitative sense when referring to God. As Wolfgang Achtner declares,

Ever since the concept of infinity was introduced in theology as a property of God, both from the apophatic tradition and from the received Aristotelian tradition, theologians have refused to think about the infinity of God in terms of quantity, such as it is obviously done in mathematics. If theologians think about the infinity of God, they do so in stressing that it has to be understood in a qualitative manner, but they do so without clearly defining what that means (Achtner 2011, p. 42).

As Achtner points out, although theologians do not always clarify what they mean when they declare that God is infinite, they clearly do not attribute a type of numerical

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<sup>2</sup> Since we are writing from a Christian perspective, we are concerned exclusively with investigating the KCA and the IGO from within a Christian context. Thus, unless otherwise indicated, ‘God’ refers to the Christian God and ‘theology’ refers to the Christian theology.

value to the general nature of God. When theologians maintain that God is infinite (in the qualitative sense), they are usually emphasising God's transcendence, that is, they are claiming that the unlimited, infinite God transcends the limited, finite Creation.<sup>3</sup> Now, the objection from God's infinite nature claims that if the quantitative or mathematical infinite cannot exist, then, God cannot be 'infinite' in *this* qualitative sense. However, in view of the fact that this conclusion does not automatically follow, the objection has little force. Of course, several conceptions of the divine attributes, such as omniscience, do involve a *quantitative* notion and this, in turn, brings us to the second version of the IGO.

### The Objection from God's Infinite Knowledge

According to the second version of the IGO, namely, the objection from God's infinite knowledge (hereafter OGIK), omniscience entails the existence of an actual infinite. Omniscience is generally defined as 'knowledge of all true propositions' (Wierenga 2012).<sup>4</sup> In other words, *S* is omniscient if for every proposition *p*, if *p* is true, then, *S* knows *p*. Therefore, since there is an endless series of things to know, God—if He is omniscient—knows all these things at once. However, the members of an endless series may be known all at once only if the series is an actual infinite series. Thus, either an actual infinite exists in God's knowledge, or God is not omniscient. We may formulate this argument in greater detail as follows:

- (A1) If God is omniscient, then, He knows an actually infinite number of things (such as propositions or truth values).
- (A2) If God knows an actually infinite number of things (such as propositions or truth values), then, an actual infinite exists.
- (A3) Therefore, if God is omniscient, then, an actual infinite exists.
- (A4) Therefore, if an actual infinite cannot exist, then, God is not omniscient.
- (A5) Therefore, Christian proponents of the KCA must choose one of three possibilities: (1) God is omniscient and an actual infinite exists, (2) God is not omniscient and an actual infinite cannot exist or (3) God is not omniscient and an actual infinite exists.

There are generally two reasons given in support of (A1): Firstly, if God is omniscient, then, God has foreknowledge of all future events and this, in turn, ensures that God's knowledge encompasses an actually infinite number of future truth values (i.e. events that will occur). In this context, the critic targets those theists who maintain that the future is endless while the final and *eternal* destination of believers in the life hereafter will be on the new earth. Of course, not all theists affirm this doctrine of the

<sup>3</sup> For example, Millard J. Erickson (2013, p. 243) writes: 'God is infinite. This means not only that God is unlimited but that he is illimitable. In this respect, God is unlike anything we experience. ... The infinity of God ... speaks of a limitless being'. Here, Erickson suggests that God's infinite nature distinguishes God, who is limitless, from Creation, which is limitable.

<sup>4</sup> A proposition may be defined, very simply, as the content of a sentence (or statement); thus, various sentences may express the same proposition. For example, the two sentences 'Grass is green' and 'Das Gras ist grün' (in German) express the same proposition.

afterlife as an endless temporal future. However, we believe that this doctrine is supported by three biblical teachings, namely, (i) that God will resurrect the bodies of believers to physical life, (ii) that God will create a new physical earth and (iii) that the new earth is an eternal destination. Thus, since a physical body and physical earth imply the presence of time, and the new earth is an eternal destination, the future is endless and constitutes at least a potentially infinite number of future events. The critic argues, therefore, that, if God is omniscient, He knows the members of an endless series of future events all at once. However, since God knows all the members of an endless series at once, He must know an actually infinite number of things because His knowledge comprises a completed totality of infinitely many distinct truth values. In addition, because future truth values may be expressed as propositions, such as the statement, ‘Jones will eat eggs for breakfast tomorrow’, God knows an actually infinite number of propositions. This conclusion, as John Byl contends below, should give proponents of the KCA pause for thought:

Let us suppose for the sake of the argument that the proof against the actual infinite were valid. It would seem that such a ban would have some awkward theological consequences. ... If the future is indeed endless, then to an omniscient God it exists as a definite actual infinity, rather than as an indefinite potential infinity, ... entailing that God has an infinite stock of memories or thoughts. ... However, if the argument against an actual infinity is valid it implies that God’s knowledge encompasses only a finite number of future events. This leads to the conclusion that either the future is finite, and there is a last event, or God’s knowledge of the future is incomplete (Byl 1996, pp. 78–79).

