

J.M. Bocheński's Logical Analysis of Kant's Criticism of the Cosmological Argument

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Introduction

Since its publication, Immanuel Kant's *Critique of Pure Reason* has continuously been subject to numerous analyses, conducted both by those who admire the genius of the philosopher from Königsberg and by those who disagree with his views. The methods used in these studies vary considerably and encompass the tools of logic. This type of analysis was undertaken by Father Józef Maria Bocheński (1902–1995), who called himself “a converted Kantist,” but who was also an expert on logic.¹

The beginning of the 20th century was a time of a dynamic development of mathematics and logic. The new approach to logic was named logistics in order to distinguish it from the traditional approach. It was applied in the analysis of philosophical views. Such was the goal of the creators of the Lvov-Warsaw School. Those ideas were also employed in the field of Christian philosophy by the members of the so-called Cracow Circle.² Its aim was to apply the tools of contemporary logic in the fields of Christian philosophy and theology. The Circle

¹ J.M. Bocheński, *Między logiką a wiarą. Z Józefem M. Bocheńskim rozmawia Jan Parys*, Warszawa 1998, p. 27.

² The term “Cracow Circle” was introduced into scientific discourse rather late. It was first used by Bocheński only in his article of 1987. Cf. J.M. Bocheński, *Koło Krakowskie*, “Kwartalnik Filozoficzny” 1995, Vol. 23, No. 1, pp. 23–31; J.M. Bocheński, *The Cracow Circle*, in: *The Vienna Circle and the Lvov-Warsaw School*, ed. K. Szaniawski, Dordrecht 1988, pp. 9–18. In all his earlier

formed at the beginning of 1934. It was created by Bocheński together with Father Jan Salamucha (1903–1944), Jan F. Drewnowski (1886–1978), and Bolesław Sobociński (1906–1980). The specific goals of the programme established by the Circle, as stated by Bocheński, can be expressed by means of the following postulates: “(1) to make philosophers and theologians use the appropriate scientific language; (2) to make them use modern formal logic, as well as semiotic and methodological concepts instead of scholastic terminology; (3) to make them use formalism.”³ An important event promoting these ideas was a special session organized during the Third Polish Philosophical Congress in Cracow in 1936.⁴ Members of the Circle wanted to introduce the style of philosophizing typical of the Lvov-Warsaw School into Catholic thought. Their works from that period concerned the *ex motu* proofs from Thomas Aquinas’s *Summa contra gentiles*, his argument for the immortality of the soul, the scholastic concept of analogy, and the history of medieval logic. It is worth noting that the creation of the Circle was influenced not only by the development of logic and the assimilation of the postulates of the Lvov-Warsaw School, but also by the spirit of that era (optimism and bravery in realizing great projects in various areas of life) and the contemporary situation of theology (the Catholic Church versus modernism).⁵ Despite the fact that the Circle’s activity ceased with the outbreak of the Second World War, its aims seem to be valid also today.⁶

At the end of his life, Bocheński returned to pursuing those goals and the results of his work were presented in the book *Gottes Dasein und Wesen. Logische*

publications, as well as in the works of the other members of the Circle and of their mentor, Father Professor Konstanty Michalski, this term is never used.

³ J.M. Bocheński, *Wspomnienia*, Kraków 1994, pp. 123–124. Unless stated otherwise, all translations are my own.

⁴ Presentations and discussions from this session were published in *Mysł katolicka wobec logiki współczesnej*, ed. J. Salamucha, “Studia Gnesnensia” 1937, Vol. 15.

⁵ Cf. M. Tkaczyk, *Geneza Koła Krakowskiego*, “Studia Philosophiae Christianae” 2019, Vol. 55, No. 2, pp. 9–39.

⁶ More information concerning the Cracow Circle and its programme can be found in the following publications: J.M. Bocheński, *O metodzie teologii w świetle logiki współczesnej*, “Collectanea Theologica” 1949, Vol. 21, pp. 171–192; Z. Wolak, *Neotomizm a szkoła lwowska-warszawska*, Kraków 1993; Z. Wolak, *Zarys historii Koła Krakowskiego*, in: *Logika i metafizologia*, ed. Z. Wolak, Kraków 1995, pp. 79–84; J. Woleński, *Ontologia w Kole Krakowskim*, in: *Logika i metafizologia*, ed. Z. Wolak, Kraków 1995, pp. 85–98; R. Murawski, *Cracow Circle and Its Philosophy of Logic and Mathematics*, “Axiomathes” 2015, Vol. 25, pp. 359–376; M. Tkaczyk, *Cracow Circle: Theology in the Lvov-Warsaw School*, in: *The Significance of the Lvov-Warsaw School in the European Culture*, eds. A. Brożek, F. Stadler, J. Woleński, Wien 2017, pp. 173–188.

