Polskie Towarzystwo Semiotyczne

# STUDIA SEMIOTYCZNE— ENGLISH SUPPLEMENT

Volume XXXI

Warszawa • 2020

Adres redakcji: Krakowskie Przedmieście 3, 00-047 Warszawa
e-mail: studiasemiotyczne@pts.edu.pl
http://studiasemiotyczne.pts.edu.pl/

ISSN 2451-2745



Prace redakcyjne związane z przygotowaniem składu elektronicznego, korektą językową i zamieszczaniem artykułów naukowych na stronie internetowej „Studiów Semiotycznych” i na stronie internetowej „Studiów Semiotycznych—English Supplement” – zadanie finansowane w ramach umowy 636/P-DUN/2019 ze środków Ministra Nauki i Szkolnictwa Wyższego przeznaczonych na działalność upowszechniającą naukę.

Ministerstwo Nauki
i Szkolnictwa Wyższego

# CONTENT

Marcin Będkowski, *To Teach Critical Thinking and Clear Speaking*. Postulates of Criticism and Clarity and the Issue of So-Called General Logic ..... 5

Adam Olech, Ajdukiewicz, Husserl and Tarski—Concerning the Semantic Theory of Knowledge ..... 25

Jan Woleński, Limitations of Formal (Logical) Semantics ..... 73

Maciej Tarnowski, Is Having Contradictory Beliefs Possible? Discussion and Critique of Arguments for the Psychological Principle of Non-Contradiction ..... 91

Elżbieta Magner, Certain Issues With the Commutativity of the Connective "i" ..... 127

Janina Mękarska, Maciej Witek, Echo and Pretence in Communicative Irony ..... 149

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 5–24
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.01
Article

Marcin Będkowski *

# *TO TEACH CRITICAL THINKING AND CLEAR SPEAKING*. POSTULATES OF CRITICISM AND CLARITY AND THE ISSUE OF SO-CALLED GENERAL LOGIC[1]

Summary: In the paper, I have presented a portrait of Jerzy Pelc as a teacher. He followed in the footsteps of Kazimierz Twardowski and his direct disciples and tried to develop his students' skills of critical thinking and clear speaking—the basics of good work in philosophy. These skills are connected with methodological postulates of criticism and precision which were shared by all the members of the Lvov-Warsaw School. Jerzy Pelc treated these postulates also as didactic postulates arising out of the conceptions of logical culture and general logic. In my article, I have sketched a general picture of the relation between logic and didactics, I have presented the aforementioned postulates, the concepts of logical culture and general logic and its curriculum.

Keywords: critical thinking, the postulate of clarity, the postulate of justification, general logic, Jerzy Pelc, the Lvov-Warsaw School, the didactics of logic.

* University of Warsaw, Faculty of Polish Studies. E-mail: mbedkowski@uw.edu.pl. ORCID: 0000-0002-2787-9487.

[1] The text was created as part of the project 2015/18/E/HS1/00478 "Philosophy from a Methodological Point of View. Condition and Prospect of Philosophical Disciplines in View of the Paradigm of the Lvov-Warsaw School", financed by the National Science Centre (Poland).

Let me start with a digression. At the conference to commemorate Professor Jerzy Pelc, many speakers shared their memories of the Professor. One of the participants stressed in his talk that he remembered Pelc as a "true professor" from whom authority, seriousness and a certain old-fashionedness were emanating. It was manifested by the fact that Pelc was supposed to recommend before the exam that the students "knuckle down" [*przysiąść fałdów* in Polish]. A phrase that is rare and memorable.

Pelc's old-fashionedness seems to be unquestionable. Its traces can be seen in one of his recent texts, namely *Prostackopolski – dodaj do ulubionych* [Rude Polish—Add to Favorites], in which it manifests itself with regard to contemporary Polish language usage. However, in my opinion, in the expression "to knuckle down" we can hear another important trait of Professor—the awareness of the "intellectual debt" in his own masters convictions as well as the effort put into nurturing the memory of their legacy.

"To knuckle down" seems to me to be a non-accidental phrase. This is how Tadeusz Kotarbiński wrote about Kazimierz Twardowski:

> Having found Poland a fallow field, overgrown with weeds, rolled up his sleeves and started pulling out the weeds and planting nutritious vegetables [...]. And he was forced to exterminate a flash in the pan, non-punctuality, unreliability in contracts, unsystematicism, the pursuit of what one is now most occupied with; and he forced them to knuckle down, to respect the organizational bond, to practice routines of various kinds, [to prepare] detailed papers, objective summaries... (Kotarbiński, 1936/1958, p. 897)

Anecdotally, one could say that Twardowski established a school of those who knuckle down. In the interview titled *Nauczyć krytycznego myślenia i jasnej mowy* [To Teach Critical Thinking and Clear Speaking] Pelc admitted he originated from this tradition. He replied to the statement that he attaches great importance to teaching work as follows:

> It's true. In my work on philosophy, I think you can see two stages. The first one is the twenty years of 1951–1971, when I worked in the Department of Logic of Tadeusz Kotarbiński, after he retired in 1956 or 1957, taken over by Janina Kotarbińska. The second stage took place from 1972, when I established the Logical Semiotics Department. [...] So I am a teacher. Of what subject? In the official lecture records—logical semiotics, formerly logic. But I want to be, above all, a teacher of good thinking and speaking. This is my main task: to teach people to think independently

> and critically, to think correctly, and what comes with it—to speak and write clearly and correctly. I spare no effort doing it. Maybe partly because I want to spare myself the negative stimuli received from my surroundings: I am very annoyed by the lack of criticism, by the clumsiness of thought and language betraying the lack of logical culture and spiritual primitivism manifesting itself in the lack of culture of speaking. (Kobos, Pelc, 2008, p. 588–589)

In the next fragment, Pelc referred directly to Twardowski and his school:

> So, there are running along parallel tracks both my scientific work, a sign of which is what I have written, and my teaching and educational work, a sign of which are perhaps the minds of some of my students shaped in some way. And since it is easier to shape the material that is not yet ripe, I particularly value classes with first-year students who are "undemoralized" intellectually by previous readings and other cognitive experiences. Here, I follow in the footsteps of Kazimierz Twardowski and his direct students. (Kobos, Pelc, 2008, pp. 588–589)

There are undoubtedly more common features to be found connecting Pelc with Twardowski and his students. Pelc came to the conclusion (after "a sober and critical assessment of his capabilities") that he would be more useful to the world if he organize the work of other researchers and publish their results rather than if he only published his own works (Pelc, 2015, p. 26). The famous Pelc short tests[2] were associated with the willingness to teach in an effective way, even if it was exposing the teacher to criticism from students and causing extra work for him (Pelc, 2015, pp. 28–29). A similar position was expressed by Twardowski (1926/2014, p. 47). The very idea of classes in logical semiotics (given for humanities faculties) arose out of the conviction, nourished, among others, by Kotarbiński, that classes in formal logic should be replaced with classes in general logic. The latter consists of semantics in a wider sense, i.e. semiot-

[2] Each tutorial given by Pelc began with a short test, during which students—divided into four groups—were to answer one question. Short tests were marked with plus or minus and their results were part of the final grade. A pass was obtained when the number of pluses was not less than the number of minuses. An exemplary task from a short test: "Formulate a definition by abstraction of watch accuracy".

ics, together with elements of ontology, theory of knowledge, psychology, methodology of sciences, and thus pragmatics (Pelc, 2015, p. 10–11).

In this paper, I would like to discuss in more detail three elements from the general and complex picture of the connections between Pelc's thoughts and those of Twardowski and his students, concerning above all the teaching of good intellectual work. These three elements are the postulates of critical thinking and clear speaking and the idea of classes in the so-called general logic. Not only did Pelc inherit these ideas but he also creatively developed and updated the views of his teachers.

## To Teach Critical Thinking and Clear Speaking: The Postulates of Criticism and Clarity

The title of the interview with Pelc evokes two skills to be taught in general logic classes: the ability to think critically and express thoughts clearly in speech (and writing). It seems worth emphasizing that these goals are not accidental—they are supported by two methodological postulates of the members of the Lvov-Warsaw School (henceforth, LWS), i.e. the postulate of criticism and the postulate of clarity. Behind their methodological character lies the conviction that every valuable way of practicing science and philosophy must meet these criteria. It was these methodological framework postulates, not a substantive content which defined LWS:

> The main characteristic of this School is in the formal-methodological domain: it is based on striving for the greatest possible precision and accuracy in thinking and expressing one's thoughts as well as on the most exhaustive justification of what is said and the correctness of proof. (Twardowski, 1926/2014, pp. 47–48)

Pelc considered these postulates not only as methodological principles but also didactic ones.

### Postulate of Criticism

Ralph Johnson and Marcin Koszowy—in their article pointing to a logical culture as a common source of informal and pragmatic logic—formulated a thesis that the representatives of the LWS did not use the phrase "critical thinking" (Johnson, Koszowy, 2018, p. 200). This is a mistaken belief: not only did they use it, but there was a quite clear conception underlying it.

Nowadays, the notion of critical thinking is understood shakily and broadly, or at least more broadly than in the LWS. It generally refers to a form of practical logic, aimed at analyzing everyday arguments, and a wide range of skills and attitudes developed thanks to it (cf. Ennis, 1996). In the LWS, however, the postulate of criticism was related specifically to the justification of beliefs. It was also called a postulate of justification or a postulate of sufficient reason.

I think that the most complete picture of this postulate can be found in *Zarys logiki* [The Outline of Logic]: "In connection with the above comments concerning the justification of the claims, it is necessary to recall the so-called principle of sufficient reason (*principium rationis sufficientis*) which is usually mentioned in logic textbooks" (Ajdukiewicz, 1953, p. 68).[3]

Ajdukiewicz noted that this principle is ambiguous and one can find several definitions of it. In Leibniz's view, it takes the form of a statement that "no situation can become a fact and no statement can be true without sufficient reason [indicating] why it is so, and not otherwise, although these reasons usually cannot be known to us". According to a different approach, this principle is not a claim but a postulate not to act recklessly when formulating one's views, but only to recognize sufficiently justified claims (Ajdukiewicz, 1953, p. 68).

Finally, Ajdukiewicz stated:

> The principle of sufficient reason, understood as a postulate demanding justification for all our convictions, is no different at all from the postulate of criticism, which, while demanding critical thinking from us, only demands that we should not give anything recklessly, but that we should believe only in what has been duly justified by other people or by ourselves. (Ajdukiewicz, 1953, p. 69)

Critical thinking, therefore, is to not accept beliefs for which we do not have sufficient justification. We break the postulate of critical thinking contained in the principle of sufficient reason by recklessly giving faith to other people's words and by the influence our feelings and desires have on our beliefs. Ajdukiewicz concludes:

---

[3] This principle was discussed by Twardowski in his *Zasadnicze pojęcia dydaktyki i logiki: do użytku w seminaryach nauczycielskich i w nauce prywatnej* [Basic Concepts of Didactics and Logic] (Twardowski, 1901a, p. 23).

> We have listed above some of the factors that most often lead us to lend uncritical credence to unjustified beliefs and thus lead to a violation of the principle of sufficient reason. Paying attention to these factors and recalling the postulate of critical thinking contained in the principle of sufficient reason should make us more resistant to their influence. (Ajdukiewicz, 1953, pp. 70–72)

It is worth stressing that the postulate of criticism—as a postulate of sufficient reason—was not proclaimed only on the grounds of the LWS but was characteristic of many rationalistic (or anti-irrationalistic and sceptical) philosophical traditions. It is also the basis of scientific thinking. However, this principle itself requires critical consideration because, as we have seen, it adopts various formulations, such as "everything has its cause" and "do not attribute to your convictions a degree of certainty higher than their justification allows". Its recognition also requires the threat of scepticism to be resisted: are we able to point out sufficient reasons for all of our beliefs? What is justification of beliefs, what is its gradationality? Regardless of the sceptical doubts, among the various characteristics of critical thinking this one seems to be most deeply rooted in philosophical reflection.[4]

## Postulate of Clarity

Władysław Witwicki once formulated an opinion about Twardowski, in which he emphasized his ability to clearly present even the most difficult topics:

> Suddenly there were incredible rumors that one could understand everything they discussed and listened to during those lectures and tutorials. There is no daydreaming and jargon of the initiated. Every word is explained and one always know what it is about, even if it is about difficult and unpopular issues. This attracted more and more crowds to his lectures. Some people attended Twardowski's lectures because they were curious whether it was possible at all to understand philosophical issues without being an expert. Both the former and the latter turned out to be possible because both were real. (Witwicki, 1938/1982, pp. 269–270)

[4] *Zarys logiki* is not the only place where Ajdukiewicz evoked and characterized the postulate of criticism, see for example (Ajdukiewicz, 2013, p. 49).