According to Byl, prohibiting the actual infinite, even for the sake of trying to prove God, backfires on the theist (who believes that the afterlife constitutes an endless temporal future) by posing a threat to God’s foreknowledge.

Secondly, it may be argued that (A1) is true because God—if He is omniscient—knows about every abstract object, of which there are an actual infinite (Morrison 2002, pp. 156–160). Abstract objects are distinguished from concrete objects which are objects that are persons or are spatially or temporally extended (or spatio-temporally extended). Examples of concrete objects include a person, mind, substance, place, time and an event. On the other hand, abstract objects are generally said to be those objects that are not persons and are non-spatial, non-temporal, non-physical and causally inert. Many philosophers believe, for example, that numbers (such as the number 7), universals (such as properties; e.g. the property of *being green*), mathematical truths and propositions are abstract objects.<sup>5</sup>

The critic maintains, then, that such abstract objects exist and, thus, God knows an actually infinite number of them. For example, Wes Morrison declares that ‘Since the number of mathematical truths (to say nothing of all the other eternal truths concerning properties and propositions and the like) is clearly infinite, it follows – does it not? – that an *actual* infinity is present in God’s knowledge’ (Morrison 2002, p. 157 [original

<sup>5</sup> Although this concrete/abstract distinction is controversial, we offer it for the sake of simplicity. However, regardless of how one should understand the concrete/abstract distinction, we are merely presupposing that propositions and mathematical entities are abstract objects.

emphasis]). In other words, God knows that  $1+1=2$ ,  $1+2=3$ ,  $1+3=4$ , ... and so on ad infinitum and, therefore, God knows an actually infinite number of things. Notice how the first argument supporting (A1) is really a narrower form of the second supporting argument. This is because the former maintains that an omniscient God would know an infinite number of future truth values, which are simply a subset of abstract objects—true propositions expressing future events.<sup>6</sup> Accordingly, even if a theist denies that God knows the future, as a proponent of open theism may do, the theist must still overcome this second argument in favour of (A1).

Finally, premise (A2) merely claims that knowledge encompassing an actually infinite number of things entails that an actual infinite exists, since such knowledge implies that an actually infinite number of things exist. Premises (A3) to (A5) logically follow from the previous premises. Thus, the OGIK, in essence, tries to show that the proponents of the KCA cannot deny the existence of the actual infinite while affirming that God is omniscient. This objection proves more difficult to address than the previous objection, and it subtly raises several complex issues, such as what it means for an omniscient being to know something. In order to deduce whether or not there is a plausible response to the OGIK, we shall now critically analyse three different responses to this objection.

### **First Response: the Concrete Infinite Only Cannot Exist**

In response to the OGIK, the proponents of the KCA may claim that the arguments against the existence of the actual infinite concern the concrete infinite only with the ‘concrete infinite’ being distinguished from the ‘abstract infinite’. The former concerns an actually infinite number of concrete objects, while the latter concerns an actually infinite number of abstract objects. Therefore, it may be argued that only a concrete infinite is impossible and it is irrelevant whether or not an abstract infinite may exist in one’s mind. In other words, that God knows about an actually infinite number of abstract objects (numbers, propositions) does not imply the possibility of a concrete infinite, such as an actually infinite number of past events. Thus, since the OGIK mistakenly equates the abstract infinite with the concrete infinite, the OGIK poses no difficulty for the KCA.

This would appear to be a common response given by Platonists who support the KCA. Platonism, as we are using the term, refers to the view that such things as abstract objects exist. However, it is not at all clear how, according to Platonism, the number of abstract objects may be finite and not infinite. For example, Swoyer (1996, p. 260) points out that most philosophers believe that mathematical equations, such as  $7+5=12$ , necessarily possess the truth values which they do and, therefore, if we use properties to describe the modal status of mathematical truths and if we identify numbers with properties, then, we will have ‘an infinite collection of necessarily existing properties’. Indeed, to support the claim that an actually infinite number of

<sup>6</sup> The KCA presupposes the A-theory of time which holds that the past, present and future are objectively distinct with things coming into being and going out of existence as time passes. According to the A-theory, then, future events do not exist and nor have they existed; a future truth value is not a concrete event that has occurred but it is rather an abstract proposition expressing a potential future event that will occur.

abstract objects exist, the Platonist may offer an argument from mathematics similar to the following:

- (B1) There is an endless series of numbers  $N$ .
- (B2) If numbers exist necessarily, then,  $N$  is a completed totality because  $N$ 's members are present all at once.
- (B3) Numbers exist necessarily.
- (B4) Therefore,  $N$  is a completed totality.
- (B5) Any endless series that is a completed totality is actually infinite.
- (B6) Therefore,  $N$  is actually infinite.

