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## INTRODUCTION WITH REMARKS ON THE HISTORY OF NEGATION

**Abstract.** In the introduction to the volume on negation, first the source ways of understanding it from antiquity to modern times are presented, as well as the basic points of contention connected with it. Subsequently, the works contained in this volume are briefly presented in the order in which they appeared. Dedication of the volume to Prof. Pavel Materna is emphasized.

The volume before you is devoted to the issue of negation. For an average student of philosophy or logic, negation is included in the class of extensional logical connectives and most often will not take up his mind any more. However, if we take a closer look at the genesis of the issue of negation, it will result from consideration of the most basic metaphysical and epistemological issues. Most probably, the first reflections on negation come from Parmenides (ca. 540–470 BC), who, together with the Eleatic school, analysed the relationship between being and non-being. Parmenides' negation has an ontological character, and what is most important, it has a crossed out character, because with its use one can reach something that we call non-being or nothingness, and that is not a kind of being or something.<sup>1</sup> Plato was critical of this view and, mainly in "Sophist", presented analyses leading to the concept of differential negation. Thanks to this, he was able to defend the view that the negation of being – that is, not too much – has an ontological character. The ontological negation was some form of 'difference' and consequently it was 'something' rather than 'nothing'. According to W. Stróżewski, many ontological views on negation, including the concept of differential negation, can be reduced to the crossing out negation, and it is this which is the most fundamental one. The above mentioned research on the ontological characteristics of negation resulted in

the emergence of various metaphysical problems, of which it is worth pointing out the following issues: non-being and negative states of things. The Platonic ontological position on negation contains already the beginnings of linguistic considerations, as the latter cannot be actually separated from the former. This theme was taken up by Aristotle and he moved the issue of negation from ontology to language and logic, resulting in such linguistic issues as the scope of negation, distinguishing affirmative and negative sentences, negation of different parts of the sentence, positive predictions vs. negative. In his “Categories”, continuing the Platonic concept of differentiation negation, he introduced four types of opposites (scholastically: *oppositis*) of expressions – from the strongest to the weakest:

- contradiction (*contradictio*) – e.g. “He sits” vs “He doesn’t sit”;
- privation (*privatio*) – e.g. “sighted” vs “blind”;
- the opposite (*contrarietas*) – e.g. “good” vs “bad”;
- relative contrast (*oppositio relativa*) – e.g. “half” vs. “double”, “father” vs “son”.

This distinction became classic in philosophy, and St. Thomas Aquinas devoted a separate work to it, “*De quattuor oppositis*”. The relationship between negation and *oppositis*, especially in natural language, later became the subject of a large number of studies, and this is still the case today. The Stagirite, on the basis of the distinction of the negation of the predicate and the negation of the copula “is” in a sentence, built a logical square in which the vertices were the schemes of categorical sentences of the following form: S is P, S is non-P, S is not non-P, S is not P. There is a contradiction between the first and fourth and the second and the third; between the first and the second there is a contrariety (*contrarietas*) and between the third and the fourth there is a subcontrariety (*subcontrarietas*). The relation between *contrarietas* and contradiction was itself the subject of separate research in later centuries (XIX and XX). Stoics, on the other hand, distinguished themselves:

- denial – “No one is walking”.
- privation – e.g. “This person is unpleasant”.
- negation (*apophatikon* from gr. ἀπόφασις) – e.g. “No: Socrates is sick”.

The last of these negations, *apophatikon*, is in a full sense an external negation, while the negations of Stagirite, the negation of prediction and the copula “is”, are internal. John Scotus Eriugena returns to the concept of Platonic negation as a differentiating negation, and in his hierarchy of beings he points out that the negation of a lower being in the hierarchy is an affirmation of the higher being. Bergson recognized the subjective concept of negation, where the latter was a certain psychological attitude of the

subject. Frege understood negation in a way similar to stoic *apophatikon*, which corresponds to classical extensional negation, and questioned also the division of judgments (and sentences, or thoughts) into affirmative and negative, believing that this division has no logical justification. It can be said that antiquity has decided on almost all important problems concerning negation. In the last decade of the twentieth and the beginnings of this century, a lot of works appeared, the subject of which was negation, and thus even it is necessary to speak of a kind of renaissance of interest in this subject. Perhaps this was due to the fact that from antiquity to the nineteenth century, the interest in negation was almost negligible. The work that served the purpose of promoting negation is the well-known historical monograph by L. Horn (1989) *A Natural History of Negation*.<sup>2</sup> A sign that negation has become an issue that has its own place in philosophy is the “Negation” article by Wansing and Horn in the *Stanford Encyclopedia of Philosophy* (2015). Research on negation has also emerged within the framework of logic, and today it is carried out in philosophy (especially the philosophy of logic), logic itself, metaphysics, cognitive psychology, cognitive science, philosophy of language, theology, and linguistics. Our volume presents works that belong to most of the above-mentioned disciplines and is of a strictly interdisciplinary nature. This volume is dedicated to Prof. Pavel Materna from the Czech Academy of Sciences on the occasion of the 60<sup>th</sup> anniversary of his scientific work, and especially on the occasion of the 20<sup>th</sup> anniversary of the publication of the book “Concepts and Objects” presenting his theory of concepts.<sup>3</sup>