The quote concerns Twardowski, but without difficulty it could be related to Pelc and the style of his classes—especially his seminars. The postulate of clarity underlying this style of giving classes also has a deeply philosophical and long provenance. On the ground of the LWS its sources and power of influence we can find in Twardowski's attitude and works. He already considered the topic of the clarity of ideas in his doctoral dissertation *Idea a percepcja* [Idea and Perception] (1892), but this issue is generally associated with his influential paper *O jasnym i niejasnym stylu filozoficznym* [On the Clear and Unclear Philosophical Style] (1919) which some take as Twardowski's manifesto. In this article he indicated that the ambiguity of speech is closely linked to the ambiguity of thoughts; he also noted that:

> Well, if the above remarks are correct, they free us largely from the obligation to break our minds about what a philosophical author who writes in an unclear style actually thinks. Guessing his thoughts only then will present a thing worthy of effort if, from elsewhere, we have acquired the conviction that he thinks clearly, so that the ambiguity of style comes in a given case from the contamination of the text or from the haste in writing the work. (Twardowski, 1919, p. 205)

In this article Twardowski raised the requirement he set himself in his didactic work to the rank of a methodological principle or one of the principles of hermeneutics (understood as an art of interpreting texts).[5] As one of the first students of the founder of the LWS, Jan Łukasiewicz, wrote in his diary:

> The main thing I owe to Twardowski is not logical or philosophical knowledge, nor accuracy of thinking, but the ability to clearly arrange and present even the most difficult issues and views. Twardowski had this ability to a high degree and I tried to see how it can be done. Thanks to the fact that Twardowski was able to think clearly and speak clearly, he was an excellent teacher and had so many students. (Łukasiewicz, 1949/2009/2010, p. 361)

Then, Łukasiewicz contrasted the clarity of thinking with its accuracy and added: "However, I did not learn the accuracy of thinking from

[5] Pelc returned to these topics, among others, in *Język współczesnej humanistyki* [Language of Modern Humanities] (Pelc, 2000).

Twardowski. What it means to think strictly I only learned from Leśniewski in Warsaw" (Łukasiewicz, 1949/2009/2010, p. 361).

In the LWS, the postulates and concepts of clarity, precision or accuracy—with regard to the verbal expression of thought—were generally considered equivalent (Przełęcki, 1998). Of course, the problem of the clarity of ideas (representations, concepts, etc.) is rooted in philosophy at least as strongly as the principle of sufficient reason. Its origins can easily be traced back to Descartes or Locke or even Plato and Socrates.

## Conception of Critical Thinking—General Logic—School Logic...

The conception of general logic was created on the basis of two aforementioned postulates. Undoubtedly, it can be seen as an equivalent of contemporary conceptions of critical thinking but the range of similarities and motivations behind both approaches are so rich and diverse that they deserve to be developed in more detail.

First of all, I think it is worth highlighting an important fact. The conception of general logic was not a margin for deliberations undertaken by the members of the LWS. Quite the contrary, it was the foundation stone of the LWS and inspired many deliberations undertaken especially by Twardowski, Kotarbiński, Ajdukiewicz and Czeżowski. The importance attributed to general logic was strongly connected with the conviction that teaching plays a major role and it is necessary to promote logical culture.

The conception of general logic in the LWS was shaped by German-language logic textbooks: they inspired scientific research of Twardowski and Łukasiewicz. As it seems, Höfler's textbook was particularly important in this respect. The conception of general logic was then greatly influenced by the discussion on the value of traditional, philosophical logic and fast-developing mathematical logic. However, this conception was being permanently formed in relation to teaching and didactics.

## Logic and Didactics

Twardowski treated logic as an auxiliary science of didactics. He defined the former as a science about the truthfulness of judgments and justified its connection with didactics as follows: Didactics teaches how a teacher should act when, on the one hand, he gives a student infor-

mation and, on the other, trains his intellectual abilities. According to Twardowski, to possess knowledge about an object is as much as to be able to make true judgments about it. And the training of intellectual abilities is making a student capable of expressing true judgments on his own. The transfer of possessed knowledge, just like training a student's intellectual independence, is connected with the ability to make true judgments. Twardowski draws the conclusion that "if you want to teach well, you also need to familiarize yourself with logic"—especially its subject because it is the truthfulness of judgements (Twardowski, 1901a, p. 12).

The relationship between didactics and logic was also explicated by Ajdukiewicz but he did it slightly differently from Twardowski. Ajdukiewicz pointed out that one of the branches of logic is the methodology of science. It is a theory of science and deals with, among other things, activities that make up science, such as defining, justifying claims, proving, solving problems, experimenting and explaining facts.

Didactics is a theory of teaching. In Ajdukiewicz's opinion, one of the most important subjects of teaching are precisely sciences understood as activities (not products). Methodology is, therefore, the science of subjects of teaching and as such provides the foundation for didactics. The relationship between logic (methodology) and didactics has practical consequences:

> In order to be a good teacher, i.e. to teach students effectively, it is not enough to be able to perform activities being a subject of teaching efficiently by oneself, one must also have a theoretical knowledge of these activities, one must know their theory. (Ajdukiewicz, 1934, p. 5)

Although Twardowski and Ajdukiewicz start with slightly different assumptions, they reach a similar conclusion: in order to teach efficiently, one has to know the theory of the subject of teaching, regardless of whether we assume that consists of true claims or sciences understood as activities. It seems that Twardowski in his approach put emphasis on sciences as results (sets of true claims), while Ajdukiewicz—on sciences as activities. These are complementary views, not contradictory ones.

## Concept of Logical Culture

Logic does not only has the function of a meta-science, providing the teacher with knowledge about the subject of their teaching. Logic itself is

a subject of teaching therefore, we can talk about some expected learning outcomes of logic.

This fact was pointed out by Twardowski in his article *O wykształcenie logiczne* [For Logical Education]. He noted that every educated person should get a general historical, mathematical, grammatical and... logical education. Education consists in the fact that one has acquired a certain amount of knowledge and mastered a certain set of skills:

> We will not ascribe general logical education to a person who does not know basic logical concepts or is not able to reason correctly, just as we will not ascribe general grammar education to someone who does not know what an adjective is or who does not know how to pronounce correctly, or as we will not ascribe general mathematical education to someone who does not know what a function is or who does not know how to solve a simple first-degree equation with one unknown.
>
> So it is not unreasonable for a man who could rightly be ascribed a general logical education to demand, for example, that he should know what syllogism is, or in his arguments he does not violate the postulate of logical consequence, at least not too blatantly. (Twardowski, 1920, p. 65)

The lack of a logical education not only has theoretical consequences but also practical ones. Pointing out logical errors—e.g. in the use of the term "syllogism"—is not only the result of a pedantic quest for precision but is also a sign of concern for the consequences of the practical application of thought.

The concept of logical education metamorphosed over time into the concept of logical culture (Czeżowski, 1954; Ajdukiewicz, 1959; Kotarbiński, 1970). Having a logical culture translates into thinking and speaking logically what in Ajdukiewicz's view means the clarity of expression and correctness of inference, as these skills are components of logical culture:

> Perhaps the most important component of logical culture is the care for the factual precision of verbal expressions and thoughts expressed by them. [...] The second important component of logical correctness is the factual order and order of our verbal statements and thoughts. The third component of logical correctness is the rational attitude towards statements that are considered true, i.e., criticism. [...] The last component of logical culture worthy of consideration is consistency in thinking, as well as, to some extent, consistency in action. Consistency in thinking is manifested by one

> who, as long as he accepts a certain claim, is also ready to accept its logical consequences. (Ajdukiewicz, 1959/2006, pp. 324–327)

Logical culture is not just the result of logic classes, it should be shaped in the lessons of all subjects. Logic classes should systematize the knowledge and skills acquired in other classes:

> In the lessons of all subjects, it should be ensured that students develop a logical culture, and in particular that they develop an addiction to think and speak logically correctly. However, teachers of all subjects must also take care of the theoretical component of logical culture. Therefore, all opportunities should be used to familiarize students with the basic theorems and concepts of logic by referring to specific teaching material. Lessons of logic, to which a small number of hours is devoted at school, should rather gather the sowing thrown at lessons of other subjects, they should recall, supplement and systematize the notions and theorems of logic learned in the past. (Ajdukiewicz, 1959/2006, p. 322)

This recommendation is in line with the vision of a teacher as someone who has mastered sufficient logic knowledge and skills.

Kotarbiński characterized the scope of logical culture in an interesting way. He indicated that a high school graduate could be expected to master the vocabulary of philosophical logic: "What a high school graduate should achieve as a form of logical culture can be characterized as mastering the vocabulary of philosophical logic" (Kotarbiński, 1970/2003, p. 623). This is, of course, a goal defined as minimal, emphasizing the theoretical aspect of logical culture. It is no coincidence, however, that Kotarbiński points to the vocabulary of philosophical logic—it underlines the tool-like nature of logical concepts, but also presupposes the existence of a certain opposition between philosophical and mathematical logic.

## Role of Mathematical Logic

Undoubtedly, the LWS contributed greatly to the development of the world's mathematical logic. Some of the most famous representatives of the LWS are logicians such as Jan Łukasiewicz, Stanisław Leśniewski and Alfred Tarski. While the scientific value of mathematical logic and its discoveries is not in the least controversial, the subject of discussion in the LWS was what kind of logic should be taught in order to ensure general logical education and logical culture.

An interesting discussion on this matter developed at the turn of 1924 and 1925. Jan Łukasiewicz in his talk entitled *Why Are We Not Satisfied With Philosophical Logic?* presented on December 15, 1924 at the Polish Psychological Society stated:

> According to the speaker, philosophers as such are not sufficiently qualified to practice logic; in order to practice this science to its benefit, one should stand on a strong foundation of scientific deductive methods, which can be assimilated by studying mathematics. In philosophical logic there is a hopeless impotence of thought. This impotence has had a fatal impact on the whole of modern philosophy and on many scientific disciplines. This logic not only does not teach good thinking but also creates harmful thinking habits. Therefore, it should disappear as soon as possible, especially from school teaching, and its place should be taken by mathematical logic. (Łukasiewicz, 1925, pp. 25a–25b)

After a few weeks—on January 12, 1925—Kotarbiński presented a counter-argument to many of Łukasiewicz's points:

> The speaker, fully recognizing the revolutionary role and the excellent advantages of mathematical logic, especially in comparison with traditional formal deductive logic, tried to demonstrate that mathematical logic, partly due to its current stage of development, partly due to its proper character, leaves fallow whole areas of issues belonging to logic in the wider sense. (Kotarbiński, 1925a, pp. 25a–25b)

Kotarbiński described general logic—i.e. logic in the wider sense—also as "logic in the school sense". He noted that in curricula it has assigned the role of science about science to. He also indicated what issues should be included in its scope:

> Logic, understood in such a way, should include the issues of the psychological techniques of mental work, general didactics, historical methodology (research on the ways how scientific disciplines are created and developed), analysis of the concepts which are really operating in scientific disciplines (building a historical dictionary of scientific terms), analysis of the semantic aspects of language, theory of knowledge, and finally the logic of induction together with the theory of experiment. (Kotarbiński, 1925a, pp. 25a–25b)

Some of them may seem surprising—they are even foreign bodies in the tissue of logic.