This argument appears to be sufficiently persuasive to commit the Platonist to affirming the existence of an abstract infinite. Of course, the Platonist may reject (B3) and maintain that numbers are merely contingent entities. However, such a move is not very common. Thus, to preserve their Platonistic conviction, many Platonist proponents of the KCA reject the concrete infinite only and not the abstract infinite.

For example, Moreland (2003) endorses both Platonism and the KCA. According to Moreland, although there exist an actually infinite number of abstract objects, an actually infinite number of concrete objects cannot exist in the real world. Thus, Moreland claims that the KCA should not use the statement 'An actually infinite number of things cannot exist'. He suggests that this statement should rather be phrased as follows: 'An actual infinite number of finite, contingent entities that (1) can be added to or subtracted from a set and (2) are spatially (or spatio-temporally or temporally) extended cannot exist' (Moreland 2003, p. 380). Moreland explains further:

An abstract object cannot be added to or subtracted from anything, so they are not proper candidates for members of sets included in thought-experiments employed against the existence of actual infinite collections. Further, abstract objects are neither spatially (or temporally) located or extended, so there is no need to find room for them next to each other or at some other location. And [this reformulated statement] allows one to accept [the] claim that the denial that a whole is greater than any of its proper parts generates 'all sorts of absurdities ... when one tries to translate that theory to reality' (Moreland 2003, p. 380).

For Moreland, thus, reformulating the statement in this way has the benefit of allowing God's knowledge to be infinite, while denying the existence of an actually infinite number of past temporal events.

However, is this response to the OGIK tenable? We do not think it is. According to this response, the arguments against the actual infinite pertain to the concrete infinite only and not to the abstract infinite. In other words, absurdities (such as those illustrated in al-Ghazālī's infinite celestial revolutions thought experiment) would result if an actual infinity were instantiated in the real world although no such absurdities would result within the realm of abstract objects. The problem here is that it appears difficult to justify why the realm of abstract objects is exempt from such absurdities. What, exactly, makes abstract objects improper 'candidates for members of sets included in thought experiments employed against the existence of actual infinite collections?' It is unhelpful to respond that this is the case because abstract objects are not spatio-

temporally extended and, thus, cannot be added to or subtracted from anything—abstract objects *can* be added to and subtracted from many things. If knowledge, for example, is propositional, then, new propositions may be added to one's knowledge, or, since sets are abstract objects, other abstract objects (numbers, properties) may be added to or subtracted from sets, such as the set containing one's personal attributes.

Furthermore, it seems reasonable to use abstract objects as members of sets in the thought experiments employed against the existence of actually infinite collections. Consider the following thought experiment about infinite knowledge. Suppose Jones and Smith possess identical knowledge and they both know an actually infinite number of mathematical equations only, namely, Jones and Smith only know that  $1+1=2$ ,  $1+2=3$ ,  $1+3=4$  and so on ad infinitum. Suppose, furthermore, that Smith somehow forgets and loses his knowledge of every second mathematical equation that he previously knew, that is, Smith no longer knows that  $1+2=3$ ,  $1+4=5$ ,  $1+6=7$  and so on ad infinitum. Smith's knowledge, however, still encompasses an actually infinite number of propositions. Therefore, although Jones knows an infinite number of propositions that Smith does not know, Jones and Smith know *exactly* the same amount of propositions. Consequently, infinity minus infinity equals infinity. Now, suppose that Smith forgets and loses his knowledge of all but the first seven equations that he previously knew, that is, after forgetting an actually infinite number of propositions Smith now only knows seven propositions. In this case, infinity minus infinity equals seven. However, this result is an absurdity, namely, infinity minus infinity equals infinity, yet infinity minus infinity equals seven! This illustrates that, when it comes to the abstract infinite, one may subtract or divide equal quantities from equal quantities and, yet, reach different results.

The situation could become even more peculiar. Suppose that Jones, somehow, becomes omniscient and, therefore, acquires knowledge of all true propositions (according to the very broad definition of omniscience). Jones now possesses knowledge of an actually infinite number of propositions (assuming that there are an actually infinite number of true propositions), which is *identical* to the number of propositions that he knew before he was omniscient. So, a non-omniscient person may know exactly the same number of propositions (abstract objects) that an omniscient person knows!

It is, perhaps, possible to show that abstract objects cannot be used in thought experiments (such as the one described above) that try to demonstrate the absurdity of the actual infinite. Indeed, this topic requires further research. Nevertheless, as far as we are able to tell, such thought experiments successfully demonstrate the absurdities that would result if either the concrete infinite or abstract infinite were to exist. As we see it, the Platonist faces a problem: it would appear that it is difficult to affirm the existence of an actually infinite number of abstract objects. Thus, the Platonist who wishes to maintain that God is omniscient and that the philosophical arguments supporting the KCA are sound may choose one of at least four options:

- (C1) Remain a Platonist and assert (i) that the existence of a concrete infinite is impossible, (ii) that an abstract infinite is possible and (iii) that this will eventually be shown to be true.
- (C2) Remain a Platonist and attempt to show that abstract objects cannot be used in thought experiments employed against the existence of an abstract infinite, or attempt to show that these thought experiments fail.