The volume opens with an article by Pavel Materna, which discusses the problem of empirical concepts and the way they are understood, according to two philosophical traditions. On the one hand, we have the Logical Analysis of Natural Language (LANL), which is a continuation of the thoughts of Frege, Church, Tichy, Materna and others, and the radical empiricism practiced by Quine, Wittgenstein, and many others. Materna presents an interesting approach to the distinction between analytical and empirical concepts and the way of understanding the latter from the perspective of the LANL and Transparent Intensional Logic (TIL) of P. Tichý. According to this concept, empirical concepts may be subject to logical analysis, which is contradicted by radical empiricians, and the effect of this analysis is to distinguish denotations from references to such concepts. Denotations are determined by logical rules of language, and references are determined by the current state of the world and the time moment. In the article, we find justified criticism of Quine’s and his supporters’ position on the matter under discussion.

An extensive article by Marie Duží “Negation and Presupposition, Truth and Falsity”, deals with the title issues and problems related to them, which have not found a happy final solution for many years. Using non-classical analysis tools based on Transparent Intensional Logic (TIL), the author provides interesting and intriguing analyses of these already classic problems. It should be stressed that the considerations presented are precise and the basic concepts are well defined. The author has provided proof of the non-equivalence of wide-scope and narrow-scope negation, particularly in relation to sentences with presupposition. Analyses show what is the essence of Russell’s and Strawson’s difference in approach to “The F is a G” sentence analysis, and to what extent these two famous analyses are correct and incorrect. It also proposes a new solution to the old discussion between the authors mentioned concerning the analysis of the sentence ‘The King of France is bald’. Duží argues that the dispute has consisted in a different understanding of the meaning of the sentence in question, leading to a false dilemma. The proposed solution is semantic and not pragmatic. This article contains much interesting additional content and analyses worth reading.

Piotr Łukowski in his paper “Contentual Approach to Negation” points out that negation is in fact a reflection of this linguistic fact, that a sentence may not be true; that is, it may be false. In contrast to the extensional negation, it is taken from the point of view of content analysis or, in other words, from the point of view of the sense. The article is a continuation of the author’s research on the new colon’s connective “:”, which serves as a content implication. The author shows in a formal way how to use the content of negation by building an appropriate formal system. At the end of the article, philosophical perspectives and logical development of the research on the negation connective are considered, a development of the presented approach.

Józef Maciuszek in his work on cognitive psychology, “I believe that he didn’t do it and I don’t believe that he did it. The Influence of Context on the Semantic-communicative Relations between Sentence Negation and Performative Negation” considers two cases of explicit negation: sentence negation and performative negation. The author presents the results of two empirical studies comparing both negations, in which he searched for a way to influence the context on processing of both types of negations, especially in the aspect “the inferential character of communication consisting in conversational inference, the sender recognising the intentions of the sender, and accounting for context.” (p. 14) Empirical research into this second type of negation, the performative negation, is par-

ticularly valuable as it does not receive much attention in the literature of the subject. The conducted experiments yielded a lot of interesting and important data, allowing to indicate differences in the way both negations function.

The slightly provocative work “Logical Rules and the Determinacy of Meaning” by Charles McCarty belongs to the logic, philosophy of logic, and philosophy of mathematics. Although the author describes himself as a pure-blooded intuitionist, it is not supposed to have any significant influence on the presented argumentation. The basic question of the work is: what is negation? In this paper we find a proven claim that logical values are all subsets of the singleton  $\{0\}$ . The second claim, made together with the evidence, states that there is only one negation. Another proven statement shows that classical negation, which we know from an elementary lecture of logic, does not exist: “‘The negation operation’ known from classical elementary logic does not exist”. The last of these claims has a proof based on an intuitionistic logical principle. The work ends with interesting remarks and statements concerning mathematics as a whole, and in particular the role of negation in it.

Adam Olszewski in his work “Notes on Accepting and Rejecting Theorems in Theology”, which lies at the crossroads of philosophy, logic, and theology, first deals with the way of accepting, that is, recognizing theorems within theology. He points to the argument from authority (argumentum ex auctoritate) as the logical rule used in the recognition of claims. Different types of theological theorems are then indicated, depending on their degree of certainty. Finally, a special way of rejecting theological theorems is described, which is connected with the so-called censures.

