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WHAT DO NEGATIVE SENTENCES SAY?

On functions of sentential negation

Whenever a philosopher asks a logician about the meaning of sentential negation functor, he is the most likely to learn that the only right answer is delivered by classical propositional logic. This respectable theory provides very simple and short solution: negation is a truth-function defined by the matrix:

p	not p
1	0
0	1

This answer, which is believed to originate with Peirce, although easily accepted by common sense, can be unsatisfactory for a philosopher who searches for less laconic interpretations of negation, and having found any he would wonder why negation treated as a truth-function is the only one valid in classical logic. Is the facility of formalization the only reason for that? The aim of this paper is to show that those reasons are more important.

The problem concerning proper interpretation of negative sentences (including the role of negation) can be found in early philosophical thought. The members of the Eleatic School were probably the first to claim that the absolutely positive being can be spoken about only in affirmative way. Parmenides, the founder of the school, emphasized that nothing can be said about not-being, thereupon negative sentences were believed to have no sense¹. This

¹ W. Kneale, M. Kneale, *The Development of Logic*, Oxford 1962, pp. 21 f.; F. Copleston, *A History of Philosophy*, London 1956, vol. 1, p. 49.

standpoint implies the assignment of destructive role to negation functor which added to affirmative statement forms a nonsense.

The conception developed by Sophists is not less paradoxical than Eleatics. For example, Protagoras, assuming that the reality is contradictory regarded both negative and affirmative sentences which state something to be true². When such a point of view is adhered to, the futility of characterization of negation (and other sentential connectives) by means of truth-tables seems to be obvious. Total confusion which reigned in contemporary opinions on negation manifests itself in the fact that another sophist, Gorgias, having ascertained that nothing exists concludes that every utterance is false, since there is nothing real it can refer to³. The conceptions mentioned above failed, since they turned out to be too wild and erroneous in comparison to intuition connected with applicability of negation in everyday language.

The first philosopher to base this problem on more firm ground was Plato. In the dialogue "Sophist" he rejects the premise of Parmenides that nothing can be said about not-being. As a matter of fact Plato didn't work out his own conception, but he rushes to a provisional statement that not-being exists and there also exist sensible negative sentences, and thus negation serves just to state the not-being. Paraphrasing the words of Plato: negative sentence says about not-being as not being⁴.

Aristotle took up and developed Plato's idea of negative sentence. According to him negative sentences refer to not-being which is not completely undetermined; it is nonexistence of something definite. In the opinion of Aristotle what does exist, undergoes changes which generally speaking consist in joining and separating of elements, qualities and factors. A sentence expresses these unions or lack of them, as it is in the case of negative sentence⁵. For instance, the sentence "Socrates is not running" states the absence of connection between a substance i.e. Socrates

² Diogenes Laertius, Lives of the Philosophers, IX, 8, 51; F. Copleston, op. cit., p. 93.

³ F. Copleston, op. cit., p. 93.

⁴ Plato, Sophist, 237 ff., 258C ff. 260B ff., 263B ff.

⁵ Aristotle, Metaphysics, IX, 1051b.

and an activity i.e. a run (let us notice here, that this very absence does not presume the actual existence of neither Socrates, nor a run, esp. when the latter is separated off the acting subject). Here the question raises: Do negative sentences in Aristotle interpretation speak about the reality, or differently: is negative situation as real as positive one? Aristotle's answer seems to be affirmative, namely he claims that contradictory sentences describe opposite situations⁶. So that not only the sentence "Socrates is running" describes certain condition, but so does the sentence "Socrates is not running". It is so because both situations represent different states of matter which is for him certain possibility: something existing - however "potentially"⁷. He also displays new approach to negative sentences, the only one accepted by most of posterior philosophers: According to this approach stating negation of sentence stands for stating its falsity⁸. The apparent advantage of this conception lies in the fact that it avoids adducing real counterparts of negative sentences like e.g. Plato's "existing nonentities". Meanwhile it is worth mentioning, that the discussed interpretation is not identical with the interpretation of negation treated as truth-function; the latter one does not decide on whether negative sentence is about: negated sentence or reality.

Total dissent in opinions about sentential negation was still alive in the Middle Ages and after. Nevertheless no new ideas emerged for quite a long time. Some, not very remarkable modifications of ancient conceptions can be found in Kant and Hegel's works. Kant regarded negative sentences as being deprived of any direct reference to reality (of course what he means by reality is the world of appearance since nothing can be said about things in themselves). In his opinion the role of negation is merely prophylactic, for negative propositions cannot enrich our knowledge but they function as a kind of warning against false thinking since negative proposition states the falsity of the proposition which

⁶ Aristotle, *De Interpretatione*, IX, 19a23f., VIII, 18a13f., Aristotle, *Categories*, X, 12a35f.