Kotarbiński developed his remarks in the article titled *Logika dla nauczycieli a logika matematyczna* [Logic for Teachers and Mathematical Logic]. He pointed out, among others, the discrepancy between how logic is understood on one hand, by its "progressive" representative and on the other hand, by a man outside the discipline. The former—contrary to the latter—does not consider logic to be a science that would have thinking (even scientific) or correct thinking as its subject. Logic is not a part of psychology, it does not teach thinking because it is not a practical science, but a theoretical one. Kotarbiński indicates, however, that the answer to the question "what is logic" is not easy:

> Therefore what is [logic]? The answer is difficult but it is certain and unshakeable that it is the basic branch of mathematics; due to a misunderstanding and only as a result of a flawed tradition it belongs to the so-called philosophical sciences. So, we have a special kind of mathematics instead of a kind of epistemology. (Kotarbiński, 1925b/2003, p. 578)

Some see the difference between logic as mathematics (formal logic, "logistics"—as it used to be said in 1920s and 1930s in Poland) and logic as epistemology (philosophical, general, school logic...) as the difference between good and bad logic:

> A stylish, so to speak, logistician sees two "logics" around him: one "philosophical", that is bad, the other "mathematical", that is good. [...] Since, therefore, logistics is the only true logic and the only good logic, it should reign exclusively in all establishments entrusted to logic. This conclusion, which may never be said, in all its brightness, is taken from words and deeds. (Kotarbiński, 1925b/2003, p. 579)

The expression "stylish logistician" refers in this case to Leśniewski. He used to say that the discipline he practices is called *logika* [logic] stressed on the antepenultimate syllable. In contrast *logika* as the name of philosophical logic practiced by Kotarbiński should be accented on the penultimate syllable (incorrectly in Polish, but often used in colloquial language).

Kotarbiński emphasized that he does not want to defend philosophical logic, in particular he was aware that the adjective "philosophical" is a source of confusion and hinders communication. He also emphasized the practical character of the discussion on different understandings of logic

and the distinction between two types of logic. As a result, he came up with another term, i.e. "pedagogical logic":

> And the problem is of a practical nature and concerns the way of organizing an academic teaching work, intended for use by teachers. We ask what domains of issues among those discussed today or in the past under the aegis of "logic" or those related to them by the very development of the subject are not included in the curriculum of current logistics, although they require the inclusion in the curriculum of pedagogical logic. When we use this word, we mean logic as a subject of studies and obligatory exams for candidates for the teaching profession, especially candidates for teachers of "philosophical propaedeutics". (Kotarbiński, 1925b/2003, p. 579)

These "objections" to mathematical logic as the basis of logical culture may be surprising as the LWS became famous for its results in formal logic. In his memoirs, Witwicki described Kotarbiński as a bear on Leśniewski's chain, remaining under his great influence (Witwicki, 1920/2016, pp. 74–76). Without resolving this issue, it should be noted that in the regard of pedagogical logic Kotarbiński was against Leśniewski and his authority. The objections to mathematical logic were not of a passing or accidental nature: Kotarbiński addressed this issue in a series of articles (1925b/2003; 1951a/2003; 1951b/2003; 1955; 1956; 1964/2003; 1967), as did Twardowski (1901b/2013; 1921) and Ajdukiewicz (1951).

## General, School and Pedagogical Logic...

It is not difficult to notice that the leading representatives of the LWS were the authors of numerous introductions to philosophy and logic. In particular, the textbooks of logic were the subject of meticulous interest and studies in the LWS, and their role definitely went beyond the nature envisaged for these publications. Jacek Jadacki in his review of *Logika pragmatyczna* [Pragmatic Logic]—one of several textbooks by Ajdukiewicz—noted that Ajdukiewicz's students developed the comments contained in the footnotes of that textbook to the proportions of scientific dissertations (Jadacki, 1994, p. 18).

Pelc wrote many times about the role and value of Kotarbiński's textbook (1929/1990)—about its influence not only on him, but on a whole generation. During his classes he often reffered to fragments from his masters' textbooks. Moreover, his reflections on metaphor were inspired by Ajdukiewicz's remarks from *Zarys logiki* [The Outline of Logic].

Similar themes can be found in the biography of Twardowski. For example, Twardowski's habilitation was—as Twardowski himself claimed—a development of one of the footnotes of Höfler's *Logic* (Twardowski, 1894/1965, p. 4), this textbook also influenced Łukasiewicz (he appreciated its value, despite the psychological nature of the work: see Łukasiewicz, 1906/1961, p. 59). In 1901 Twardowski wrote a textbook of logic which on the one hand, referred to textbooks of philosophical logic (by Höfler, Stöckland and to some extent by Mill), but on the other hand, undoubtedly influenced the textbooks by Kotarbiński and Ajdukiewicz. The authors were aware of the need to overcome the flaws of traditional and philosophical logic textbooks and to rethink the issues raised in them, thus they were not papers on old and well-known things but works of a synthetic, scientific and original nature (what is perhaps particularly noticeable in the case of Kotarbiński's textbook containing a treatise on reism).

Even a superficial review of the textbooks by Twardowski, Kotarbiński, Ajdukiewicz and Czeżowski allows one to see the common core of the issues constituting the conception of general logic. These are the issues of contemporary semiotics (e.g. semantic functions of expressions, definitions, linguistic defects), epistemology (e.g. presentations, concepts, judgments), formal logic (e.g. laws of logic, logical relations between propositions, structure and properties of deductive systems) and the outline of the general methodology of sciences, e.g. division of kinds of reasoning, inductive and deductive methods, division of sciences. Of course, different studies focus on different aspects and treat certain issues in a more extensive way.

However, in addition to this common core, which has established itself as the stable scope of many textbooks of logic, we will find in the textbooks issues that do not belong to it. Particularly noteworthy, I think, is the theory of measurement and the basics of statistics in *Logika pragmatyczna*—as an advanced approach to inductive methods. In the script of Kotarbiński's *Logika dla prawników* [Logic for Lawyers] one can find elements of eristic. In Twardowski's textbook—didactic issues, concerning, for example, types of lesson flows.

These elements, since less obvious, may require specific justification to be accepted as logical issues and its role should be defined, but in fact, any issue that does not belong to formal logic may require such justification from a certain point of view. It is worth noting that some of these elements belong to the legacy of traditional logic, e.g. eristic. The issues concerning the functions of natural language are rooted in Aristotle's *Organon* (Kotarbiński, 1967; 1925b/2003, p. 581) and the issues of induc-

tion—and statistics—go back to Francis Bacon's *Novum Organum* (Ajdukiewicz, 1965). Kotarbiński postulated that the issues of the dynamics of development of science and the history of scientific concepts should be included in the scope of general logic (Kotarbiński, 1951b/2003, p. 591).

The presence of didactic issues is explained by the fact that textbooks of logic were addressed mainly to teachers. However, these issues also belong to a wider group of praxeological issues. The representatives of the LWS—especially Kotarbiński—postulated the inclusion of general principles of good work in logic in a broad sense (Kotarbiński, 1951b/2003, p. 591), as well as practical advice, e.g. mnemonics (Kotarbiński, 1925b/2003, p. 582; 1964a/2003, p. 617) and focusing techniques (Kotarbiński, 1964a/2003, p. 617).

Another range of issues concerned psychological research on human irrationality (conditions increasing the risk of making a logical error; Ajdukiewicz, 1951/2006, pp. 135–136). It is significant that in his recommendations, Ajdukiewicz went far beyond the scope of logic (especially formal, but also traditional). He recommended e.g. a pre-war Stanisław Rudniański's book *Technologia pracy umysłowej* [Technology of Mental Work] to be used in logic lessons (Ajdukiewicz, 1955, p. 269).

The conception of general logic as an interdisciplinary, heterogeneous and at times probably incoherent subject emerges from these observations:

> It is up to logicians to give a picture of the world of science in its fundamental lines. And finally, they have the right and duty to place his own science in this world, to take a stand in disputes over its subject, method and closer or looser connection with certain other sciences. Logic as a school subject, a product of long historical development, will then reveal all the diversity of its subjects. For how different are its semantic, purely formal and methodological problems, how different are its recommendations, demanding correctness of speech, from the point of view of accuracy and clarity of speech, and other recommendations, e.g. concerning the preparation of an experiment or so-called mental work technique! It is not a uniform theoretical discipline and should not aim for such uniformity. It is supposed to make one more efficient in mental work, with a particular emphasis on reasoning, i.e., considerations justifying one's claims, and should do so through the realizations of various types. (Kotarbiński, 1964a/2003, p. 615)

## Conclusion

The classes given by Professor Pelc undoubtedly corresponded to the broad conception of general logic. He tried to be a teacher of thinking and good work—not only in philosophy, but in humanities in general. He achieved this goal not only through the selection of subjects, high expectations and requirements, various ways of testing students' knowledge, but also by setting a good example. He shared many things not through lectures or readings, but by directly guiding the efforts of students—especially efforts to prepare the end of year written assignment. The process of preparing the paper was instructive—e.g. consulting the subsequent stages of essay writing—but also the expectations, e.g. that the work should be accompanied by an abstract and keywords in one of the congressional languages.

Professor Pelc became known and remains in memory as an outstanding researcher, creator of contemporary Polish semiotics, organizer and educator. In this article, I tried to show that the latter role puts him in one line with the eminent representatives of the LSW, as they shared a common concern for the education of the students' logical culture, fulfilment of the postulates of clarity and criticism, and preference for logic in a broad sense. As I have presented, the conception of general logic was not narrowed to formal logic, but it constituted a truly interdisciplinary field including, among others, elements of epistemology, psychology, praxeology. In fact, it could be seen as a contemporary *trivium*.

Finally, I would like to express my deep conviction that the conception of general logic deserves to be rediscovered and reconstructed and its history to be written down. But more importantly, this conception deserves to be creatively developed.

## REFERENCES

Ajdukiewicz K. (1923). *Główne kierunki filozofii w wyjątkach z dzieł ich klasycznych przedstawicieli (teoria poznania, logika, metafizyka)*. Lwów: Nakład K. S. Jakubowskiego.

Ajdukiewicz K. (1934). *Logiczne podstawy nauczania*. Warszawa: nakładem „Naszej Księgarni" sp. akc. Związku Nauczycielstwa Polskiego.

Ajdukiewicz K. (1938). *Propedeutyka filozofii dla liceów ogólnokształcących*. Lwów: Książnica Atlas.

Ajdukiewicz K. (1949). *Zagadnienia i kierunki filozofii (Teoria poznania. Metafizyka)* [Issues and Directions of Philosophy]. Warszawa: Czytelnik.

Ajdukiewicz K. (1951). Logika, jej zadania i potrzeby w Polsce współczesnej. *Myśl Filozoficzna*, *1–2*.

Ajdukiewicz K. (1953). *Zarys logiki*. Warszawa: PWN.

Ajdukiewicz K. (1955). Sprawa planu prac badawczych w zakresie logiki. *Studia Logica*, *2*.

Ajdukiewicz K. (1959/2006). Co może zrobić szkoła dla podniesienia kultury logicznej uczniów. In K. Ajdukiewicz, *Język i poznanie* (vol. 2, pp. 322–331).

Ajdukiewicz K. (1965). *Logika pragmatyczna* [Pragmatic Logic]. Warszawa: PWN.

Ajdukiewicz K. (2013). Miscellanea Kazimierza Ajdukiewicza. *Przegląd Filozoficzny – Nowa Seria*, *4*(88), 27–121.

Czeżowski T. (1958). O kulturze logicznej. In T. Czeżowski, *Odczyty filozoficzne*. Toruń: TN.

Ennis R. H. (1996). Critical Thinking Dispositions: Their Nature and Assessability. *Informal Logic*, *18*(2–3), 165–182.

Jadacki J. (1994). Logika pragmatyczna. In B. Skarga (Ed.), *Przewodnik po literaturze filozoficznej XX wieku* (pp. 13–18). Warszawa: WN PWN.

Jadacki J. (2016). *Stanisław Leśniewski: geniusz logiki*. Bydgoszcz: Oficyna Wydawnicza Epigram.

Johnson R. H., Koszowy M. (2018). Logical Culture as a Common Ground for the Lvov-Warsaw School and the Informal Logic Initiative. *Studies in Logic, Grammar and Rhetoric*, *55*(1), 187–229.

Kotarbiński T. (1925a). Logika w sensie szkolnym a logika matematyczna [Autoreferat]. *Ruch Filozoficzny*, *1/2*.