- (C3) Remain a Platonist and claim that the number of abstract objects that exist is finite and not actually infinite.
- (C4) Reject the view that there exist such things as abstract objects.

The first option (C1) is undesirable because, given the thought experiments employed against the abstract infinite, the Platonist must, at least, show why these thought experiments have failed/fail. By not offering any supporting arguments for the possibility of an abstract infinite, it remains more plausible that the existence of the abstract infinite is as impossible as the concrete infinite. Moreover, as noted above, (C2) may be a valid option if the Platonist could show that the realm of abstract objects is impervious to the apparent metaphysical absurdities associated with an actual infinity. However, it is unclear how the Platonist could do this. Furthermore, since (C3) requires one to affirm that abstract objects do not exist necessarily, the Platonist is likely to criticise (C3) as scarcely credible, maintaining that a possible world devoid of abstract objects, such as propositions, is incomprehensible. However, if certain abstract objects, say, numbers, exist necessarily, then, all the natural numbers would amount to an actual infinite. Accordingly, it would appear that (C4) is the best option for the proponents of the KCA. Of course, (C4) is an unorthodox and contentious position and so those Platonists who believe they formulated sound arguments in favour of Platonism should rather opt for either (C2) or (C3).

Nevertheless, apart from the thought experiments employed against the abstract infinite, the proponents of the KCA have a sound theological reason for favouring (C4), namely, if abstract objects exist, then, God would need to possess certain abstract properties *prior* to His act of creating them. Bergmann and Brower (2006) persuasively argue that ‘Platonism is inconsistent with the central thesis of traditional theism,’ that is, ‘the thesis that God is an absolutely independent being who exists entirely from himself (*a se*), whereas everything else is somehow dependent on him’ (Bergmann and Brower 2006, p. 358).<sup>7</sup> More precisely, according to Bergmann and Brower, it is the Platonistic account of predication in terms of properties (or exemplifiabilities) that is inconsistent with the theistic view that God creates all properties; together, both views imply that the property of *being able to create a property* is both logically prior and logically posterior to God’s act of creating it.<sup>8</sup> In other words, in order to create the property of being able to create a property, God must already exemplify the property of being able to create a property. Bergmann and Brower’s argument may also be applied to certain other properties and abstract objects. For example, in order to create the property of *being powerful*, God must first possess the property of being powerful; to create *wisdom*, God must already be *wise*; to create the *number 1*, there must be at least *one* God. However, this implies that God’s act of creating certain abstract objects is logically prior to these abstract objects, while these abstract objects are logically prior to God’s act of creating

<sup>7</sup> Bergmann and Brower (2006, p. 359) define Platonism as ‘a thesis involving two components: (1) the view that a unified account of predication can be provided in terms of properties or exemplifiabilities, and (2) the view that exemplifiabilities are best conceived of as abstract properties or universals’.

<sup>8</sup> We may understand logical priority as follows. If an object *a* is logically prior to an object *b*, then, *a* does not depend on *b* for its existence, yet *b* depends on *a* for its existence. For example, the thinker is logically prior to the thought because the thought depends on its thinker, while the thinker’s existence does not depend on the thought.

them. This conclusion is obviously incoherent; therefore, the theist is justified in rejecting Platonism.

It is beyond the scope of this article to present a full-blown philosophical argument against Platonism. Nevertheless, in view of the philosophical difficulties presented by the thought experiment about infinite knowledge, the theological difficulty presented by uncreatable divine properties and the various seemingly plausible alternatives to Platonism (such as nominalism, fictionalism or figuralism), it seems reasonable for proponents of the KCA to deny Platonism and to adopt some form of anti-Platonism or anti-realism. An anti-realist, for example, may claim that abstract objects do not exist and that abstract objects are merely useful constructs that help us to discuss and understand reality. Nevertheless, how we talk about reality does not commit us ontologically to abstract objects; for example, the sentence ‘3 is prime’ does not commit us to the existence of the number 3. In addition, in view of the fact that abstract objects do not exist, there cannot be any numbers or propositions existing within God’s mind or knowledge, let alone an infinite number of them. Therefore, although we believe that this Platonistic response to the OGIK is ineffective, a closer investigation of this response is illuminating for it reveals that (C4) is a valid option for the proponents of the KCA.