*Studien zur Summa Theologiae I, qq. 2–11.*⁷ Unfortunately, the book had not been authorized before it was published, and the corrections added by its editors were not always marked. For that reason, the manuscripts of this study are of great significance when it comes to the analysis of its content. The structure of *Gottes Dasein und Wesen* is based on the analysis of questions 2–11 from Aquinas's *Summa theologiae*. The analysis finishes with a chapter concerning the possibility of creating an axiomatic theory of the Absolute on the basis of the results of the analysis. The research is placed in a broader context of Bocheński's programme of studies on God. In point 5, Bocheński writes that "a critical analysis of Kantian and neopositivist objections to the possibility of knowing God and to the proofs of his existence is an urgent task."⁸ In order to pursue this goal, in his *Gottes Dasein und Wesen*, Bocheński undertakes that kind of research. It is included in Chapter 8, labelled as an appendix. His studies focus on the criticism of the cosmological argument for God's existence, put forward by Kant in his *Critique of Pure Reason*.⁹ The necessity of conducting this kind of research was one of the subjects of Bocheński's lecture delivered in 1990 in Warsaw, during the ceremony of awarding him the *doctor honoris causa* degree at the Academy of Catholic Theology.¹⁰ The present paper aims to critically present Bocheński's less-known analyses concerning Aquinas's proofs of God's existence against the background of those more popular ones. The source text used by the author of this study is available in two versions: in book form (B) and in its Polish manuscript (M).¹¹

⁷ J.M. Bocheński, *Gottes Dasein und Wesen. Logische Studien zur Summa Theologiae I, qq. 2–11*, München 2003. The book contains amended analyses which were originally published in the article *Die fünf Wege*, "Freiburger Zeitschrift für Philosophie und Theologiae" 1989, Vol. 36, No. 3, pp. 235–265 (in Polish: *Pięć dróg*, trans. J. Miziński, in: J.M. Bocheński, *Logika i filozofia. Wybór pism*, Warszawa 1993, pp. 471–473). Additionally, there exist two manuscripts of the book: in German and in Polish, from 1989 and 1993, respectively.

⁸ In the Polish manuscript, Bocheński writes about objections to the proofs of God's existence, while in the German manuscript and his book he writes about doubts concerning knowing God.

⁹ I. Kant, *Critique of Pure Reason*, trans. and eds. P. Guyer, A.W. Wood, Cambridge 1999, pp. 569–575. Arguments for the existence of God were analyzed by Kant also in his work titled *The Only Possible Argument in Support of a Demonstration of the Existence of God* (1763). In his *Critique of Pure Reason*, we can find references to those earlier investigations from the period, which Kant later called "dogmatic slumber"

¹⁰ Cf. J.M. Bocheński, *O współczesnym stanie i zadaniach teologii filozoficznej*, "Studia Philosophiae Christianae" 1991, Vol. 2, pp. 103–107.

¹¹ The table of contents of the available German manuscript refers to a fragment concerning Kant, but, unfortunately, it is not included in the text. A comparison of the previous parts of the Polish and German manuscripts shows that there are no significant differences between them when it

The Stages of Analyzing Kant's Text

The way Bocheński conducted his analysis of Kant's text resembles the way he arranged his logical commentary on the *Summa theologiae*. First, he identifies the essential fragment of the discourse of a given work, divides it into separate sentences, numbers them and then formalizes them. Next, he analyzes the specific arguments in order to check whether there are any fallacies in them. The focus is on the truth of the applied premises (material fallacy) or their acceptability on the grounds of a given philosophical system and the logical consequence of the premises and the conclusion (formal fallacy).

Bocheński focuses only on the criticism of the cosmological argument as he believes that the only valid way among the Thomist ways is the one that concerns the efficient cause, that is, the second way. It represents the type of argument referred to as cosmological. Bocheński chooses not to discuss Kant's criticism of the ontological argument because Aquinas rejects that kind of argument too.

The fragments of interest are divided by Bocheński into shorter sections and then analyzed. These include:

- the report on the cosmological argument;
- the reduction of the cosmological argument to the ontological argument;
- the four “simplifications” included in the cosmological argument.

The Applied Abbreviations and Schemas of Reasoning

The formalization is conducted with the help of the following abbreviations:

$BS(x, y) =: x$ ist durch den Begriff von y bestimmt (x is described by concept y),¹²

$CA(x, y) =: y$ ist die Ursache von x (y is the cause of x),

$E!(x) =: x$ existiert (x exists), [in (M) we have: $E(x)$]

$En!(x) =: x$ existiert notwendigerweise (x exists out of necessity),
[in (M) we have: $En(x)$]

comes to the content of the analysis and the formalization of the studied text. Thus, it can be assumed that in this situation there will be no differences either.

¹² In brackets I provide my translations.

- $Eb!(x)$ =: kann nur auf eine einzige Art bestimmt werden (*x can be described only in one way*), [in (M) we have: $Eb(x)$]
 $Ber(x)$ =: *x ist der Begriff des entis realissimi* (*x is an entis realissimi concept*), [in (M) we have: $Er(x)$]
 $H(x)$ =: *x ist das höchste Wesen* (*x is the highest being*), [in (M) we have: $D(x)$]
 i =: *ich* (*I*),
 $N(x)$ =: *x ist ein notwendiges Wesen* (*x is a necessary being*),
 $P(x)$ =: *x ist kontingent* (*x is contingent*), [in (M) we have: *x ist zufällig* (*x is contingent*)]
 $Rm(x)$ =: *x ist ein allerrealstes Wesen (ens realissimum)* (*x is the most real being (ens realissimum)*),¹³
 $G(x)$ =: *x ist gültig* (*x is valid*),¹⁴
 $W(x)$ =: *x ist wahr* (*x is true*),
 k =: *kosmologischen Gottesbeweis* (*the cosmological argument*),
 o =: *ontologischen Gottesbeweis* (*the ontological argument*).