Kotarbiński T. (1925b/2003). Logika dla nauczycieli a logika matematyczna. *Ruch Filozoficzny*, *9/10*.

Kotarbiński T. (1929/1990). *Elementy logiki formalnej, teorii poznania i metodologii nauk*. Wrocław–Warszawa–Kraków–Gdańsk–Łódź: Zakład Narodowy im. Ossolińskich Wydawnictwo Polskiej Akademii Nauk.

Kotarbiński T. (1936/1958). Kazimierz Twardowski. In T. Kotarbiński, *Wybór pism, Vol. II: Myśli o myśleniu*. Warszawa: PWN.

Kotarbiński T. (1951). *Logika dla prawników*. Warszawa: PWN.

Kotarbiński T. (1951a/2003). Logika, jej zadania i potrzeby w Polsce współczesnej. *Myśl Filozoficzna*, *1–2*, 50–67.

Kotarbiński T. (1951b/2003). Zadania swoiste logiki szkolnej. *Nowa Szkoła*, *2*(5), 327–339.

Kotarbiński T. (1955). Kryzys logiki. *Myśl Filozoficzna*, *1*, 223–228.

Kotarbiński T. (1956). Sprawa logiki w przededniu rozstrzygnięć. *Myśl Filozoficzna*, *2*, 121–125.

Kotarbiński T. (1964/2003). Logika szkolna, jej problematyka i znaczenie dla pedagogiki. In F. Korniszewski (Ed.), *Pedagogika na usługach szkoły* (pp. 22–39). Warszawa: PZWS.

Kotarbiński T. (1967). Sprawa programu logiki dla prawników. In *Dwadzieścia lat Wydziału Prawa Uniwersytetu Łódzkiego* (pp. 42–46). Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

Kotarbiński T. (1970). Logika jako szkolny przedmiot pomocniczy (ze szczególnym uwzględnieniem studiów humanistycznych). *Studia Logica*, *26*, 99–105.

Łukasiewicz J. (1906/1961). Analiza i konstrukcja pojęcia przyczyny. In J. Łukasiewicz, *Z zagadnień logiki i filozofii* (pp. 9–62). Warszawa: PWN.

Łukasiewicz J. (1925). Dlaczego nie zadowala nas logika filozoficzna? *Ruch Filozoficzny*, *9*(1–2).

Łukasiewicz J. (1949/2009/2010). Pamiętnik (fragmenty). *Rocznik Historii Filozofii Polskiej*, *23*, 313–380.

Pelc J. (2015). Od wydawcy. Pożegnanie ze „Studiami Semiotycznymi". *Studia Semiotyczne*, *28–29*, 5–30.

Pelc J. (Ed.). (2000). *Język współczesnej humanistyki*. Warszawa: Znak–Język–Rzeczywistość, Polskie Towarzystwo Semiotyczne.

Pelc J., Kobos A. (2008). Nauczyć krytycznego myślenia i jasnej mowy. In *Po drogach uczonych. Z członkami Polskiej Akademii Umiejętności rozmawia Andrzej M. Kobos* (vol. 3, pp. 563–604). Kraków: PAU.

Przełęcki M. (1998). The Postulate of Precision: its Sense and its Limits. In J. Woleński, K. Kijania-Placek (Eds.), *The Lvov-Warsaw School and Contemporary Philosophy*. Dordrecht: Kluwer Academic Publishers.

Twardowski K. (1894/1965). O treści i przedmiocie przedstawień. In K. Twardowski, *Wybrane pisma filozoficzne*. Warszawa: PWN.

Twardowski K. (1901a). *Zasadnicze pojęcia dydaktyki i logiki: do użytku w seminaryach nauczycielskich i w nauce prywatnej*. Lwów: Drukarnia Ludowa.

Twardowski K. (1901b/2013). O formalizmie logicznym w myśleniu [abstrakt]. In J. Jadacki, A. Brożek (Eds.), *Twardowski. Myśl, mowa, czyn* (vol. 1, p. 27). Kraków: Copernicus Center Press.

Twardowski K. (1920). O wykształcenie logiczne. *Ruch Filozoficzny*, *5*(4–5).

Twardowski K. (1921). Symbolomania i pragmatofobia [Symbolomania and Pragmatophobia]. *Ruch Filozoficzny*, *6*(2).

Twardowski K. (1926/2014). Autobiografia [5]. In J. Jadacki, A. Brożek (Eds.), *Twardowski. Myśl, mowa, czyn* (vol. 2). Warszawa: Wydawnictwo Naukowe Semper.

Witwicki W. (1919/2016). List Władysława Witwickiego do Kazimierza Twardowskiego – jesień 1919 r. In J. Jadacki (Ed.), *Stanisław Leśniewski: geniusz logiki* (pp. 72–74). Bydgoszcz: Oficyna Wydawnicza Epigram.

Witwicki W. (1920/2016). List Władysława Witwickiego do Kazimierza Twardowskiego – 11 stycznia 1920 r. In J. Jadacki (Ed.), *Stanisław Leśniewski: geniusz logiki* (pp. 76–78). Bydgoszcz: Oficyna Wydawnicza Epigram.

Witwicki W. (1938/1982). Kazimierz Twardowski. In A. Nowicki (Ed.), *Witwicki*. Warszawa: Wiedza Powszechna.

Originally published as "*Nauczyć krytycznego myślenia i jasnej mowy*. Postulaty krytycyzmu i jasności a sprawa tzw. logiki ogólnej". *Studia Semiotyczne*, *33*(2), 167–183, DOI: 10.26333/sts.xxxiii2.04. Translated by Marcin Będkowski.

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 25–72
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.02
Article

Adam Olech *

# AJDUKIEWICZ, HUSSERL AND TARSKI— CONCERNING THE SEMANTIC THEORY OF KNOWLEDGE

Summary: This article is polemical. It argues with those philosophers who see, in the semantic theory of knowledge of Kazimierz Ajdukiewicz, the significant and exclusive influence of Alfred Tarski's semantic output. Listening to these philosophers, one gets the impression that they have overlooked the fact that the term "semantics" meant one thing in the case of Ajdukiewicz, presenting the semantic theory of knowledge, and something different in the case of Tarski, presenting the semantic theory of truth. There is another difference, related to the abovementioned, and fundamental in the case of both these logicians, namely their different approach to language, which seems to escape the attention of those who write about the semantic theory of knowledge. Ajdukiewicz's approach was intensional, while Tarski's approach was extensional: for the first of them, the intensional interpretation of language was basic, as for the second, was the extensional interpretation. The philosophers with whom I argue overlook one more fact, namely the impact, difficult to overestimate, that the intentional theory of language of Edmund Husserl had on the emergence of the semantic theory of knowledge. This article tries to restore Tarski's real role in the matter referred to in the title, and do justice to Husserl: after all, without his philosophy of the semantic theory of knowledge, as a metaepistemological project, it would not have come to be. It was only in the implementation of this project that some of the achievements of Tarski's semantics were used.

* Jan Dlugosz University in Czestochowa, Department of Philosophy. E-mail: adamolech@wp.pl. ORCID: 0000-0003-1661-3015.

KEYWORDS: Kazimierz Ajdukiewicz, Edmund Husserl, Alfred Tarski, Anna Jedynak, Jan Woleński, semantic theory of knowledge, semantic theory of truth, intensional and extensional interpretation of language, intentional theory of expression, knowledge determined by content, relationship of language and thinking.

## 1. Terminological Issues

If one wanted to characterize the meaning which the word "semantics" had in Polish philosophy at the turn of the 1920s and 1930s, and during the 1930s, one should first refer to the *Elementy* [Elements] of Tadeusz Kotarbiński (1986) the first edition of which came out in 1929. This well-known and influential academic textbook at the time, which is also a lecture on the original views of its author, begins with comments on language—that is how its first part is titled: *Uwagi o języku* [Notes on Language]. The first chapter of that part is entitled *O stosunkach semantycznych, jak wyrażanie, oznaczanie i inne* [On Semantic Relations, Such as Expressing, Designation and Others]. The semantic relations are, therefore, the relations of expression and designation mentioned here, as well as the relations of meaning, connotation, replacement and representation. According to the author of *Elements*, the word "semantics" carries those senses that we now call syntactic, semantic and pragmatic meanings (Kotarbiński, 1986, p. 17n). In the same chapter, speaking about semantics, Kotarbiński states that "semantics is called the science of the meaning side of language" (ibid., p. 28), and elsewhere in this chapter, writing about semantic categories, he states that "from the Aristotelian categories it is necessary to distinguish between the meaning categories otherwise called 'the semantic categories'" (ibid., p. 66), which, refers to those fragments of the second volume of Husserl's *Logical Investigations* (2000) in which Husserl writes about pure grammar, and strictly: about the *a priori* laws binding in complexes meanings, as well as important types of meanings that single meanings fall under. These important types of meanings are categories of meaning [*Bedeutungskategorien*], which in Husserl's analyses play a major role in creating uniformly meaningful complexes of meaning or—as we would now say—play a major role in creating syntactically coherent expression complexes (Kotarbiński, 1986, p. 66; Husserl, 1928, p. 318 f.; 2000, p. 398).

Nowadays, these categories of meaning, called by Kotarbiński "semantic categories", are called "syntactic categories" and are distinguished from semantic categories—in the case of the latter, the types of objects constituting the denotation of expressions belonging to a given semantic category are taken into account. While talking about this contemporary distinction, one should bear in mind that we also still meet with the use of the term "semantic category" in which the expression "semantics" is taken in a broad sense—as a name referring to the general theory of signs, now called "semiotics". With this understanding of the term "semantics", the term "semantic category" refers to both a syntactic category and a strictly understood semantic category.

Ajdukiewicz used the term "semantics" in the same way, i.e. also broadly, when he wrote about semantic categories on the occasion of his review of *Elements* and when he said that he did not agree with Kotarbiński's postulate stating the need to "turn all sentences containing noun phrases into sentences containing noun phrases of one and the same semantic category" (Ajdukiewicz, 1960a, p. 86) and also when he referred to logical-linguistic phenomena like meaning and expressing and determination as semantic (Ajdukiewicz, 1960a, pp. 86–94). In the lectures on logical semantics which Ajdukiewicz gave in the autumn of 1930 at the Jan Kazimierz University in Lviv, during which he first used his fractional notation, he also spoke about semantic categories (Ajdukiewicz, 1993, p. 165).

We meet the same broad understanding of the term "semantics" in Ajdukiewicz's thesis entitled *O znaczeniu wyrażeń* [On the Meaning of Expressions], in which we read that the term "semantic function" introduced by him in this work refers to every property owned by the expressions as such, with the exception of their external side (Ajdukiewicz, 1960c, p. 104). Hence the fact that Ajdukiewicz described the issue of the meaning of expressions to which this work was devoted as one concerning only one, though special, semantic function of the expressions (ibid., p. 104).[1]

[1] For the sake of clarity, I would like to point to the real and extremely important motivation that prompted Ajdukiewicz to write this essay: "In entering into this topic—wrote Ajdukiewicz—we would like to point out that this topic is not of interest to us as a chapter in the scientific dictionary. We are not only concerned with presenting and criticizing someone else's definition of meaning and displaying our own. We are talking about something else, which we can only vaguely signify here. Here we think that language plays a certain and very important role in the cognitive process. Different views on meaning reveal the rele-

Ajdukiewicz writes about semantic categories as syntactic categories, or—in Husserl's language, and later Leśniewski's—meaning categories, in the articles *W sprawie "uniwersaliów"* [On the Problem of Universals] (1960e, p. 197) and *Definicja* [Definition] (1960d, p. 243). In the same way, that is to say broadly, Ajdukiewicz understands the term "semantics" in the paper entitled *Problemat transcendentalnego idealizmu w sformułowaniu semantycznym* [Semantic Version of the Problem of Transcendental Idealism] (1960h), in which the term appears to be synonymous with the modern term "semiotics", and this is because the discussion of this work includes all three components of contemporarily understood semiotics, i.e. the syntactic, semantic and pragmatic. In concluding these terminological remarks, I would like to mention that the term "semasiology" functioned at that time as synonymous with "semantics", understood in this way. It was used by Ajdukiewicz and Alfred Tarski, as well as other philosophers and logicians of that time (Ajdukiewicz, 1960f, p. 145; Tarski, 1995b, pp. 11–12).