⁷ Aristotle, *Metaphysics*, IV, 1009a, XII, 1069b, XIV, 1087b.

⁸ *Ibidem*, V, 1017a.

has been negated⁹. Certainly it is the reminiscence of the Aristotle's conception mentioned above. Whereas Hegel rejects the opinion that negative propositions have no objective correlates and, arguing with Kant, he demands for propositions to enlarge our knowledge. In abstruse manner typical of him, he seems to assert that negative and affirmative propositions are both true, as they describe some not self-contained moments or aspects of reality¹⁰.

In the 20th century philosophy the dispute concerning the proper understanding of negation becomes more vivid; not only revive old points of view but new approaches emerges as well. At the very beginning of the century Bergson analyses the problem of nothingness and negative sentences. Having assumed that the character of reality is absolutely positive, he concludes that negative sentences cannot have any direct link with it. This is why he puts forward a hypothesis that such a sentence is a "sentence about sentence", namely about sentence which is negated. In this point he refers to Kant, although in fact it is a reference to Aristotle. Saying "Socrates didn't eat hot dogs", we only state, according to Bergson, that the sentence "Socrates ate hot dogs" is false. Therefore every negative sentence is a metalinguistic statement or a statement of a "second order" as Bergson used to call it (exactly one order higher than the order of negated sentence). Presented approach is combined with two other practical functions. First, Bergson borrows Kant's opinion that negative proposition is a warning that negated proposition is false. Secondly, this proposition expresses a state of certain tension - by negating something we express (maybe unconsciously) kind of regret or disappointment that something is gone, or a kind of hope that it is going to happen. Such a tension between something that is and something that could be is the manifestation of general tendency of every active subject to transform the reality¹¹.

Shortly afterwards appeared the dissertation of German phenomenologist, Adolf Reinach, devoted entirely to the question of

⁹ I. K a n t, Kritik der Reinen Vernunft, Leipzig 1926, B¹ 737.

¹⁰ G. W. H. H e g e l, Wissenschaft der Logik, II Aufl., Leipzig 1951, Buch II, I Abt., Kap. II C, Anm. 3.

¹¹ H. B e r g s o n, L'Evolution creatrice, Genève 1945, p. 278 ff.

negative proposition. The author rejects the Aristotelian idea that affirmative and negative propositions express respectively connection and disconnection of elements as too artificial and primitive. Instead he forms a hypothesis that an objective counterpart of a proposition constitutes so called state of affairs: positive or negative. State of affairs is something peculiar and different from both object and relation. This difference is especially well observable in the case of negative state. The fact that Socrates is not running is neither the separation of Socrates from a run, nor a lack in Socrates himself, nor a relation between Socrates and a run, but it is a state in which Socrates can find himself. For every state of affairs there can be indicated another state which bears a relation of "contradictory incompatibility" to the initial one. A state occurs if and only if the other doesn't. Reinach says that negation can be used in sentence to express negative state of affairs, however it is not its unique role. Its another function is to express the rejecting act characteristic for negative propositions, which occurs for instance in the sentence: "It is not the case that Socrates is running". Reinach warns against identifying meanings of propositions: "Socrates is not running" and "It isn't the case that Socrates is running"; the former states negative state of affairs, while the latter expresses repudiation of positive state. Of course one can invent a proposition in which it is the negative state of affairs which is repudiated e.g.: "It is not the case that Socrates is not running"; two negations occurring in this sentence play each different roles¹².

Roman Ingarden argues with Reinach's approach. He accepts the thesis that negative proposition represents certain state of affairs but he differs in opinion that positive and negative states of affairs are existentially on a par. According to him the mode of existence of negative state of affairs is "weaker" than that one of positive state, in fact, it is placed between purely intentional being (of something imagined) and the real one. Negative states of affairs are determined on the one hand by positive states that really occur and on the other by knowing subject, and what is more, negative states couldn't exist without knowing subject whose

¹² A. Reinach, Zur Theorie des negativen Urteils, [in:] Gesammelte Schriften, Halle a.d. Saale 1921, Teil 2.

expectations turn out to be different from what he sees; in the result of such a cognitive disillusionment negative states of affairs are formed eg. when finding empty pocket one realizes that he has no money. Then positive states of affairs are "read" directly out of reality. On the other hand however negative states of affairs exist "stronger" than mere imagined ones, for they are facts, although negative. Different ways of recognizing of positive and negative states of affairs do not compel us to acknowledge the difference of their existence. They can rather betray specific susceptibility of knowing subject to positive side of reality. Ingarden employs one argument more to support the thesis of weaker existence of negative states of affairs: they cannot cause real effects. He claims that changes of reality are due entirely to positive states of affairs. This reason seems to be more convincing but it is not unlikely that just that feature of negative states of affairs makes them hide behind the positive states¹³.