Apart from the rule of substitution,¹⁵ Bocheński applies the following rules of reasoning:¹⁶

$\frac{g \quad p \rightarrow q \quad p}{q}$	$\frac{j \quad \forall_x [\Phi(x) \rightarrow \exists_y \Psi(x, y)] \quad \exists_x \Phi(x)}{\exists_x \exists_y \Psi(x, y)}$	$\frac{m \quad \forall_x [\Phi(x) \rightarrow \Psi(x)] \quad \exists_x \Phi(x)}{\exists_x \Psi(x)}$
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¹³ In the table of abbreviations on p. 167, which, apart from this exception, is identical with what is included at the beginning of the analysis, we read $Rm(x)$ =: *x ist ein ens realissimum*.

¹⁴ The last four abbreviations are not given by Bocheński in the list of abbreviations, but provided later, in his formalization of Kant's text.

¹⁵ Bocheński uses the rule of substitution not only for individual variables, but also within predicates, which shows that he uses second-order logic.

¹⁶ Rules α and β were provided by Bocheński only in the chapter concerning Kant's text, and not with the other rules in Chapter 2 of his book, which constitutes an introduction to the analyses presented in the whole work. That list lacks any references to the discussed fragment concerning Kant, which may mean that the text was written later than the one concerning Aquinas's *Summa theologiae*.

$\begin{array}{c} \text{n} \quad p \rightarrow q \\ \quad q \rightarrow r \\ \hline p \rightarrow r \end{array}$	$\begin{array}{c} \text{o} \quad p \rightarrow q \\ \quad \sim q \\ \hline \sim p \end{array}$	$\begin{array}{c} \alpha \quad \Phi(a) \\ \hline \exists_x \Phi(x) \end{array}$	$\begin{array}{c} \beta \quad \exists_x [\Phi(x) \wedge \Psi(x)] \\ \hline \exists_x \Psi(x) \end{array}$
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The procedure of identification of the applied rules of reasoning presented above is used by Bocheński to reconstruct the argument structure of the analyzed text. Obviously, when we are familiar with those rules, we can identify the type of logical calculus (or its fragment) used. However, Bocheński does not elaborate on this issue here. We can find remarks of that type, concerning argumentation, in his analyses of the *Summa theologiae*.

The Report on the Cosmological Argument

The text we are interested in is divided by Bocheński into separate sentences and numbered as shown below:¹⁷

No.	German version	English translation
1.1	Wenn etwas existiert, so muß auch ein schlechterdings nothwendiges Wesen existieren.	If something exists, then an absolutely necessary being also has to exist.
1.2	Nun existiere zum mindesten ich selbst:	Now I myself, at least, exist;
1.3	also existiert ein absolut nothwendiges Wesen.	therefore, an absolutely necessary being exists.
1.4	Diese Schlußfolgerung beruht auf dem vermeintlich transcendentalen Natur gesetz der Causalität: daß alles Zufällige seine Ursache habe	It rests on the allegedly transcendental natural law of causality that everything contingent must have a cause,
1.5	die, wenn sie Wiederum zufällig ist, eben sowohl eine Ursache haben muß,	which, if it in turn is contingent, must likewise have its cause,
1.6	bis die Reihe der einander untergeordneten Ursachen sich bei einer schlechthin nothwendigen Ursache endigen muß,	until the series of causes subordinated one to another has to end with an absolutely necessary cause,
1.7	ohne welche sie keine Vollständigkeit haben würde.	without which it would have no completeness.

¹⁷ The German text is quoted from Bocheński's book (the version from the manuscript is slightly different). The English text is quoted from: I. Kant, *Critique of Pure Reason*, op. cit., p. 570.

In order to improve the disquisition presented above, Bocheński formulates the following premise, which is accepted by Kant tacitly:

No.	German version	English translation
1.21	Wenn ich existiere, dann existiert etwas.	I exist, then something exists.

Reconstruction:

Premises:

1. (M) $\forall_x \{ \exists_y CA(x, y) \rightarrow \exists_z \forall_t [CA(z, t) \wedge N(t)] \}$

For each x, if for a certain y, y is the cause of x, then for a certain z, for every t, t is the cause of z, and t is a necessary being.

(B) $\forall_x [\exists_y CA(x, y) \rightarrow \exists_z N(z)]$

For every x, if for a certain y, y is the cause of x, then for a certain z, z is a necessary being.

2. $\forall_x [P(x) \rightarrow \exists_y CA(x, y)]$

For every x, if x is contingent, then for a certain y, y is the cause of x.

3. (M) $E(i) \wedge P(i)$

(B) $E!(i) \wedge P(i)$

I exist and I am contingent.