The above historical and terminological remarks are to serve the correct understanding of the term "semantics", appearing in Ajdukiewicz's essay *Problemat transcendentalnego idealizmu w sformułowaniu semantycznym* [Semantic Version of the Problem of Transcendental Idealism] (1960h), which is crucial for this article. In its original form, i.e. as a shorter paper, it was presented by its author in 1936 at the 3rd Polish Philosophical Congress in Krakow, and in the printed version—taking into account the discussion that took place after its presentation—in 1937. The correct understanding of the term "semantics" is a broad one, referring to the general theory of sign. It is therefore synonymous with the modern understanding of the term "semiotics", which contains three meanings: syntactic, strictly semantic and pragmatic. These are the threefold meanings in Ajdukiewicz's essay that appear under the common name "semantics"—referring to semantics broadly understood.

---

vant view of this cognitive role of language. For some, this role is rather an aside. Cognition could be had without the help of language, and language only acts as a means to consolidate and communicate our cognition to others. For others, this role is important, words of language present us with objects that, unlike words, cannot be presented at all. This or that position on what the meaning of words consists in is more or less closely related to the cognitive role of language. When dealing with the concept of meaning, we think that we can shed some light on this role" (ibid., p. 105).

For this article, the essay is crucial because it was there that Ajdukiewicz presented the metaepistemological project of the semantic theory of knowledge and its example implementation, which in the essay were jointly referred to as the "semantic theory of knowledge".[2] However, bearing in mind the way the term "semantics" was used at the time, it should be—translating the name of this idea and its implementation into a modern name—the "semiotic theory of knowledge", since the theory of knowledge understood in this way, covering the project and its implementation, involves Ajdukiewicz's threefold meaning: syntactic, strictly semantic and pragmatic. However—and I would like to emphasize this point clearly—Ajdukiewicz formulated his metaepistemological project of the semantic theory of knowledge without involving the concepts of contemporary semantics. So, if one wanted to define the project itself—from the point of view of the modern understanding of the term "semiotics"—it should be called a "syntactic-pragmatic project". However, the implementation of this project was semiotic, i.e. one that, in addition to syntactic and pragmatic concepts, also involved a contemporary semantic concept—strictly: the concept of "truthfulness" occurring in the metalogical formulation of the principle of the excluded middle.

One more equally important remark should be added to these terminological considerations: saying that in the 1930s Ajdukiewicz used the term "semantics" in a broadly understood way, the current equivalent of which is the term "semiotics", I could mislead the reader. This error would arise if the reader understood my words in such a way that Ajdukiewicz used in his research (until the aforementioned 1936) contemporary semantic concepts, since these concepts fall—in addition to syntactic and pragmatic concepts—into the concepts of contemporarily understood semiotics. This was not the case: at that time, Ajdukiewicz did not use the concepts of strictly understood semantics because of their antynomial character (cf. Ajdukiewicz, 1960b; Maciaszek, 2013; Maciaszek, 2015; Grabarczyk, 2019); which does not mean that his logical-linguistic or logical-linguistic-epistemological or logical-linguistic-ontological research, or such research of other philosophers, would not be described or termed "semantic research". However, the word "semantics" meant to him, at that time and in

[2] The metaepistemological project of the semantic theory of knowledge can also be referred to as the "metaepistemological programme" and this is how I sometimes describe it in this paper.

such cases, the same as the word "semasiology" or "general (logical) theory of language". It is worth mentioning that Ajdukiewicz first used the term "semantics" in the modern understanding only after the war, in an article from 1946 entitled *O tzw. neopozytywizmie* [On So-called Neopositivism] (Ajdukiewicz, 1965d, pp. 19–20).

I devote so much space to the above-mentioned terminological issues because I would like to point out that one should not directly associate the semantic theory of knowledge of Ajdukiewicz with Tarski's semantic theory of truth, strictly: these two theories should not be directly connected, which would amount to the statement that the semantic theory of knowledge is a derivative of the semantic theory of truth. The term "semantics" appearing in the name "semantic theory of knowledge" and in the name "semantic theory of truth" has a different meaning each time. In the case of the "semantic theory of knowledge" it has the former, broad sense, while in the case of the "semantic theory of truth" it has the strict, contemporary sense. These two semantic-epistemological theories, the theory of Ajdukiewicz and that of Tarski, share not only terminological issues, but something more, something fundamental, which I shall discuss in more detail. Let two opinions which contribute to the mistaken direct connection of Ajdukiewicz's semantic theory of knowledge with Tarski's semantic theory of truth be the introduction to the consideration of these differences. First, I shall present these opinions, and then—arguing against them—I shall present these fundamental differences.

## 2. The Views of Jan WoleńSki and Anna Jedynak on the Semantic Theory of Knowledge

**2.1.** The first opinion is that of Jan Woleński. In his well-known and influential monograph entitled *Filozoficzna szkoła lwowsko-warszawska* [The Lviv-Warsaw Philosophical School] (1985), in the chapter devoted to Ajdukiewicz's epistemology, bearing the title *Logic, Semantics and Knowledge—the Epistemology of Kazimierz Ajdukiewicz*, and, to be exact, in his sixth paragraph entitled *Semantics, Epistemology, Ontology*, Woleński writes:

> As a radical conventionalist, Ajdukiewicz did not derive any ontological conclusions from his epistemology. The change took place around 1936, when Ajdukiewicz became convinced of the importance of Tarski's semantics. The first testimony to Ajdukiewicz's new attitude towards the rela-

> tion 'epistemology-ontology' was the paper he gave at the 3rd Polish Philosophical Congress (Krakow 1936)—the full text of the paper was published in 1937 [*Semantic Version of the Problem of Transcendental Idealism*—A.O.]. Ajdukiewicz considers using semantics to critique transcendental idealism [of Rickert—A.O.]. (Woleński, 1985, p. 203)

And in the last sentence of this paragraph, in which Woleński analyses Ajdukiewicz's application of semantic procedures for the explication and rejection of another idealism, this time Berkeley's subjective idealism, the author states that "[...] it is worth noting that semantic epistemology falsifies the opinion of all those who think that the semantic theory of truth is philosophically neutral" (ibid., p. 206).

To these comments of Woleński, from the monograph, we must add one that comes from a volume he published twenty years later *Epistemologia. Poznanie-prawda-wiedza-realizm* [Epistemology. Cognition-Truth-Knowledge-Realism] (2005). In chapter nine, in which the author considers the philosophical consequences of Tarski's semantic definition of truth, Woleński states that under the influence of this definition

> [...] three prominent philosophers of the 20th century [Ajdukiewicz, Carnap and Popper—A.O.] fundamentally changed their philosophical views [...]. Ajdukiewicz abandoned radical conventionalism, Carnap moved away from the view that language theory must be limited to syntax, and Popper found a place for the concept of truth in the methodology of the sciences. (Woleński, 2005, p. 272)

**2.2.** The second view comes from Anna Jedynak. In her book on Kazimierz Ajdukiewicz (2003), in the chapter entitled *Metaphysics and Semantic Epistemology*, she writes:

> Ajdukiewicz was drawn towards undertaking the fundamental metaphysical issues regarding the nature of reality, which for centuries had been driving philosophy. At the same time, he felt a reluctance towards free reflections, which ended with empty-worded conclusions, and such reflections dominate in metaphysics. So Ajdukiewicz's metaphysics was far from traditional. Above all, he wanted to base metaphysics on some solid foundation that would protect it from being mere empty words. He found this basis in epistemology, i.e. the theory of knowledge (which he did not include in metaphysics). He reasoned as follows: all knowledge is expressed in language, and therefore the science of cognition can be reduced to learning about the linguistic results of cognitive activities, i.e. sentences. On the other hand, semantics, assuming the achievements of logic, treats of sen-

> tences, their mutual relationships and their relation to reality. Ajdukiewicz already felt at home in this area: after all, semantics and logic provide substantiated solutions. He presented the programme of semantic epistemology, or semantics-based epistemology, and implemented it by considering various issues in the field of traditional philosophy. On the other hand, he decided to base his research into the nature of reality on semantic epistemology. So he did not freely consider existence, but he drew conclusions about existence from conclusions about knowledge, taking into account the achievements of semantics and logic. [...] Metaphysics based on epistemology is one of the two (next to the cognitive role of language) main currents of his philosophical work. (Jedynak, 2003, p. 57).

## 3. Comments on the WoleńSki and Jedynak's Views

**3.1.** Woleński's and Jedynak's quoted views are not here taken out of contexts that would change the meaning of the words contained within them. The meaning of Woleński's words is that due to the semantic definition of Tarski's truth, Ajdukiewicz abandoned the epistemological concept of radical conventionalism, from which he did not draw ontological conclusions, after which, in 1936, he appeared at the Third Polish Philosophical Congress with another epistemological proposition, which he described as a "semantic theory of knowledge", from which he could already draw such conclusions. Further, that Ajdukiewicz's semantic epistemology falsifies the opinion of all those who think that Tarski's semantic definition of truth is philosophically neutral.

In giving a polemical commentary on Woleński's statement, I shall start with the polemically shortest case—radical conventionalism. It is true—as Woleński states—that Ajdukiewicz, as a radical conventionalist, did not derive any ontological conclusions from his epistemology, because he did not programmatically say anything about the world, but only about the linguistic picture of the world, because semantic concepts, in the modern understanding of the term, were antynomial at the time when Ajdukiewicz wrote his conventionalist works. However, it is difficult to agree with Woleński's statement that Ajdukiewicz gave up radical conventionalism under the influence of Tarski's semantic definition of truth. He abandoned it under the influence of Tarski's critical remark aimed at the directival definition of the meaning of expressions—a remark not related to the semantic definition of truth. Ajdukiewicz's acknowledgment of this critical remark as apt meant that he could no longer, as he had before, define the equality of expressions equitably, and this in turn pre-

vented him from defining the meaning of expressions as an abstraction class of synonymous expressions, i.e. as the common property of these expressions. And such a definition, together with the concept of coherent, closed and non-translatable languages, played an important role in the syntactic-pragmatic foundations of the concept of radical conventionalism. Therefore, since Ajdukiewicz decided that these foundations raised doubts—although there are serious reasons why he could have not done so—he consequently decided that doubts must also be raised about the epistemological concept built on them.[3]

As for the semantic epistemology referred to in Woleński's statements, the reader of these statements might mistakenly believe that this epistemology was inspired by Tarski's semantic definition of truth. Speaking about the semantic theory of knowledge, one must remember that it is—

[3] Ajdukiewicz adopted the following definition of equivalence of meaning: given two expressions have the same meaning in language $J$ always and only when the rules of sense of this language (also called sense directives or acceptance directives) do not change when these expressions are changed, i.e. when the rules of sense of this language say the same about both expressions. Tarski's critical remark, which he made to Ajdukiewicz in an oral conversation shortly after the publication of the work *Sprache und Sinn* (1934), was to indicate an example from the functional calculus. with identity which falsified one of the conditionals that constitute the above definition of equivalence, namely the conditional that if the rules of the sense of language $J$ are unchanged by the repositioning of expressions of that language, then those expressions are synonymous. The second conditional stated that if two given $J$ expressions are synonymous, then the rules of the sense of $J$ that apply to them are unchanged (Ajdukiewicz, 1965g, pp. 396–397). As a reminder, I would like to mention that *Sprache und Sinn*, containing this definition of the equivalence of expressions, was the syntactic-pragmatic basis of radical conventionalism. This paper appeared in "Erkenntnis" 1934, vol. 4; reprinted in a translation from the German by F. Zeidler as *Język i znaczenie* [Language and Meaning] (Ajdukiewicz, 1960f, pp. 145–174). The heart of Tarski's critical remark was to point out an example (from the functional calculus with identity) in which two expressions are synonymous—from the point of view of Ajdukiewicz's theory of meaning—and yet they are not equivalent, i.e. they have different denotations. Adam Nowaczyk convincingly writes about the possibility of responding to Tarski's criticism of Ajdukiewicz's theory of meaning in the article *Dyrektywalna teoria znaczenia, czyli dramat Filozofa* [Directival Theory of Meaning, or the Drama of the Philosopher] (Nowaczyk, 2006, see also Giedymin, 1978, pp. XIX–LIII).

firstly—a metaepistemological programme, and secondly—the implementation of that programme. As a metaepistemological programme, the theory of knowledge was not inspired by Tarski's semantic and logical results, and even—due to the different philosophies of language that these two logicians and philosophers accepted—could not have been so inspired. As for the realisation of this programme, which Ajdukiewicz presented at the aforementioned III Polish Philosophical Congress—presenting at once both the programme and its implementation—he used Gödel's theorem about the incompleteness of rich deductive systems and the metalogical principle of the excluded middle. This principle—that one of two contradictory sentences is true—is, as Tarski showed, a consequence of his semantic definition of truth. In short, without a semantic definition of truth, Ajdukiewicz could not, in a scientifically responsible manner, use this principle in his first implementation of the semantic theory of knowledge programme. It consisted in demonstrating the falsehood of Rickert's transcendental idealism; that reality is only a correlate of the transcendental subject. That, and only that,in the first implementation of the semantic programme of knowledge of Ajdukiewicz, involved the use of the results obtained by Tarski. Stating this, I ignore another, diametrical difference in the understanding of language of Ajdukiewicz and Tarski. Namely, that in this work, Ajdukiewicz also treated the language in which the thesis of transcendental idealism is expressed as a pragmatic and assertive deductive system (Ajdukiewicz, 1965a). Meanwhile, Tarski's approach to the language(s) or deductive systems was never pragmatic, but always apragmatic, and so, assertiveness, understood as a pragmatically understood acceptance of sentences, was out of the question. It be mentioned that Ajdukiewicz had always understood language as a system of expressions interpreted intensionally, governed by the rules of the acceptance of sentences, while Tarski put emphasis on extensional interpretation.