## Second Response: God’s Knowledge is Non-propositional in Nature

A second response to the OGIK is William Lane Craig’s (Craig and Smith 1993, p. 94) suggestion that God’s knowledge has no propositional structure. If God’s knowledge is non-propositional in nature, then, it may be that God’s knowledge is similar to the way in which Aquinas envisaged it. In his *Summa Contra Gentiles*, 1.51–53, Aquinas argues that it is ‘by one object-representation – God’s substance – and by one understood conception – God’s Word – God can understand many things’. Thus, perhaps, God’s knowledge is simple with there being no diversity in God’s knowledge nor any distinction between God’s knowledge and its object. Accordingly, God has one simple intuition of all reality and, although reality is diverse and complex, God’s knowledge is not akin to the diversity which is found in creation, for God does not analyse distinct facts about reality and then organise these facts into some sort of knowledge system.

Now, omniscience is generally assumed to be, or is, at least, defined as, propositional knowledge: *S* is omniscient if for every proposition *p*, if *p* is true, then, *S* knows *p*. Although this standard definition of omniscience as knowledge of every true proposition is often said to be problematic, the majority of the alternative definitions of omniscience that try to escape the problems inherent in this standard definition retain the assumption that omniscience is propositional knowledge. But why is omniscience commonly associated with propositional knowledge? A quotation from Linda Zagzebski sheds some light on this question:

Propositional knowledge has been much more exhaustively discussed than knowledge by acquaintance for at least two reasons. For one thing, the proposition is the form in which knowledge is communicated, so propositional knowledge can be transferred from one person to another, whereas knowledge by

acquaintance cannot be, at least not in any straightforward way. A related reason is the common assumption that reality has a propositional structure or, at least, that the proposition is the principal form in which reality becomes understandable to the human mind (Zagzebski 1999, p. 92).

As Zagzebski points out, we use propositions to communicate information to one another and to understand reality. It would appear, therefore, that we, as human beings, are forced to think of God's knowledge in terms of propositional knowledge as this is how we make sense of things. However, this fact should not commit us to thinking that God's *knowledge of all reality* must have a propositional structure. As Craig puts it, 'Finite creatures break up the whole of what God knows into propositions which they know. But the fact that God's simple intuition can be broken down into a potentially infinite number of propositions does not entail that what God knows is an actually infinite number of propositions' (Craig and Smith 1993, p. 94). Furthermore, as mentioned above, there is a sound theological reason for rejecting the existence of abstract objects, such as propositions. However, if propositions do not exist, it seems plausible that God's knowledge does not necessarily have a propositional structure. Propositions, then, are merely useful constructs that promote a better understanding of both reality and God's knowledge. In such a case, we are, therefore, correct in saying that God knows *that Socrates was Greek* for God does know that. However, this propositional representation simply helps us, as finite beings, to understand God's non-propositional knowledge.

Nevertheless, it is unclear how this response solves the OGIK. Firstly, Craig's description of God's non-propositional knowledge is extremely succinct and not sufficiently comprehensive to address the critical issue that if mathematical and future truth values do not exist, then, they are not part of reality and, accordingly, not part of God's simple intuition of all reality. It, therefore, remains an inexplicable mystery as to how God knows mathematical truths and future events. On the other hand, if God's simple intuition of all reality does encompass all mathematical and future truth values, then, these truth values are part of 'all reality' which entails that an actually infinite number of abstract objects exist simultaneously in reality.

Secondly, if we assume that future truth values do not exist as part of reality but, nevertheless, God's simple intuition encompasses the entire future, then, Craig's response suggests that the series of future events may be grasped as a completed totality, for how else could God have a *complete* intuition of the future? However, the actual infinite is, by definition, a completed totality, whereas the potential infinite is not a completed totality. Consequently, it would seem that God could grasp, in one simple intuition, the entire future *only if* the series of future events that will occur is actually infinite (likewise with the series of all mathematical truths). If the series of future events is merely potentially infinite, then, God could not grasp the entire future because, regardless of how far into the future God sees, so to speak, there will always be future events beyond what God sees. Hence, even if propositions do not exist, God's simple intuition may be broken down into an actually infinite number of propositions and not merely a potentially infinite number of propositions. It, thus, appears that, although this second response has potential, further clarification is required if it is to refute the OGIK.

### Third Response: God's Knowledge Cannot Be Actually Infinite

How else may the proponents of the KCA respond to the OGIK? One promising response is to attempt to show that the OGIK is based on untenable presuppositions. Such a response is plausible for it seems that those who advance the OGIK do, in fact, make the following two questionable assumptions in their defence of (A1):

- (D1) It is possible for an omniscient being, such as God, to know an actually infinite number of things.
- (D2) There is an actually infinite number of abstract objects for God to know.

Notice how (A1) cannot be true if either (D1) or (D2) is false. In addition, if either assumption is false, God's knowledge cannot encompass an actually infinite number of things. In other words, God's knowledge cannot be actually infinite if it is impossible for any being to have such knowledge or if there are no actual infinities for God to know. So *are* (D1) and (D2) both true? Let us consider each in turn.