Proof:

4. (M) $\forall_x \{ P(x) \rightarrow \exists_z \forall_t [CA(z, t) \wedge N(t)] \}$

1, 2, Barbara

(B) $\forall_x [P(x) \rightarrow \exists_z N(z)]$

1, 2, Barbara

5. (M) $\exists_x [E(x) \wedge P(x)]$

3, α

(B) $\exists_x [E!(x) \wedge P(x)]$

3, α

6. $\exists_x P(x)$

5, β

7. (M) $\exists z \forall t [CA(z, t) \wedge N(t)]$ 4, 6, j
 (B) $\exists z N(z)$ 4, 6, m

The formalism presented above is considered correct by Bocheński. Indeed, the rules of reasoning are used here correctly. In line 7 from version (B) a different rule is used from the one provided in the formalization. However, the problem lies in the formulation of premise 1. That problem is discussed by the editors of (B) in footnote 51. They modify that premise since they believe that it was distorted during the editorial procedure, and that probably its original form was the following: $\forall x \{P(x) \rightarrow \exists z \forall t [\sim CA(z, t) \wedge N(z)]\}$ or $\forall x \{P(x) \rightarrow \exists z \{N(z) \wedge \forall t [P(t) \rightarrow CA(t, z)]\}$. The premise taken from (B) results both from the first and the second supposed form on the grounds of classical logic. Thus, this fragment of Bocheński's formalization requires corrections and improvements.

Reducing the Cosmological Argument to the Ontological Argument

Bocheński formalizes the following text:¹⁸

No.	German version	English translation
2.1	Das nothwendige Wesen kann nur auf eine einzige Art, d.i. in Ansehung aller möglichen entgegengesetzten Prädicate nur durch eines derselben, bestimmt werden,	The necessary being can be determined only in one single way, i.e., in regard to all possible predicates, it can be determined by only one of them,
2.2	folglich muß es durch seinen Begriff durchgängig bestimmt werden.	so consequently it must be thoroughly determined through its concept.
2.3	Nun ist nur ein einziger Begriff von einem Dinge möglich, der dasselbe <i>a priori</i> durchgängig bestimmt, nämlich der des <i>entis realissimi</i> .	Now only one single concept of a thing is possible that thoroughly determines the thing <i>a priori</i> , namely that of an <i>ens realissimum</i> .
2.4	Also ist der Begriff des allerrealsten Wesens der einzige, dadurch ein nothwendiges Wesen gedacht werden kann,	Thus the concept of the most real being is the only single one through which a necessary being can be thought,
2.5	d.h. es existiert ein höchstes Wesen nothwendiger Weise.	i.e., there necessarily exists a highest being.

¹⁸ The English text is quoted from: I. Kant, *Critique of Pure Reason*, op. cit., p. 570.

In Bocheński's views, here we are dealing with a particularly complicated and flawed text. To him, there are too many premises accepted tacitly, which clashes with the greatness and rank of such a philosopher as Kant. The premises are as follows:

No.	German version	English translation
2.11	Alles, was nur auf eine einzige Art bestimmt werden kann, muß durch seinen Begriff durchgängig bestimmt werden.	All that can be described in only one way must be completely described by its own concept.
2.21	Das notwendige Wesen muß durchgängig durch seinen Begriff bestimmt werden.	The necessary being must be completely described by its own concept.
2.31	Jeder Begriff, der ein Ding durchgängig <i>a priori</i> bestimmt, ist jener des <i>entis realissimi</i> .	Every concept that describes a thing <i>a priori</i> is that of an <i>ens realissimum</i> .
2.32	Ein Ding muß durch seinen Begriff genau dann durchgängig bestimmt werden, wenn es nur dadurch gedacht werden kann.	A thing must be thus precisely and completely described by its own concept if it can be thought of only in this way.
2.41	Alles, was so geartet ist, daß der Begriff des allrealsten Wesens der einzige ist, wodurch es gedacht werden kann, existiert notwendig.	Everything that is of such a nature that the concept of the most real being is the only one through which it can be thought necessarily exists.
2.42	Jedes notwendige Wesen ist ein allerhöchstes Wesen.	Every necessary being is a highest being.

Reconstruction:

Premises:

10. $\forall_x \{Eb(x) \rightarrow \forall_y \forall_z [BS(x, y) \wedge BS(x, z) \rightarrow y = z]\}$
For every x, if x is described in only one way, then for every y and z, if x is described by concepts y and z, then y and z are identical.
11. $\forall_x [N(x) \rightarrow Eb(x)]$
Every necessary being is described in only one way.

12. (M) $\forall_x \forall_y \forall_z \{ [BS(x, y) \wedge BS(x, z) \rightarrow y = z] \rightarrow [BS(x, y) \rightarrow Er(y)] \}$

For every x , y , and z , if x is described by concepts y and z , then y and z are identical, then if x is described by concept y , then y is an entis realissimi concept.