Some years after Reinach Ludwig Wittgenstein wrote his "Tractatus logico-philosophicus" where objective counterparts of propositions are also called states of affairs, but this time they mean something different. Wittgenstein postulates the existence of perpetual, unchanging and absolutely simple elements called objects or things. He also assumes that they can form certain configurations, mutually independent as far as their existence is concerned. A possible configuration of objects is a state of affairs. A proposition representing the existence of single state of affairs is an elementary proposition; it is true when the appropriate state of affairs exists and false if not. The negation of an elementary proposition is a truth-function; its logical value is determined by the value of the initial proposition so that one can say that the negation of an elementary proposition represents non-existence of a given state of affairs. If it is so, the representation cannot be taken literally, for veracity of a proposition means only that a given state of affairs does not occur. Here the question can be asked whether the propositions so interpreted refer at all to reality, or differently if they describe the world. Wittgenstein considers the world to be a totality of facts.

¹³ R. Ingarden, *Spór o istnienie świata*, Warszawa 1961, t. 2, XII, § 51, pp. 121 ff.

It is a set of all the existing states of affairs. In order to describe it sufficiently it is not enough, as it seems, to state all the true elementary propositions since one more remark should be added, namely that there are no more true elementary propositions. Nevertheless Wittgenstein claims that each sensible proposition is (apparent or latent) the truth-function of some elementary propositions, e.g. proposition "These are all the true elementary propositions" when analysed turns out to be a conjunction of all the false elementary propositions negations. Thus, these negations are as important in the description of the world as elementary propositions alone. Negation provides information about what is not a fact, although what is not a fact doesn't constitute its semantic correlate simply because it does not exist. Wittgenstein, showing that negative propositions are truth-functions and not simple copies of a possible reality, managed to solve long-standing problem concerning veracity of negative propositions which have no real correlates¹⁴. Thereafter in "Philosophical Investigations" where Wittgenstein seems to break with the opinions expressed in "Tractatus" he treats language as a set of linguistic games. He tentatively outlines various ideas of negative propositions; among the others mentioning its metalinguistic interpretation and those which have the only thing in common with it, i.e. "some excluding negative gesture"¹⁵.

British Analytical Philosophy made programmatic studies of functioning of natural language in which negation was one of the touched problems. J. L. Austin, for instance, observes that the concept of negation which functions in natural languages has no concern for truth and falsity, therefore, defining negation as truth-function is not adequate, for negation's basic role is different. According to Austin the act of negation is not builded on the act of affirmation (acceptation of negative fact), but it is an act opposed to it. Negative propositions refer directly to reality as affirmative propositions do; the formers state what it is not like. However it does not imply that negative facts must be ac-

¹⁴ L. Wittgenstein, *Tractatus Logico-Philosophicus*, London 1947, 3 ed., 1.1, 1.12, 2.05-2.063, 4.01, 4.1, 5, 5.2341, 5.3.

¹⁵ L. Wittgenstein, *Philosophical Investigations*, Oxford 1953, part 1, § 136, §§ 548-557.

cepted since negative propositions refer to the same part of imagined reality as do negated propositions; the opposition between them lies in the difference of attitudes a speaker possesses while uttering affirmative proposition (affirmation) or negative one (repudiation). In this point the conception of Austin resembles that of Reinach but their interpretations of negative proposition vary: Austin having rejected negative states of affairs, interprets it as a negative judgement about positive state of affairs, while Reinach as affirmative one about negative state¹⁶.

Another representative of British Analytical Philosophy, A. J. Ayer also analyses the peculiarity of negative statements. Looking at prevailing division of statements into negatives and affirmatives, he arrives at paradox: such a differentiation is in fact arbitrary and cannot be satisfactorily justified. Ayer takes for granted that the criterion of this differentiation cannot be merely syntactical (e.g. the presence of the word "not" or its derivatives in the sentence) because what matters in philosophical study is the difference of meaning and not of grammatical structures. Still another criterion is delivered by the theory defended by Bergson; here negative sentence is treated as a sentence about sentence which is negated (considered to be false). Unlike Austin, Ayer allows such an interpretation of negation but he denies that it can be the basis of differentiating negative and affirmative statements. In his opinion the alike interpretation can characterize affirmative statements, e.g. the sentence "I love Mary" can be treated as negation of the sentence "I do not love Mary" and vice versa. (Let us incidentally notice that this kind of interpretation leads to the conclusion that every sentence constitutes an infinite series of negations, which is a consequence difficult to accept). The next way of distinguishing negative statements proposed by Ayer is the attempt to enumerate all possible types of affirmative statements and then to determine the set of negative sentences¹ as those which have not been specified. The problem that ari-