#### Is Actually Infinite Knowledge Possible?

Firstly, (D1) is critical for the success of the OGIK. If the very notion of actually infinite knowledge—that is, knowledge encompassing an actually infinite number of things—contains inherent absurdities, then, omniscience should not connote actually infinite knowledge and, therefore, proponents of the KCA are justified in denying the existence of the actual infinite while affirming that God is omniscient. We may formulate our argument in greater detail in two parts as follows:

- (E1) If an actual infinite cannot exist in one's mind or knowledge, then, actually infinite knowledge is impossible.
- (E2) An actual infinite cannot exist in one's mind or knowledge.
- (E3) Therefore, actually infinite knowledge is impossible.

and

- (F1) If actually infinite knowledge is impossible, then, it is no violation of omniscience that God fails to possess actually infinite knowledge.
- (F2) Actually infinite knowledge is impossible.
- (F3) Therefore, it is no violation of omniscience that God fails to possess actually infinite knowledge.

The truth of both (E1) and (F1) appears obvious (at least to us); thus, the significant premise here is (E2).<sup>9</sup> However, is (E2) tenable? We think it is. The easiest way in which to show that an actual infinite cannot exist in one's mind or knowledge is to show that certain absurdities would result if an actual infinite were instantiated in one's mind or knowledge. Consider once more the above thought experiment about infinite knowledge. Jones and Smith know the same actually infinite series of mathematical

<sup>9</sup> (F1) seems obvious because to be unable to know what cannot be known is no violation of omniscience.

equations. Now, if Smith forgets every second equation, which amounts to an actually infinite number of equations, then, he would still know the same number of equations that Jones knows—an actually infinite. However, if Smith forgets all but the first seven equations, which again amounts to an actually infinite number of equations, then, he would know only seven equations. Furthermore, if Jones becomes omniscient, then, Jones and Smith would still know exactly the same number of things, even though Smith is not omniscient. These conclusions are clearly absurd. It, therefore, follows that actually infinite knowledge is impossible.

Given (E1), (E2) and (F1), it follows that it is no violation of omniscience that God fails to possess actually infinite knowledge. This conclusion implies that omniscience does not necessarily entail actually infinite knowledge. Perhaps, then, omniscience should fundamentally be understood as *maximal knowledge*. To say that God has maximal knowledge is to say that God possesses the most perfect knowledge attribute that is attainable, namely, the ability to identify the truth value of any proposition simply by consciously thinking about the proposition (we explore this ability in greater detail below). Thus, if no being is able to possess knowledge of an actually infinite number of things, then, it is no violation of God's omniscience if He fails to possess such knowledge. Nonetheless, we have good reason for rejecting (D1).

### Is There an Actually Infinite Number of Abstract Objects?

With regard to (D2), the critic assumes that there is an actually infinite number of abstract objects, such as *all numbers* or *all future truth values*. However, as noted above, the proponents of the KCA are justified in denying the existence of abstract objects and, if abstract objects do not exist, God cannot know an infinite number of them. Furthermore, as regards the endless future, the phrase 'all future truth values' may be understood as meaning either an actually infinite series of future truth values or a potentially infinite series of future truth values. However, the proponents of the KCA argue that an actual infinite cannot exist and, thus, this phrase should be understood in terms of the latter meaning. If the arguments against the actual infinite are sound, then, the series of future events denotes an endless succession that never reaches infinity and, hence, there is no actually infinite series of future events for God to know. Therefore, before affirming (D2), the critic must both defend Platonism and show that the arguments against the actual infinite are unsound.

One may retort that this response fails to show how God's *simultaneous* knowledge is potentially infinite and not actually infinite. Since God is timeless without creation, God's knowledge is simultaneous in that God knows all things at once. However, if God simultaneously knows each member in an endless series, such as the series of future events, then, this series is, in fact, an actually infinite series. In other words, if God knows, or if God's knowledge extends across, each and every member of an endless (or seemingly potentially infinite) series of things all at once, then, this series is a completed totality that is, therefore, actually infinite.

Nevertheless, why would one think that the objects of God's knowledge are present all at once, causing an actual infinite to somehow exist within God's mind? For the sake of argument, let us ignore the slight problems inherent in the standard definition of omniscience (such as the problem of indexicals) and rephrase the standard definition as follows:

- (G) For any proposition  $p$ , if God consciously thinks about  $p$ , God will either accept  $p$  as true if and only if  $p$  is true, or accept  $p$  as false if and only if  $p$  is false.<sup>10</sup>

According to (G), to state that God knows some true proposition  $p$  is to say that, if God thinks about  $p$ , God will accept  $p$  as true. This is similar to the way in which we, as human beings, operate. For example, the average person knows that  $7+5=12$  because he/she will accept this equation as true if he/she consciously thinks about it. Likewise, God knows that  $7+5=12$  because, if God consciously thinks about this equation, God will accept it as true. However, unlike human beings, God does not conclude that a proposition is true (or false) based on *discursive reasoning* (i.e. the activity of forming conclusions by inference from premises). Rather, when considering a proposition, God immediately knows whether or not it is true.