(B) $\forall_x \forall_y \{ \forall_z [BS(x, y) \wedge BS(x, z) \rightarrow y = z] \rightarrow [BS(x, y) \rightarrow Ber(y)] \}$

For every x and y , if for every z , if x is described by concepts y and z , then y and z are identical, then if x is described by concept y , then y is an entis realissimi concept.

13. (M) $\forall_x \forall_y \{ [BS(x, y) \rightarrow Er(y)] \rightarrow En(x) \}$

For every x and y , if x is described by concept y , then y is an entis realissimi concept, then x exists out of necessity.

(B) $\forall_x \{ \forall_y [BS(x, y) \rightarrow Ber(y)] \rightarrow En!(x) \}$

For every x , if for every y , if x is described by concept y , then y is an entis realissimi concept, then x exists out of necessity.

14. $\forall_x [H(x) \rightarrow N(x)]$

The highest being is a necessary being.

Proof:

15. $\forall_x \{ N(x) \rightarrow \forall_y \forall_z [BS(x, y) \wedge BS(x, z) \rightarrow y = z] \}$ 10, 11, Barbara

16. (M) $\forall_x \forall_y \{ [N(x) \rightarrow BS(x, y)] \rightarrow Er(y) \}$ 12, 15, Barbara

(B) $\forall_x \forall_y \{ N(x) \rightarrow [BS(x, y) \rightarrow Ber(y)] \}$ 12, 15, Barbara

17. (M) $\forall_x [N(x) \rightarrow En(x)]$ 13, 16, Barbara

(B) $\forall_x [N(x) \rightarrow En!(x)]$ 13, 16, Barbara

18. (M) $\forall_x [H(x) \rightarrow En(x)]$ 14, 17, Barbara

(B) $\forall_x [H(x) \rightarrow En!(x)]$ 14, 17, Barbara

The reconstruction presented above is correct in terms of the rules of logical consequence. However, the use of certain premises is disputable. In Bocheński's

views, sentences 10 and 12 from the reconstruction (2.1 and 2.3 in the text) raise serious doubts. Premise 11 is not obvious either. The editors of (B) introduced amendments in lines 12 and 13. Their goal was not only to modify the controversial premises, but to also modify their formalizations.¹⁹ That reasoning contains premises which are not obvious even on the grounds of Kant's philosophy. Apart from that, the editors of (B) notice the consistency between premises 10–14 and the respective fragments of Kant's text: 2.11, 2.1, 2.3, 2.4, 2.42, and the fact that probably Kant's argumentation ends with sentence 2.4, while 2.5 is only an additional remark. In such a case, the reconstruction presented by Bocheński would be only one of a few possible reconstructions.

The subject of further criticism conducted by Kant is the following sentence, which is absent from his report on the criticized argument:

No.	German version	English translation
2.9	Jedes schlechthin nothwendige Wesen ist zugleich das allerrealste Wesen.	The absolutely necessary being is also the most real being.

As Bocheński reasonably suggests, this is probably sentence 17 from the presented reconstruction. Kant states that he reverses the sentence and formulates the following disquisition:²⁰

No.	German version	English translation
2.10	Einige allerrealste Wesen sind zugleich schlechthin nothwendige Wesen.	Some most real beings are at the same time absolutely necessary beings.
2.11	Nun ist aber ein <i>ens realissimum</i> von einem anderen in keinem Stücke unterschieden,	But now one <i>ens realissimum</i> does not differ the least bit from another,
2.12	und was also von <i>einigen</i> unter diesem Begriffe enthaltenen gilt, das gilt auch von allen.	and thus what holds of some beings contained under this concept holds also of all.
2.13	Mithin [...] ein jedes allerrealste Wesen ist ein nothwendiges Wesen.	Hence [...] every most real being is a necessary being.

¹⁹ Note that, for instance, expression 12 from version (M) is equivalent to the following expression in the first-order predicate calculus with identity: $\forall x \forall y [BS(x, y) \rightarrow Er(y)]$.

²⁰ The English text is quoted from: I. Kant, *Critique of Pure Reason*, op. cit., p. 572.

2.14	Weil nun dieser Satz bloß aus seinen Begriffen <i>a priori</i> bestimmt ist, so muß der bloße Begriff des realsten Wesens auch die absolute Nothwendigkeit desselben bei sich führen;	Now, because this proposition is determined merely from its concepts <i>a priori</i> , the mere concept of the most real being must also carry with it the absolute necessity of this being
2.15	welches eben der ontologische Beweis behauptete	– which is just what the ontological proof asserts
2.16	und der kosmologische nicht anerkennen wollte,	and the cosmological proof does not want to recognize,
2.17	gleichwohl aber seinen Schlüssen, obzwar versteckter Weise, unterlegte.	despite the fact that it underlies its inferences, though in a covert way.