¹⁶ J. L. Austin, *Philosophical Papers*, Oxford 1961, pp. 91, 192.

ses here is opposite to that we have discussed earlier; it aims at description of affirmative sentences. It is generally assumed that affirmative sentences can have subject - predicate form as for example "The rose is red". Ayer sees no reason for excluding the sentence "The rose is not red" from this category. Both predicates (red, not-red) describe to some extent the subject and they do not differ from each other in respect of gender; both correspond to some subrange of the term "colourful". Hence, according to Ayer, also this attempt to draw the line between affirmative and negative statements fails¹⁷. Taking no account of any possible criticism of his argumentation, let us notice that kind of ontological option can be found in his assumption that the existence of a set of objects having certain attribute is a sufficient condition in order to accept this attribute as positive.

Finally we shall present Martin Heidegger's opinions about negation. In his dissertation "What is Metaphysics?" he brings up the question concerning the fundamental relationship between the logical negation and nothingness. Searching for an answer he reaches the roots of being and states that there exists some primary and rare experience which unveils nothingness. Nothingness doesn't appear as a kind of being nor anything apart but it is a condition which enables a man to encounter being as such. On account of the transcendental character of nothingness, we are not able to say anything about it, and, therefore it cannot be the thing negative sentences refer to, nevertheless it renders negation possible. Negation is an evidence of nothingness, it emerges from nothingness and could not appear without its primary manifestation¹⁸.

The presentation of different conceptions of negation shows that most of them depend on decisions of ontological nature. Citing Heidegger: "The interpretation of nothingness reveals the fundamental way of comprehension of being". In such an environment the in-

¹⁷ A. J. Ayer, Negation, "The Journal of Philosophy" 1952, vol. 44, No. 26, pp. 797 ff.

¹⁸ M. Heidegger M. Was ist Metaphysik?, [in:] Wegmarken, Frankfurt a. Main 1967, passim.

terpretation of negation as truth-function may seem modest and insufficient. However it has one remarkable feature: it can be easily assimilated with most of them. The characterization of negation functor in terms of truth doesn't influence neither the semantical correlate of negative propositions nor the way in which this correlate exists. Ontologically it is the most neutral conception and it can't be adopted only to extremely nonintuitive views of Parmenides, Sophists and Hegel. Such a general adaptability of the discussed interpretation is the best proof of its accuracy. Therefore the fact that this interpretation is used to formalize the notion of negation seems to be well-founded.

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CO MÓWIĄ ZDANIA PRZECZĄCE?

O funkcjach pełnionych przez negację zdaniową

Klasyczny rachunek zdań w ujęciu semantycznym, uważany niekiedy za idealizację opisowej części języka naturalnego czy też za teorię spójników zdaniowych, traktuje negację jako czystą funkcję prawdziwościową. Przyzwyczajeni do takiego ujęcia, uważamy je za adekwatne, ściśle oddające sens, jaki ma ten funktor w zdaniach opisowych. Tymczasem okazuje się, że w refleksji filozoficznej przypisywano negacji i inne, bardzo różnorodne role. Na przykładzie tego, co o negacji i zdaniach przeczących mówią: Parmenides, sofiści, Platon, Arystoteles, a z filozofów nowożytnych i współczesnych Kant, Hegel, Bergson, fenomenologowie Reinach i Ingarden, Ludwig Wittgenstein, przedstawiciele brytyjskiej filozofii analitycznej J. L. Austin i A. J. Ayer czy wreszcie Martin Heidegger, można zauważyć zależność funkcji semantycznych przypisywanych negacji od takich czy innych rozstrzygnięć ontologicznych dokonywanych przez tych myślicieli. Pamiętając o tym, warto jednak wyróżnić interpretację negacji jako funkcji prawdziwościowej - nie dlatego, żeby była ona jedynie poprawna, lecz ze względu na to, że interpretacja taka jako najmniej zaangażowana ontologicznie daje się uzgodnić z większością innych tu wymienionych. W tym i tylko tym znaczeniu może ona być uważana za uprzywilejowaną w stosunku do innych.