However, if we deny the existence of abstract objects, how can God think about abstract objects? Consider God's foreknowledge. If God is consciously thinking about the proposition  $p$ , where  $p$  is expressed by, for example, the sentence, 'Jones will eat eggs for breakfast tomorrow morning', then, does this not imply that  $p$  is a possible, but unactual, object? In other words, does God's foreknowledge—taking into account the fact that one may talk about and refer to future events—not imply that propositions (such as  $p$ ) expressing future events exist but are not yet actualised? We do not think so. We are suggesting that abstract objects are similar to fictional characters in that a person may think and talk about abstract objects despite the fact that they do not exist. For example, one may talk about and refer to Sir Arthur Conan Doyle's fictional detective Sherlock Holmes even though the term 'Sherlock Holmes' does not denote any actually existing object, but is merely an idea in the mind. Similarly, one may talk and think about  $p$  without asserting that  $p$  exists and is as real as dogs and trees, for  $p$  does not denote an unactualised future event that exists. Rather,  $p$  is simply an imaginary, fictional proposition that is no more than a thought in one's mind. Hence, if God is thinking about  $p$ , then, God's *thought about p* exists, yet  $p$  itself does not exist. Accordingly, God is able to construct mental images denoting such fictional propositions, mathematical equations, numbers or future events, without requiring that these objects exist independently of God's conscious thought. In that case, an actual infinite may be present in the mind of God only if God consciously thinks about each and every member of an endless series of propositions all at once.

Now, if we affirm both that abstract objects do not exist and that actually infinite knowledge is impossible, then, it is plausible that, at any moment (or in some timeless state), God is consciously entertaining a finite number of ideas only. Furthermore, if God is temporal and exists in time, then, God's cognitive state may change endlessly and so God may have a potentially infinite number of ideas. Consequently, the endless series of (possible) objects of God's knowledge are not present *all at once*. Rather, according to (G), God's knowledge is potentially infinite in the sense that God is able to endlessly construct mental ideas of fictional propositions without necessitating an actual infinite. This suggestion has the benefit of not limiting God's knowledge to a static and completed collection of various knowledge items, but rather exalts the extent

<sup>10</sup> A more technical definition is as follows: For any person  $S$ ,  $S$  is omniscient iff for any proposition  $p$ , (i)  $S$  can comprehend  $p$ , and (ii) if  $S$  consciously thinks about  $p$ ,  $S$  will either accept  $p$  as true iff  $p$  is true, or accept  $p$  as false iff  $p$  is false.

of God's knowledge as dynamic, endless and limitless. Just as the potentially infinite series of natural numbers is boundless and endless, so, too, is God's knowledge.

Admittedly, our above (tentative) suggestion is not without its difficulties as this third response to the OGIK raises at least three crucial issues. Firstly, it is difficult to see why God, in His timeless state, is consciously entertaining those ideas that He is currently entertaining. Why is God not mentally entertaining other ideas? For example, why would God be eternally thinking about, say, the truth of  $7+5=12$  but not the truth of  $13-11=2$ ? Or why would God, prior to His creative decree, be thinking about only *some* of the potentially infinite possible worlds that He could create? Indeed, how did God then decide which one of the infinite possible worlds to create?

In response, we may say that it is part of God's divine nature to entertain only those ideas that are best for Him to entertain. Furthermore, God does not judge the truth value of a proposition according to discursive reasoning, that is, by inference from premises. Rather, God's divine intuition means that He immediately knows the truth value of a proposition simply by considering that proposition. Thus, God does not *decide* between various alternatives but, instead, He is instantly aware that the best alternative is, in fact, the best, whether or not He has considered all the alternatives. Thus, for example, God does not need to compare every possible world in order to decide which world to actualise, nor does God need to consider the entire future of a possible world *before* actualising it. Instead, God is eternally aware that it would be good to actualise this particular world. In other words, through His divine intuition, God is aware that it is good for Him to bring this universe into existence, to create a certain finite number of human beings, to place each human in a specific set of circumstances, etc. Of course, if God had considered all possible worlds in order to decide which world to actualise, He would have arrived at the same conclusion, namely, to actualise this world. Nevertheless, the salient point is that, at any moment, God is aware of which action to perform without having to consider each of the actions He could perform. Similarly, without considering all the ideas He could entertain, God is aware of the fact that He does not need to entertain ideas other than those ideas He is currently entertaining.

Secondly, one may object that this third response to the OGIK renders God extremely ignorant, and ignorance is incompatible with omniscience.<sup>11</sup> This objection is, however, ambiguous. In what sense is God supposed to be 'ignorant'? Is God ignorant either (1) because through His conscious thought, God can identify the truth value of some propositions only but not others, (2) because God lacks information when making decisions or (3) because God is not consciously entertaining every idea that He could be entertaining? Generally, we use ignorance in the first and second sense when we claim that someone is ignorant. For example, Jones may be said to be ignorant of the field of physics if he is not able to answer any physics-related question correctly. Similarly, Jones may be said to be ignorant about the leading contemporary physicists if he lacks the information to decide which scholars are prominent in the field of physics. However, God is not, according to (G), ignorant in either the first or second sense because, firstly, God is able to identify the truth value of any proposition simply by considering it, and, secondly, God does not make decisions through discursive reasoning.