Woleński also writes in the quoted passage that Tarski's semantic definition is not philosophically neutral. Yes, I agree, but I would like to specify this general statement by Woleński, saying that this non-neutrality lies in the fact that the semantic definition of truth, or its consequences, can serve as the significant premise in arguments falsifying metaphysical idealism, but—it should be added—through a previously, and appropriately, carried out semiotic and logical explication of a given idealistic position. This is the case with both Ajdukiewicz's criticism of Rickert's idealism and his criticism of Berkeley's idealism. In short, the philosophical non-neutrality of Tarski's semantic definition of truth is not

non-neutrality—so to speak—outright, but it is so, provided that the idealistic position is expressed (paraphrased) in a semiotic-logical way. This is a strong condition, as it contains the question of the legitimacy of these explications—an issue that is philosophically interesting due to its hermeneutic non-triviality.

This conditional statement must be supplemented with another conditional statement—this time metaphilosophical—which states that metaphysical positions are a consequence of previously made epistemological decisions. This is the metaphilosophical position—as will be discussed below—Ajdukiewicz held. To conclude, Tarski's semantic definition of truth, and its consequences, are not philosophically neutral—in the sense: they are realistically and metaphysically involved—under two conditions: if in a semiotic-logical way the given idealistic thesis is expressed (paraphrased), and if the philosopher accepts epistemological metaphilosophy, proclaiming the derivative of metaphysical theses in relation to previously made epistemological conclusions. Without going into detailed considerations in this regard, I just want to mention that the epistemological philosopher—and that Ajdukiewicz was—finds himself in a favourable situation in this case. This is because he can use the analogy between two meta-theoretical disciplines: the theory of knowledge and the theory of deductive systems (metalogics and metamathematics). The analogy is that an epistemological philosopher presents his theses about being from the point of view of previously made epistemological conclusions, while the theorist of deductive systems presents his theses about the referential side of these systems from the point of view of previously made conclusions regarding the wealth of the meta-language in which he discusses a given deductive system. Ajdukiewicz, being a logicizing philosopher, used this analogy.[4]

Two matters indicated in the above remarks deserve a broader treatment: the different approaches to language of Ajdukiewicz and Tarski, and the metaepistemological programme of the semantic theory of knowledge of Ajdukiewicz, which—if it was inspired by anyone—was

[4] I write about this in *Semantycznej teorii poznania* [The Semantic Theory of Knowledge] (2014b, pp. 148–153, 169–180, 247–252). Speaking in the above paragraph about the consequences of the semantic definition of truth, I mean the metalogical principle of the excluded middle and Tarski's theorem on the indefinability of truth.

inspired by Edmund Husserl and his *Badania logiczne* [Logical Investigations] (2000). However, before I get to these matters, I shall first refer to the excerpt from the book by Jedynak.

**3.2.** Jedynak writes that traditional metaphysics is dominated by freely thought-out considerations ending with empty-worded declarations and that Ajdukiewicz practised metaphysics in a non-traditional way. Further, that Ajdukiewicz, in expressing his opinion on metaphysical matters, wanted to base metaphysics on a permanent foundation that would protect such statements against empty-wordedness, and that Ajdukiewicz found this basis in epistemology. I shall not argue with the author's statement that traditional metaphysics is dominated by freely thought-out considerations ending with empty-worded declarations—I shall just say that this statement raises some doubts. As for the non-traditional—as the author writes—approach of Ajdukiewiczto metaphysical issues, I would like to note that it has an esteemed tradition going back to Descartes; after all, Descartes is responsible for changing the metaphilosophical paradigm: from metaphysical to epistemological. Ajdukiewicz is part of this Cartesian epistemological paradigm, having, in addition to Descartes, such predecessors as Locke, Berkeley, Hume, Kant, Brentano, Twardowski, Rickert and Husserl. To the metaphilosophical question of which of the philosophical disciplines comes first, i.e. the one from which the philosopher should begin his philosophizing, Ajdukiewicz answered that it is epistemology. Thence the philosopher takes, for example, the structure of his well-known introduction to philosophy—*Zagadnienia i kierunki filozofii* [Issues and Directions of Philosophy] (Ajdukiewicz, 1949)—in which epistemology precedes metaphysics, as well as the layout of his *Głównych kierunków filozofii* [Main Directions of Philosophy] (Ajdukiewicz, 2011). This epistemological metaphilosophical orientation was not universal in the Lviv-Warsaw school, after all, it met with strong opposition from Jan Łukasiewicz. His harsh criticism of the philosophy of Descartes and Kant, motivated by the metaphysical metaphilosophical paradigm, is a significant expression of this.

Another statement by Jedynak contained in the quoted passage, requires comment, namely, that in which she states that Ajdukiewicz presented a programme of semantic epistemology, i.e. a programme based on semantics, and that he implemented it, undertaking various issues in the field of traditional philosophy, including issues of the nature of reality.

I would like to point out here briefly—because I shall talk about it more precisely later on—that this programme, which I call a "metaepistemological programme of the semantic theory of knowledge", is precisely a metaepistemological programme and boils down to the conjunction of two statements:

> First statement: Epistemological reflection on logically understood concepts and propositions, i.e. on logically understood knowledge, is equivalent to reflection on expressions and sentences whose linguistic meanings are these concepts and propositions.
>
> Second statement: An epistemologist must treat these concepts and propositions as the linguistic meanings of expressions and sentences if he intends to speak of knowledge defined as to content.

Therefore, in the programme of the semantic theory of knowledge, there is no mention of semantics in the modern sense of the term, the sense which is understood in the Jedynak statement cited. What's more, even this implicit semantics does not assume this programme, because it grows out of Ajdukiewicz's syntactic-pragmatic theory of language, which I shall discuss in more detail. Meanwhile, Jedynak claims that the semantic epistemology programme was based on the contemporary understanding of semantics, i.e. that dealing with the referential side of language. As in the previous case, I would like to add that it was only while implementing this programme that Ajdukiewicz used the contemporary concept of semantics, i.e. the metalogical principle of the excluded middle, in which the truth of the sentence is mentioned. He used it because he intended to show that what the transcendental idealist Rickert says about the ontological status of the world is—with the proper understanding of the transcendental subject—wrong. For this and only for this was semantics involved in Ajdukiewicz's analysis. All the rest of the analysis is made within the syntactic-pragmatic theory of language, in which language is interpreted intensionally and, moreover, conceived as an assertive-pragmatic deductive system.

Anticipating the course of further argument, I would like to mention that from the point of view of the metaepistemological programme of the semantic theory of knowledge, Ajdukiewicz's radical conventionalism is a semantic-knowledge-theoretical position, i.e. it is a semantic theory of knowledge understood and implemented in accordance with that programme, although it was announced as a programme two years after the

publication of works presenting radical conventionalism. It is the implementation of this programme because—roughly speaking—the linguistic picture of the world about which the radical conventionalist speaks is built of sentences and as such is *equivalent* to the image of the world built of the meanings of these sentences. The meanings of these sentences are logically understood propositions. These, in turn, are the objectively conceived contents of acts of judging, i.e. the objective content of psychologically understood judgments. I emphasized the word "equivalent" because the word is key to the semantic theory of knowledge programme which proclaims the equivalence of reflection on logical concepts and propositions and reflection on expressions and sentences.

As in the case of comments made about the quoted statements of Jan Woleński, also in the case of the statements of Anna Jedynak, the same two matters require a broader treatment: the matter of the different approaches to language of Ajdukiewicz and Tarski, and the matter of the metaepistemological programme of the semantic theory of knowledge.

## 4. The Approaches to Language of Ajdukiewicz and Tarski

**4.1.** Ajdukiewicz's approach to language was always a pragmatic approach, in which the intensional interpretation of language played an important role. Along with that interpretation, Ajdukiewicz mentioned the referential side of language, but did so in order to emphasize the importance of this, exactly, intensional interpretation.[5] In the essay *Język i znaczenie* [Language and Meaning] (1960f), published in 1934 and presenting the syntactic and pragmatic foundations of the concept of radical conventionalism, he wrote:

> Language is not uniquely characterized only by its store of words and rules of syntax, but also by the way in which words and expressions are assigned their meaning. [...] Therefore, the unambiguous characterization of a language includes giving the assignment of its sounds (or written characters, etc.) and their meaning. This assignment will be called the correct assignment of language meaning. It is not yet complete when the assignment is established between the words or expressions of the language and the ob-

[5] Ajdukiewicz did not use the term "intensional interpretation of language" but talked about assigning expressions to their meanings.

> jects they name. First, because: not all expressions name objects, but only those among them that have a nominal character, i.e. names; however, all the words and phrases of the language have meaning. Secondly, two expressions may name the same object and yet have different meanings: for example, "the highest peak in Europe" and "the highest peak in Switzerland" refer to the same object, but have different meanings. (Ajdukiewicz, 1960f, p. 149)

Ajdukiewicz writes in the same way in *Logika pragmatyczna* [Pragmatic Logic] published over thirty years later, in which we read that "each [...] language is characterized 1) by the range of its expressions and 2) by assigning them (not always unambiguously) specific meanings" (Ajdukiewicz, 1965b, p. 23).