Bartłomiej Skowron and Wiesław Skubiś are the authors of the work “Negating as Turning Upside Down”, which lies on the border of category theory and philosophy. The task of the authors is to give specific models of negation, where some larger whole or structure is negated – in toto. These models are built on the theory of categories and refer to negation in a wider sense. More precisely, the models of negation are: reversal of arrows, construction of contravariant functor, the process of “conceptual inversion for a given phenomenon”. As they write, they try to “squeeze out” the negation juice from the indicated equivalents of negation. In this paper we find a clear and brief introduction to some concepts of category theory. The work contains very interesting philosophical implications formulated in the form of conclusions, and some of them are very surprising, such as the relation between syntax and the semantics of language or negative states of affairs.

In his work “Negation and Infinity”, Kazimierz Trzęsicki tries to formulate and defend the thesis that there is a deep relationship between potential or current infinity and negation as a logical and linguistic operation. The question is asked: what negation do known infinities allow for? It turns out that when we have a theory about the actually infinite domain, then the use of classical negation results in the appearance of incompleteness, in particular the property strongly associated with negation – the impossibility of proving the contradiction of the system. Theories with potentially infinite domains allow constructive negations, while with finite domains they allow classical negation. The paper also contains other topics in the field of semantics and pragmatics.

“The Logical Challenge of Negative Theology” by Piotr Urbańczyk is located on the border of three specialties: logic, philosophy and theology. The work is devoted to four attempts at reconstruction or interpretation of apophatic (negative) theology. This is a particularly difficult challenge on the logical side. According to these four interpretations, negative theology is understood as: the theology of silence, theological scepticism, positive negative theology, and neoplatonist-inspired mysticism. All four partial reconstructions are done with great care from the formal point of view, and are an original contribution to the study of negative theology. Research on various types of negation plays a special role in the work. One of the goals set by the author to protect negative theology from the accusation of paradoxicality was certainly achieved in this way.

Jan Woleński is the author of “Something, Nothing, and Leibniz’s Question. Negation in Logic and Metaphysics”, which presents a reflection on the logic and metaphysics of nothingness. First, a short history of nothingness is presented in mainly philosophical thought, and then we find attempts at various interpretations of nothingness, especially in relation to negation and an attempt at establishing the relation of nothingness to something. We are also talking about possible understandings of nothingness in the sciences: physics and mathematics. Then, in the light of earlier findings, the famous question of Leibniz is considered: “Why is there anything rather than nothing? The role of the principle of sufficient reason in Leibniz’s argumentation for the existence of God is critically discussed. The principle of sufficient reason is also discussed by means of modal logic (a generalised logical modal square). At the end of the paper we find interesting logical comments about the English translation of Heidegger’s sentence: *Das Nichts nichtet*.

Yong-Sok Ri, Yong-Yun Kim, Gwang-Chon Ri are the authors of the last work in our volume entitled “A Contra-linguistic Study of Negation in Korean and English”. The authors, from a linguistic and philosophical

point of view, make an interesting comparison of negation in English with negation in Korean, which is quite exotic for Europeans. The four main oppositions between Korean and English are discussed. Since Korean is the mother tongue of the authors, there is no problem with arguments based on authentic examples from Korean. The first contrast concerns the types of expression used in the two languages to express negation; the second concerns the differences in the types of negation in the two languages, especially in the term negation type; the third concerns differences in the scope of the negation in the two languages; the fourth concerns the way in which negatively structured questions are answered.

Most of the articles were presented in earlier versions as lectures at the conference “Negation”, which took place on 19.05.2017 in Cracow. The conference was organized by Father Adam Olszewski under the auspices of the John Paul II Pontifical University in Cracow, in cooperation with the Copernicus Center in Cracow, headed by Fr. Professor Michał Heller.

#### N O T E S

<sup>1</sup> He is assigned the sentence: ‘Being alone is and nothing is altogether not.’ Plato in *Sophist* quotes Parmenides: “Never will this prevail, that the things that are not are – bar your thought from this road of inquiry.” (*Sophist* 237 A).

<sup>2</sup> At the end of the twentieth century and at the beginning of the present century several collective works were published on the subject of negation. This book by Horn and my article published in ‘*Analecta Cracoviensia*’, entitled “Negacja w języku teologii” 46 (2016); pp. 279–294; are the basis for the historical part of this introduction.

<sup>3</sup> The basic idea and key definitions of the theory of construction come from Pavel Tichý, which Materna applied to his theory of concepts and developed creatively in collaboration with Marie Duží. In a sense, this book has become a turning point in the development of theory. Professor Materna was unable to publish his works during the communist era for many years due to the prohibition on the part of the contemporary authorities.