Here we are dealing with two types of reasoning, which Bocheński formalizes in the following way:

Reconstruction:

Premises:

$$19. (M) \exists_{\bar{x}} \exists_{\bar{\phi}} \{ [Rm(x) \wedge \phi(x)] \rightarrow \forall [Rm(y) \rightarrow \phi(y)] \}^{21}$$

For a certain property and a certain x, if x has that property and is the most real being, then every most real being has that property.

$$(B) \forall_{\bar{\phi}} \{ \exists_{\bar{x}} [Rm(x) \wedge \Phi(x)] \rightarrow \forall [Rm(y) \rightarrow \Phi(y)] \}$$

For every property, if a certain most real being has that property, then every most real being already has that property.

$$20. (M) \exists_{\bar{x}} [Rm(x) \wedge En(x)]^{22}$$

$$(B) \exists_{\bar{x}} [Rm(x) \wedge En!(x)]$$

A certain most real being exists out of necessity.

²¹ In premise 19 (in both versions), Bocheński uses predicate variables. However, that fact is not mentioned directly here.

²² In the chapter of *Gottes Dasein und Wesen* we are interested in, in version (M), Bocheński does not explain the symbol “En”. For that reason, we understand it in the same way as symbol “En!” in (B).

Proof:

21. (M) $\forall_x \{ [Rm(x) \wedge En(x)] \rightarrow \forall_y [Rm(y) \rightarrow En(y)] \}$ ²³ 19, *En/φ*
 (B) $\exists_x \{ [Rm(x) \wedge En!(x)] \rightarrow \forall_y [Rm(y) \rightarrow En!(y)] \}$ 19, *En!/Φ*
22. (M) $\forall_y [Rm(y) \rightarrow En(y)]$ 21, *g*²⁴
 (B) $\forall_y [Rm(y) \rightarrow En!(y)]$ 20, 21, *g*

The editors of (B) emphasize the consistency between premises 19 and 20, and sentences 2.12 and 2.10 from Kant's text. Premise 19 in version (B) is much stronger than the one from version (M), and it seems that it expresses Kant's thought more adequately. Line 21 in version (M) is equivalent to $\exists_x [Rm(x) \wedge En(x)] \rightarrow \forall_y [Rm(y) \rightarrow En(y)]$ in the first-order predicate calculus with identity, while in version (B) it is equivalent to $\forall_x [Rm(x) \wedge En(x)] \rightarrow \forall_y [Rm(y) \rightarrow En(y)]$. For that reason, in the way shown in the formalization we can obtain line 21 in version (M), but not in version (B). Thus, line 21 should be left in the form it has been given in (M).

Premises:

23. (M) $W(9) \rightarrow W(18)$ ²⁵ Proof of sentence 18
 (B) $W(2.9) \rightarrow W(18)$ Proof of sentence 18
- If sentence 2.9 is true, then also sentence 18 is true.*
24. (M) $G(k) \rightarrow W(9)$ Def.
 (B) $G(k) \rightarrow W(2.9)$ Proof of sentence 18

If the cosmological argument is valid, then sentence 2.9 is true.

²³ In the original text it reads $\forall_x \{ [Rm(x) \wedge En(x)] \rightarrow \forall_y [Rm(y) \rightarrow En(y)] \}$, which we consider to be an obvious typographic error.

²⁴ The logical commentary should have the same form here as it has in the book version.

²⁵ The numbering of lines in (M) and (B) omits 8 and 9. Here and in the subsequent lines what is meant is probably not line 9 from the formalization, but sentence 2.9 (as it is in the book version). In this fragment of the analysis, numbering from Kant's text is mixed with the numbering of lines from the formalizations.

25. (M) $W(18) \rightarrow G(o)$ Def.
(B) $W(18) \rightarrow G(o)$ Proof of sentence 18
If sentence 18 is true, then the ontological argument is valid.
26. $\sim G(o)$ Proven by Kant (and Aquinas)
The ontological argument is not valid.

Proof:

27. $G(k) \rightarrow W(18)$ 23, 24, n
If the cosmological argument is valid, then sentence 18 is true.
28. $G(k) \rightarrow G(o)$ 25, 27, n
If the cosmological argument is valid, then the ontological argument is valid.
29. $\sim G(k)$ 28, 26, o
The cosmological argument is not valid.

Bocheński notices that in light of the truth of premises 24, 25, and 26, the truth of conclusion 29 depends only on the truth of premise 23. Since, in his opinion, it has already been proven that the proof of that premise is not valid, the reduction of the cosmological argument to the ontological argument presented by Kant is incorrect. The comparison of the manuscript with the book shows that the description of premises 24 and 25 is changed. However, finding them in the proof of line 18 is not the only problematic issue – so is treating them as kinds of definitions or sentences resulting directly from definitions. Another controversy is caused by the way of formalization presented by Bocheński, because of the fact that language is mixed here with metalanguage. Additionally, the concept of validity also requires further specifications. Moreover, that concept is not used by Kant in his text. Bocheński realizes that the analyzed fragment of Kant's argumentation is of key importance, but it seems that he conducts the formalization in the least precise way in comparison to the other arguments.