<sup>11</sup> This objection was brought to our attention by an anonymous referee.

It may, thus, be that the objection here is that God is ignorant in the sense that He is not consciously entertaining every idea that He could be entertaining. In other words, at any moment, there is an endless series of propositions of which God is consciously unaware and *this* type of ignorance is incompatible with omniscience. Setting aside the assumption that propositions exist independently of God's conscious thought, this objection is misguided because our definition of omniscience allows an omniscient being to entertain some ideas and not others. According to (G), to say that God *knows* some true proposition *p* does not mean that God is currently entertaining the idea of *p*, nor does it mean that God has thought about *p* before<sup>12</sup> but, rather, that God will accept *p* as true simply by considering *p*. In this sense of omniscience, God knows *everything* and this, in turn, is not incompatible with God's act of entertaining only some of the ideas He could be entertaining. Moreover, ignorance in this third sense is not necessarily an imperfection. A person who has the ability to immediately identify the truth value of any proposition appears to be *greater* than a person who lacks this ability and relies on discursive reasoning. Similarly, a person who is entertaining only those ideas that are the best to entertain appears to be greater than a person who is not able to control his/her conscious thought and is constantly engulfed in an infinite number of unnecessary thoughts. Therefore, it appears to be a perfection, rather than an imperfection, for God to be aware that it is completely unnecessary for Him to simultaneously think about all possible propositions (including, for example, every natural number) and, thus, refrain from thinking about each and every proposition He could think about.

Thirdly, this third response suggests an unusual view of God's relationship to time. On the one hand, God must be timeless without creation because, if God exists in a temporal state only and if past time is finite, then, both God and time must have had a beginning and this is an unacceptable conclusion for traditional theists. On the other hand, God must be temporal subsequent to creation because, if God is timeless and does not exist in time, then, God's cognitive state cannot change and, therefore, God's knowledge is static and finite, not dynamic and potentially infinite. Hence, this third response requires that one affirms that God is atemporal without creation and temporal subsequent to creation.<sup>13</sup> It is beyond the scope of this article to evaluate this view of God's eternity. Nevertheless, if the third response to the OGIK is to succeed, a view of God's eternity similar to the above view should be defended.

It appears, therefore, that a promising response to the OGIK should attempt to show that (1) abstract objects do not exist, that (2) actually infinite knowledge is impossible, that (3) a definition of omniscience similar to (G) is correct and that (4) God is atemporal without creation and yet temporal subsequent to creation. If each of these four steps is achieved, then, this would, in turn, show that both (D1) and (D2) are false, or, at the least, extremely questionable, and that omniscience does not imply the existence of an actual infinite. We believe that steps (1), (2) and (3) are achievable.

<sup>12</sup> We see no reason to think that, for any true proposition *p*, God knows *p* only once God has thought about *p*. If God's divine intuition enables Him to identify the truth value of *p* immediately, then, whether or not God has thought about *p* before makes no difference to God's knowing *p*, since it is God's divine nature, not His previous considerations of *p*, that enable Him to immediately identify the truth value of *p*.

<sup>13</sup> There seems to be a contradiction here about the temporality of God although there have been significant attempts to overcome this, especially from a trinitarian perspective. Verhoef argues, for example, that 'Trinitarian theology... has the ability to accommodate the tension between God and time/eternity in a relational way' (2011, p. 105).



However, it remains an open question as whether or not the proponents of the KCA could succeed in the fourth step.

## Conclusion

As we have seen, the IGO comes in at least two forms. According to the first, the arguments against the existence of the actual infinite employed by the KCA cause difficulties as regards God's nature. If an actual infinite cannot exist, then, God cannot be infinite. On the other hand, if God is infinite, then, an actual infinite can exist, and the KCA becomes problematic. However, we have argued that this first form of the IGO equivocates on the term 'infinite'. In view of the fact that the KCA offers arguments against the notion of a *quantitative* infinity, while God's nature is generally understood in terms of a *qualitative* infinity, God's infinity is not the same thing as the mathematical or quantitative infinity.

According to the second form of the IGO, omniscience entails the existence of an actual infinite because an omniscient being would know an actually infinite number of propositions, such as the propositions expressing all future events or all mathematical truths. Thus, according to this objection, either God is omniscient and an actual infinite exists, or God is not omniscient and an actual infinite cannot exist. A plausible solution to this dilemma is, essentially, to (1) deny the existence of abstract objects and to (2) affirm that (a) it is impossible for an omniscient being to know an actually infinite number of things and (b) there is not an actually infinite number of abstract objects for God to know.

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