Speaking of Ajdukiewicz's semiotic views, it should be remembered that the basic semiotic concept in his approach to language was always the pragmatic concept of "understanding of expressions". It is fundamental both in *Language and Meaning* written in the 1930s (Ajdukiewicz, 1960f) and in *Pragmatic Logic* from the 1960s (1965b). Based on the concept of "understanding of expressions", Ajdukiewicz introduced in *Language and Meaning* the concept of "directive rule of meaning", also called the "directive of acceptance of sentences" or "rule of sense". This concept is crucial for the directival concept of language, which Ajdukiewicz announced and presented in the works *O znaczeniu wyrażeń* [On the Meaning of Expressions] (1960c) and *Language and Meaning*, and which he accepted until almost the end of his life,[6] and on the concept of the "meaning directive" (strictly: on the concepts of "meaning directives", because Ajdukiewicz distinguished three kinds of such directives) he based the definition of the linguistic meaning of expressions. So it is easy to see that the concept of "understanding of expressions" and the concept of "meaning of expressions" are closely related. It is no different in *Pragmatic Logic*. The first chapter of this volume, which deals with the meaning of expressions, begins with the author's considerations on the understanding of expressions, and only later, based on these considerations, does Ajdukiewicz characterize the meaning of expressions. Just as in the 1930s, he solves issues of the understanding of expressions based on Edmund Husserl's intentional theory of the meaning of expressions, laid out in the

[6] For Ajdukiewicz's abandonment of the directival theory of meaning, see (Ajdukiewicz, 1965g).

second volume of *Logical Investigations*. The fact that in *On the Meaning of Expressions* and *Language and Meaning*, Ajdukiewicz then translates this Husserlian comprehension of the understanding of expression into a syntactic-pragmatic concept, does not change the essence of the matter. Whenever he began his argument to illuminate or solve the problem of the meaning of expressions, he often followed the path of Husserl, his Göttingen teacher, the path of consideration on the characteristics of acts which confer meaning. For before Husserl fully described these acts, thus capturing the essence of the meaning of expressions, he first considered the fundamental answer to the question of what is understanding of expressions, understanding without intuition, i.e. without non-linguistic imaginative content, which may, but does not have to fulfil the understanding that is based on an intuition. Without realizing what understanding of expressions is, it is impossible to grasp what expression meaning is (*audrückliche Bedeutung*), and also what is meaning "in itself" (*Bedeutung "an sich"*), that is, non-expressional meaning, which is currently not associated with any expression of the language (Husserl, 2000, pp. 77–129). I would like to emphasize this last sentence.

Ajdukiewicz's pragmatic and directival conception of language operates with such a subject (user) of a language that is always "inscribed" in a language, which—in other words—is always "in the power" of a language. This concept of language is closely related to the philosopher's approach to the way of understanding the cognizing subject and—thus—to the basic epistemological opposition, i.e. to the opposition: the cognizing subject—the object of cognition. The cognizing subject in Ajdukiewicz's logical-linguistic epistemology, and his epistemology was always such, is a special case of the subject of language referred to in the logical pragmatics he initiated and cultivated. In other words, in Ajdukiewicz's epistemology, the concept of "cognizing subject" is subordinate to the concept of "language subject". And this means that every cognitive act is at the same time a linguistic act, after all, a non-verbalizable act does not deserve the name "cognitive", according to Ajdukiewicz. Verbalizability of the cognitive act is a necessary, but not sufficient, condition to be able to reasonably declare that it is cognitive. This condition is also a component of anti-irrationalism—a metaphilosophical position preached by Ajdukiewicz and shared by other philosophers of the Twardowski school. This position states that acceptable knowledge should be communicable and intersubjectively verifiable and that the degree of acceptance of the com-

municated propositions should be directly proportional to the level of justification.[7]

I stated above that the cognizing subject in Ajdukiewicz's epistemology is a special case of the subject that is always "in the power" of a language. This statement requires explanation, and in doing so, we must rely on Husserl's *Logical Investigations* and show his influence on Ajdukiewicz. I shall start with Ajdukiewicz's last work—*Pragmatic Logic*, which seems to be neutral philosophically, and then move on to his earlier, clearly philosophical statements.

The first paragraph of the first chapter of *Pragmatic Logic* begins with a description of Husserl's view of the understanding of expressions, although Husserl's name does not appear on this occasion. However, this is Husserl's description, because, explaining the act of understanding expressions, Ajdukiewicz writes about the intertwining of one perception-intention directed at a given inscription or sound of a language sign with the meaning-intention directed at the meaning of that sign, and through that meaning—at the possible object of reference of the sign, strictly: on this aspect or appearance of the object through which this object reference appears to a person who understands this expression. Here is what we read in *Pragmatic Logic*: "We often say that someone understood a given word when hearing the word intertwines within him one thought with some object different from that word" (Ajdukiewicz, 1965b, p. 19). After pointing to other ways of understanding the phrase "to understand an expression", Ajdukiewicz adds:

---

[7] There are many statements by Ajdukiewicz in this regard, I would like to draw attention to two. The first, rarely cited, is a welcome speech that Ajdukiewicz gave at the International Congress of Scientific Philosophy at the Sorbonne in 1935 (Ajdukiewicz 1994). This speech is related to Ajdukiewicz's second statement—his article *Logistyczny antyirracjonalizm w Polsce* [Logistic Anti-Irrationalism in Poland] (1935). This article is a translation of the paper entitled *Der logistiche antyirracjonalismus in Polen*, which Ajdukiewicz gave in Prague in 1934 during the Preliminary Conference to the International Congress of the Unity of Science, which took place in Paris, at the Sorbonne, on September 16–21, 1935. The Preliminary Conference took place in Prague on August 31 and September 1, 1934 and was convened by the Vienna Circle as a supplement to the VIII International Philosophical Congress. Shortly afterwards, on the days 2–7 of September The VIII International Philosophical Congress was held in Prague.

> [leaving aside these other ways of understanding expressions—A.O.] we shall keep in mind in our further arguments its first meaning by which one understands an expression, when its being heard directs the thoughts of the hearing person to something different from that expression. In these cases, the process of understanding a phrase heard by someone relies on a certain thought of the individual hearing it, which in his mind intertwines with hearing that expression. Such a thought is also a process of understanding the expression by the one who pronounces it, because by speaking it, he also hears or perceives it differently. (Ibid, p. 19)

Finally, by exemplifying the act of understanding the expression with the example of the word "hexagon", Ajdukiewicz writes that this word, although it might have been incomprehensible to someone at first, ceases to be an empty sound and becomes an expression when it becomes intelligible, and becomes such, when along with the perception of this word intertwines a thought different from that of the word—that other thought is the subject matter to which this word refers. When two people hear or read this word with understanding, their thoughts about the same object may be different in content. For example, the content of one person's thoughts may refer to a polygon with 9 diagonals, and the content of the other person's thoughts may refer to a polygon with internal angles summing to 720°.

In *Language and Meaning* (Ajdukiewicz, 1960f), preparing a syntactic-pragmatic ground for radical conventionalism, Ajdukiewicz explicitly refers to *Logical Investigations*, and, precisely, to *Investigation I* of the second volume entitled *Expression and Meaning* [*Ausdruck und Bedeutung*]. He does so while characterizing the articulate acts of judging and distinguishing them from the non-articulate acts of judging. Only linguistic articulation is taken into account in saying that "Scientific judgment-processes in mature form are always of the verbal sort" (Ajdukiewicz, 1960f, p. 147). It is about speaking quietly or loudly,

> [I]n which usually there can be discerned a more or less fragmentary intuitive presentation of a word-image. This intuitive presentation is then mixed with certain others (without analysis of the distinguishable components) into the unity of the articulate judging. We consider it fallacious to characterize matters in such a way that in the cases above judging is linked to the sentence-representation simply on the basis of association. The representation enters fully into the judgment-process and, indeed, forms its essential part. This has been convincingly demonstrated by Husserl. (Ibid, p. 147)

As confirmation, Ajdukiewicz points to the said *Investigation I* entitled *Expression and Meaning*. Ajdukiewicz's critical remark in the quoted passage is noteworthy regarding linguistic associationism, which—according to him—weakly links cognitive acts with language, in contrast to Husserl's theory, in which these two acts—the act of judging and the linguistic act—are bound in one, synthetic whole.

Ajdukiewicz repeatedly criticized the associationist position on the meaning of expressions and, consequently, on the relationship between cognitive acts and linguistic acts. Each time, the criticism was based on the intentional theory of the language of Edmund Husserl laid out in *Logical Investigations*. This was the case with the lectures on logical semantics which he gave at the Jan Kazimierz University in Lviv in the autumn of 1930, when, after a critical analysis of associationism and after a thorough presentation of Husserl's understanding of expression and meaning, he stated that the error of associationism is that it binds thought too weakly with language (Ajdukiewicz, 2014, pp. 150–157). Ajdukiewicz presents the same position in his work *On the Meaning of Expressions*, in which—after criticism of associationism in the spirit of Husserl, and after the presentation of Husserl's concept of the meaning of expressions—he then further clarifies this concept with the help of syntactic-pragmatic concepts characteristic of his directival theory of language, which he presented for the first time in this paper (Ajdukiewicz, 1960c).[8]

[8] The last paragraph of this work entitled *O tzw. intencji aktu znaczenia* [On the So-Called Intention of an Act of Meaning] deserves special attention. It talks explicitly about the explanatory reduction of the direction and matter of the act of meaning-intentions—which Husserl writes about in his *Logical Investigations* and which Ajdukiewicz considers in this work—to the syntactic and pragmatic concepts introduced by Ajdukiewicz in this paper. To the reader who uses the editions of *Język i poznanie* [Language and Knowledge], vol. 1 from 1960 and 1983, I would like to draw attention to the error that is not found in the original edition of this work or in the edition of vol. 1 from 2006. This error is that in the last paragraph, instead of the correct expression "direction of intention" is the expression "direction of intuition". Another error that occurs in these editions (from 1960 and 1983) is in paragraph 8 and relates to a key concept of the work, "wywodzenia w sposób istotny" [significant derivation]. It is crucial because it plays a major role in the explanatory (syntactic-pragmatic) procedure which Ajdukiewicz presented there, regarding the intention of meaning. The original and the aforementioned 2006 edition are also free of this error. I analyse the issue of Ajdukiewicz's

Speaking about the weak connection between thought and language in associationism, Ajdukiewicz had in mind the thought on which the understanding of expressions is based, which is also the psychological meaning of the expression. This thought is—according to Husserl and Ajdukiewicz following him in this respect—an act of meaning-intention, which, in the case of verbal cognitive acts, is an act of comprehension or judging, i.e. it is a concept or judgement in the psychological sense. The objectively understood contents of these acts, also understood in Husserl's way, are according to Ajdukiewicz's philosophical and linguistic views, logically understood concepts and propositions, and these are expressive meanings (they are *ausdrückliche Bedeutungen*—in Husserl's language). Ajdukiewicz's last lecture, part of a series on logical semantics, in which the lecturer indicates his definition of the logically understood meaning of expressions, clarifies this matter. Here is what Ajdukiewicz said about the meaning of expressions understood in this way, at the same time ending with this statement the whole series of lectures, which I would like to emphasize clearly:

> One of the best solutions [...] is what has been done by Husserl, who subjects these [closely related to linguistic expressions—A.O.] thoughts to an analysis in which he distinguishes their various properties, and in particular something that would commonly be called "content". Husserl says that in every thought one can distinguish, among other things, two parts or sides, such as the quality of thought (Husserl says: the quality of the act of thought) and the matter of thought. The quality of thoughts is what distinguishes, e.g. performances from beliefs, beliefs from supposition, etc. What changes in a person who first hears a statement but does not yet understand it, and only then realises, etc. would be a good illustration of what Husserl calls the quality of the act. However, he does not give any closer definition in this regard. On the other hand, the matter of the act is that in thought which directs it to this or that object and to an object with such and such properties. These are undoubtedly very inaccurate definitions. It seems that nothing can be said more accurately on this topic. We would like to explain what is meant by matter. The component of matter is what in two thoughts makes one of them focus on these objects and the secondon others. This term, however, does not exhaust the meaning of the word "matter", because two thoughts directed at the same ob-

---

syntactic-pragmatic explication of Husserl on the meaning of expressions in (Olech, 2001).

jects may differ in matter, if in these thoughts the objects are seen from a different point of view as something different. Suppose that Mr. X's father is the only manager of bank S. If someone says "father of X" and someone else—"manager of bank S", then the thoughts accompanying these statements refer to the same object, to the same human individual. However, one of these thoughts captures this individual from one point of view—as Mr. X's father, and the other from a different point of view—as the manager of bank S. To the matter of a particular thought belongs that which makes this thought focus on this or that object as such and such. Husserl calls the quality of thought and matter the semantic nature of thought. The existence of meaning [of thoughts] is a feature of thought that distinguishes a certain class of thoughts, and therefore there can be a lot of thoughts about a certain semantic essence. All thoughts that arise in the minds of Poles hearing with understanding, e.g. the word "pies" (dog), will have the same quality and the same matter. Now, one could say that the meaning of a word with such and such a shape is the semantic essence of thoughts that must be intertwinedwith this word so that the word can be used as an expression in this or that language. (after: Olech, 2014a, pp. 171–172)[9]