A Criticism of “the Nest of Dialectical Presumptions”

Kant also criticizes the argument of the existence of a necessary being (sentences 1–9) and, to be more precise, the premises assumed in that argument. He does it not when reporting on the cosmological argument, but in the fragment concerning “the nest of dialectical presumptions”.²⁶

No.	German version	English translation
3.1	Der transscendentale Grundsatz, vom Zufälligen auf eine Ursache zu schließen.	The transcendental principle of inferring from the contingent to a cause.
3.2	Der Grundsatz, von der Unmöglichkeit einer unendlichen Reihe über einander gegebener Ursachen in der Sinnenwelt auf eine erste Ursache zu schließen.	The inference from the impossibility of an infinite series of causes given one upon another to a first cause.
3.3	Die falsche Selbstbefriedigung der Vernunft in Ansehung der Vollendung dieser Reihe.	The false selfsatisfaction reason finds in regard to the completion of this series.
3.4	Die Verwechslung der logischen Möglichkeit eines Begriffs von aller vereinigten Realität (ohne inneren Widerspruch) mit der transscendentalen, welche ein Principium der Thunlichkeit einer solchen Synthesis bedarf.	The confusion of the logical possibility of a concept of all reality united (without internal contradiction) with its transcendental possibility, which requires a principle of the feasibility of such a synthesis.

When analyzing the objections listed above, Bocheński shows that none of them is sufficiently justified because:

- 3.1. Kant fails to explain why the law of causality should not be used outside empirical experience. This type of interpretation of Kantianism is extremely rare nowadays. In contemporary science, the law of causality is used outside sensual experience, for instance, with reference to the so-called theoretical propositions.
- 3.2. There are no reasons to reject the possibility of the existence of the first cause in the infinite sequence of causes.
- 3.3. It is necessary to distinguish between the truth of a given sentence and the fact we accept it for the sake of our pleasure. Kant fails to explain why such a situation should apply to the cosmological argument.
- 3.4. In this argument, however, nothing is said about the logical possibility of existence. Probably Kant means the difference between proving that

²⁶ The English text is quoted from: I. Kant, *Critique of Pure Reason*, op. cit., pp. 572–573.

something exists and the actual existence of that thing. Unfortunately, in his view, it contradicts the practice of human reasoning, including scientific reasoning.

Bocheński's Conclusions

These analyses led Bocheński to the formulation of the following conclusions:

1. The proof of God's existence presented and criticized by Kant is not identical with any one proof provided by Aquinas, as it is a combination of the second way and the third way.
2. Causality in Kant's text refers only to non-necessary objects.
3. Kant thinks that the sequence of causes should have the first element in order to be complete. In Bocheński's view, this idea is absent from Aquinas's thought.
4. The reconstruction of the second way, conducted by Bocheński earlier, shows that reducing it to the ontological argument is not necessary.
5. None of the arguments proving that the cosmological argument is not valid, which are discussed by Bocheński, is in his view correct.
6. These arguments can be reconstructed in such a way that they can preserve their formal correctness. Unfortunately, it is not like that with their material correctness.
7. The degree of accuracy in the case of Kant's text is lower than in the case of Aquinas's text, and the schemas of reasoning are trivially simplistic.
8. Kant fails to prove the incorrectness of Aquinas's arguments in the studied fragment. Such a claim is unjustified.
9. This fact has often been overlooked due to Kant's complex style, unfamiliar terminology, and numerous assumptions.

The Significance of Bocheński's Analyses

Although the text concerning Kant and his criticism of the cosmological argument constitutes an appendix to the key analyses of the first questions from the *Summa theologiae* presented in *Gottes Dasein und Wesen*, it is important not only

for historical reasons of showing Bocheński's return to the programme of the Cracow Circle. Looking at the analyzed texts, we can notice that:

1. The available versions of Bocheński's discussed analyses (manuscript/book) do not differ much from each other when it comes to certain formal contents. Apart from that, the book version contains some remarks formulated by its editors. These include, among others, their own proposal of modifying the formalization conducted by Bocheński (footnotes 57 and 62).
2. Bocheński's analyses are an attempt to reconstruct the structure of the argument in the analyzed text. In fact, the chosen text is not easy to analyze as it contains repetitions and the premises used are sometimes implicit. As Bocheński shows, some of them are unjustified or insufficiently justified, even if we base our disquisition on theses that are accepted in Kant's philosophical system, understood in a broad sense. Bocheński fails to comment on the type of premises 1–3, 10–14, and 19–20, and does not say whether they are ontological or empirical, as he used to do in his analyses of the *Summa theologiae*. He also fails to analyze them in detail and classify them in the way he did with reference to Aquinas's text. Bocheński tries to correct errors related to logical consequence at various stages of reasoning on his own. Apart from that, not only does he indicate those premises from Kant's argumentation that are difficult to accept, but he also tries to respond to his objections raised in the fragment concerning "the nest of dialectical presumptions," where Kant directly attacks certain premises from the cosmological argument.
3. Bocheński always starts his analyses with the identification of specific fragments and sentences in the original text. Because of the above-mentioned numerous repetitions, it was problematic to determine which fragments from Kant's text should be formalized. In his analyses, Bocheński paraphrased in formal language the text written in natural language. The advantages of that procedure can be seen, for instance, in the presentation of the argument structure of the text. The obvious direction of those preliminary studies may be the development of a formalized Kantian theory of the necessary being, or the one called *ens realissimum* in this case.
4. The calculus used by Bocheński in his analyses is second-order logic with identity. What is typical of him is the fact that he identifies the rules of

reasoning that are actually used in argumentation. Thanks to this, having finished the analysis, we can determine the language and logical calculus needed for our formalization.

5. A very controversial issue is Bocheński's application of the same language as the object language and its metalanguage (in the fragments concerning the relationships between the cosmological argument and the ontological argument). The use of such predicates as: $G(x) =: x \text{ ist gültig}$ (*x is valid*), $W(x) =: x \text{ ist wahr}$ (*x is true*), and constants: $k =: \textit{kosmologischen Gottesbeweis}$ (*the cosmological argument*), $o =: \textit{ontologischen Gottesbeweis}$ (*the ontological argument*) is at least questionable here.
6. The fragment of Bocheński's formalization that concerns the reduction of the cosmological argument to the ontological argument is controversial also because Kant does not use there the concepts of the validity of an argument or the truth of a sentence. Although that fragment is in fact inconclusive in its interpretation and unconvincing,²⁷ the real problem results from the fact that without making any reference to the idea of *ens realissimum*, and, consequently, to its existence (as stated in the ontological argument), it is impossible to prove the existence of the necessary being, whose idea, in Kant's view, is postulated by the cosmological argument. Obviously, Kant often writes about reducing the cosmological argument to the ontological argument, but it seems that he means reduction understood in the sense described above.
7. In a number of places, Bocheński makes references to Aquinas. However, this does not seem to be necessary, since in the report on the cosmological argument Kant mentions only Leibniz. The comparison with Aquinas made by Bocheński is inspired by his earlier analyses of the *quinque viae*. Since in Bocheński's view only the second way is valid (its premises are acceptable on the grounds of Aquinas's philosophy, and the argumentation is free from logical errors), he juxtaposes it with the most popular criticism of the cosmological type of arguments. The result of that polemic depends on the acceptance of premises (and rules of reasoning) used in the arguments, and, being dependent on them, it has a local character and is limited to certain philosophical systems. The way schemas of reasoning are

²⁷ Cf. F. Copleston, *History of Philosophy*, Vol. 6, New York, NY 1993, pp. 297–299.

introduced in the discussed text proves that it was added to the analyses of Aquinas's *Summa theologiae* much later.

8. The results of the analyses conducted by Bocheński confirm what he had written about Kant in his earlier texts. It concerns both his knowledge of logic and his criticism of the cosmological argument. In his *Wspomnienia* [Memoirs], Bocheński writes that “for instance, in Kant’s case, it [ignorance of logic] reaches improbable dimensions,” and “I used to tell my students that those allegedly great philosophers, including Descartes, Kant, or Hegel, would have failed the first end-of-semester exams if they had been examined by stoics, scholastics, or us – mathematical logicians,” and that “the history of logic was unlucky. Immanuel Kant, the most influential philosopher of the modern era, said that logic, unlike other sciences, had never had any history. In Kant’s view, Aristotle created it out of nothing, and everything written later was worthless as it destroyed Aristotle’s achievements.”²⁸ Thus, comparing Aquinas’s artistry in argumentation with Kant is unfavourable for the latter, although the results of Bocheński’s analyses are not as adverse as the claims included in the above quotations. When it comes to Kant’s criticism of the cosmological argument, Bocheński writes in *Zarys historii filozofii* [An Outline of the History of Philosophy] that “the cosmological argument (based on causality) is also invalid, unless we accept the ontological argument (that thesis is not proven by Kant).”²⁹
9. Bocheński’s work concerning Kant’s criticism of the cosmological argument can be a good reference point for further formal analyses of that argumentation. Moreover, they could be supplemented with analyses of the criticism of the other two types of arguments distinguished by Kant: ontological and physicotheological, as well as with analyses of the division into those three types of arguments. A valuable complementation of the analyses of the cosmological argument would be a logical analysis of Kant’s fourth antinomy of pure reason concerning the existence of a necessary being. Apart from possibly improving the analysis presented in this paper, it could provide material for further research.

²⁸ J.M. Bocheński, *Wspomnienia*, op. cit., pp. 313, 320, 319.

²⁹ J.M. Bocheński, *Zarys historii filozofii*, Kraków 1993, p. 187.

Despite their numerous drawbacks, not only of formal nature, Bocheński's analyses presented in this paper deserve popularization, both among converted Kantists, such as Bocheński himself, and those who are still inspired by the philosopher from Königsberg.

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Summary

Józef Maria Bocheński is widely known as a promoter of the application of logic to theology and the philosophy of God. His analysis of St Thomas Aquinas's *quinque viae* has become a traditional benchmark for numerous formal analyses of the arguments for the existence of God. Thus, we can say that he was a precursor of formal natural theology, which nowadays is undergoing dynamic developments. Bocheński used formal methods to analyze not only arguments for the existence of God, but also their counterarguments. Conducting those two types of analyses is postulated in his programme of studies on God. In this paper, I will discuss Bocheński's only available case of the second type of analysis mentioned above, in which he considers Immanuel Kant's objections to the cosmological argument.

Key words: J.M. Bocheński, I. Kant, cosmological argument, logic, formal natural theology