[9] Here are a few remarks regarding the aforementioned series of lectures by Ajdukiewicz from autumn 1930 devoted to logical semantics: (1) Kazimierz Ajdukiewicz gave eighteen lectures on logical semantics in the winter semester of the 1930/1931 academic year. These lectures were stenographed by the then student of philosophy and mathematics at the Jan Kazimierz University in Lviv, Kazimierz Szałajko. Szałajko passed them on in October 1985 to Prof. Jan Woleński on the occasion of the cyclical conference on the history of logic, which was then held in Krakow at the Institute of Philosophy of the Jagiellonian University. At that time, I was a doctoral student of Prof. Woleński preparing a doctoral dissertation on Ajdukiewicz's semiotic views and I used these lectures significantly in my dissertation, probably being the first person who had referred to them in a publication. (2) Most of Ajdukiewicz's lectures on logical semantics were published in the Archives section of the *Filozofia Nauki* [Philosophy of Science] quarterly. Lectures from IX to XVI appeared in *Filozofia Nauki* 1993, R. 1 (1). Lectures from III to VIII were published in the same quarterly designated as R. 22, 2014, No. 1 (85). (3) For reasons unknown to me, lectures XVII and XVIII were not published in *Filozofia Nauki*, therefore, with the knowledge of Prof. Woleński—the depositary of these lectures—I decided to publish lecture XVIII in the abovementioned chapter of my authorship, because I consider this lecture one of the most important in the whole series. Hence the fact that I joined it to the chapter devoted to the stay of Ajdukiewicz and Ingarden in Göttingen, providing this lecture with relevant comments. (4) Lecture XVIII, which literally shows Aj-

The last sentence from the quoted lecture by Ajdukiewicz is a definition of the logically and linguistically at the same time understood meaning of expressions, i.e. the meaning that Husserl defines as the meaning of expression (*ausdrückliche Bedeutung*) and which he distinguishes from meaning "in itself" (*Bedeutung "an sich"*)

There are many such philosophical and linguistic statements following Husserl's deliberations.[10] They refer directly to two of Husserl's *Investiga-*

---

dukiewicz's attachment to Husserl's intentional theory of language, has so far been published only in my chapter. Lecture XVII of Ajdukiewicz from this cycle has not yet been published (I have in my library a copy of this lecture prepared by hand, on the basis of theSzałajko manuscript). Shorthand records of lectures I and II, also made by Szałajko, disappeared and, in1985, I no longer had them.

[10] I agree with Ajdukiewicz when he says—describing Husserl's approach in this matter—that the quality and matter of thought create what Husserl would describe as "the meaning-essence of thought"). However, in the view of Ajdukiewicz, presented above, the meaning-essence of thought is already something abstracted from the subjectively and numerically different acts of meaning-intentions entangled in a given word. If one wanted to be exact in this respect, that is, if one wanted to follow Husserl's terminology faithfully, it would have to be said that the meaning-essence of thought, understood as the unity of quality and matter of the act, is still something on the subjective or mental level. In order to move from this level to the objective level, that is the logical, it is necessary to make an ideational abstraction, only as a result of which we will gain insight into the meaning in the logical sense, which—as a sense—is contained in this mental essence like an Aristotelian species form in an individual object. Therefore, we should say that the meaning of the expression (in a logical sense) is the *in specie* grasped meaning-essence of thought. Only then is the essence thus conceived of a higher order, a general being, while the previous meaning-essence of thought, not grasped *in specie*, is nothing more than *what is most important* in the multi-component act of meaning-intention involved in a given expression. Here is the appropriate quote from *Logical Investigations*, which justifies this: "Therefore, since [...] we must consider quality and matter as fully essential, and therefore the never-negligible components of the act, it will be appropriate that the unity of both of them, constituting only a part of the full act, should be described as the intentional essence of the act [*intentionale Wesen des Aktes*]. To preserve this term and the related approach, we also introduce another here. That is, when it comes to acts that perform or may perform the function of acts that give meaning to expressions [...] one should speak in more detail about the meaning-essence of the act [*bedeutungsmäßigen Wesen des Aktes*—A.O.]. Its ideational abstraction results in meaning in our ideal sense" (Husserl, 2000, p. 524). To conclude: what

*tions* contained in the second volume of *Logical Investigations*—to *Investigation I* entitled *Expression and Meaning*; and to *Investigation V* entitled *On Intentional Experiences and Their Contents*—or more or less explicitly refer to these investigations. These references or connections relate to Ajdukiewicz's semiotic-epistemological issues related to answering the questions: What is an expression? What are the meanings of expressions psychologically and logically understood? What is the content of concepts and judgements (after all, these contents are not understood referentially by Ajdukiewicz the epistemologist)? How is the act of judging entangled with the act of meaning-intention in a logically conceived sentence? What is the basic carrier of logical value? What is the philosophical and linguistic justification of the fundamental thesis of the semantic theory of knowledge, understood as a metaepistemological programme that states that reflection on concepts and propositions is equivalent to reflection on expressions and sentences? All these issues, which in this one article I can only point or refer to briefly, are addressed by Ajdukiewicz in the spirit of *Logical Investigations* or can be addressed in accordance with this spirit if they are to be coherent with the whole of Ajdukiewicz's philosophical and semiotic views.[11]

**4.2.** Tarski's approach to language was a syntactic and semantic approach, and therefore completely different from Ajdukiewicz's approach. Moreover, Tarski was not an epistemologist, which Ajdukiewicz—using logical-language tools—was. It should be remembered that Ajdukiewicz, writing his semiotic-epistemological works, did not abstract from the traditionally understood theory of knowledge, which talks about cognitive acts, such as acts of comprehension or judging, and a cognitive subject. This was the case with works regarding radical conventionalism, as well as with those clearly implementing the metaepistemological programme of the semantic theory of knowledge, i.e. writing critically analysing the

Ajdukiewicz says in the lecture is strictly in the spirit of Husserl, and my point is only a terminological remark regarding the term "essence", which in Ajdukiewicz has an objective-logical character, and in the relevant part of the *Logical Investigations* is subjective-psychological.

[11] It is significant, and in the context of what I have stated above understandable, that is, not surprising, that in the Hussserl Archive there are copies of Ajdukiewicz's works dedicated to Husserl—this information was provided to me by Prof. Jan Woleński.

positions of metaphysical idealism. As an ontological antipsychologist, Ajdukiewicz distinguished cognitive acts from the objectively, i.e. logically, understood content of these acts, but this does not mean that as an epistemologist he removed from the scope of his considerations the problems of psychologically understood cognition, and thus the problems of the real cognitive subject. Moreover, he could not remove them, after all, he practised logical pragmatics, which in his semiotic approach to epistemology intersected with the scope of his epistemological considerations. Meanwhile, Tarski, approaching the issue of defining the truth understood in the classic way in his 1933 publication, not only addressed it solely on the syntactic and semantic plane, but also—in his conviction and intention—addressed it only for the formalized languages of the deductive sciences. Yes, he referred to philosophers who wrote about the problem of truth—he referred to the *Metaphysics* of Aristotle and *Elements* of Tadeusz Kotarbiński, when he wrote about the intuitions that guided him in his approach to the problem of truth and when he considered the possibility of constructing the correct definition of the phrase "true sentence" for everyday languages.[12] However, the conclusion of the discussion regarding the possibility of formulating such a definition of truth for these languages, which would also reflect the intuitions that these philosophers associate with the concept of "truth of the sentence" was negative.[13] Therefore, in further considerations, Tarski limited himself only to formal languages,

[12] As for Aristotle, Tarski referred to the *Metaphysics*, to the part of book *Gamma* that deals with the defence of the principle of the excluded middle, in which we read that "to claim that Being does not exist, or that Non-Being exists is false; however, to say that Being exists and Non-Being does not exist, is true" (Aristotle, 1984, p. 99). As for Kotarbiński, Tarski referred to those fragments of his *Elements* that relate to the question of the veracity of the sentence and the question of the truth of the thought and in which—according to ontological reism and also according to his semantic reism—Kotarbiński writes that in the literal sense the predicates "true" and "false" only apply to sentences (Kotarbiński, 1986, pp. 110–111) and that if the words "truth" and "falsity" are to be proper and non-empty names, then "truth" should be understood as "true sentence" and "falsity" as "false sentence".

[13] Tarski wrote: "[...] the mere possibility of using the expression 'true sentence', consistently and in accordance with the principles of logic and the spirit of the common language, and thus the possibility of building any correct definition of this expression seems strongly questioned" (Tarski, 1995c, p. 31).

which he characterized "[...] as such (artificially constructed) languages in which the meaning of each expression is clearly determined by its form" (Tarski, 1995c, p. 31).

What deserves special attention in this quote, in the context of Ajdukiewicz's different approach to language from Tarski's, is Tarski's statement that the meaning of each expression is clearly determined by its form. Since the form of expressions is solely the subject of syntactical considerations, therefore—according to Tarski—the meaning of formalized expressions of the languages of deductive sciences is definable only on the basis of syntax. However, Tarski did not give any definition of meaning, and he considered the very notion of "meaning" vague (see also Tarski, 1995a, p. 203). He did not identify, as Ajdukiewicz did, judgements and propositions with with the meanings of sentences, not deal with propositions at all. Ajdukiewicz identified psychological judgements with psychological meanings, while logical judgements that is propositions with linguistic (logical) meanings. In the essay dating from 1944, the *Semantyczna koncepcja prawdy i podstawy semantyki* [The Semantic Conception of Truth and the Foundations of Semantics] (1995d), and therefore eleven years after the publication of *Pojęcia prawdy w językach nauk dedukcyjnych* [The Conception of Truth in the Languages of Deductive Sciences], Tarski wrote:

> The predicate "true" is sometimes used to refer to psychological phenomena such as judgements or beliefs, sometimes to certain physical objects, linguistic expressions and specifically sentences, and sometimes to certain ideal entities called "propositions". By "sentence" we understand here what usually meant in grammar by "declarative sentence"; as regards the term "proposition", its meaning is notoriously a subject of lengthy disputations by various philosophers and logicians, and it seems never to have made quite clear and unambiguous. For several reasons it appears most convenient to apply the term "true" to sentences, and we shall follow this course. (Tarski, 1995d, p. 231)

Although Tarski limited himself to talking about sentences in this work, he did not exclude the possibility of later extending the concept of "truthfulness" to other types of objects, that is, as one can guess, to judgments and propositions. How would this extension take place?—unknown. It is known, however, that in this paper he also claimed what he firmly maintained in 1933, namely that:

> The problem of defining truth has a clear meaning and can be solved strictly only for languages whose structure has been strictly defined. For other languages—that is, for all natural, "spoken" languages—the sense of this problem is more or less vague, and its solution can only be approximate. (Tarski, 1995d, p. 240; emphasis by Tarski—A.O.)

**4.3.** This cursory description of Tarski's approach to language has already shown that from the point of view of this approach it is impossible to formulate the metaepistemological thesis of the semantic theory of knowledge proclaiming that reflection on logically understood concepts and propositions is equivalent to reflection on expressions and sentences whose meanings are those concepts and propositions. Further, that these concepts and propositions must be treated by the epistemologist as the meanings of expressions and sentences, if the contents of these concepts and propositions are to be determined. From Tarski's point of view this is not possible, because he did not have—as already mentioned—any conception of the meaning of expressions and, consequently, no conception of the relationship between meanings and logical concepts and propositions; he merely stated that the meaning of the expression in a given language was clearly determined by the shape of the expression. After which he added that

> [S]trictly speaking, this only applies to the so-called fixed symbols, [after all] variable symbols and technical signs (such as brackets, full-stops, etc.) do not have independent meaning, but they do have a significant impact on the meaning of the expressions that contain them. (Tarski, 1995c, p. 33)

So once again: the lack of a conception of the meaning of expressions, and moreover, refraining from taking a position on the subject of psychologically and logically understood cognition makes the semantic theory of knowledge understood as a project is not possible to formulate on the basis of Tarski's approach to language, and since the semiotic legitimacy of this project—indicated by Ajdukiewicz, as will be discussed below—is also the legitimacy of the realization of the project, it is also not possible on the basis of Tarski's logical theory of language to understand the semantic theory of knowledge as a legitimate realization of the project of the semantic theory of knowledge. Tarski's influence on Ajdukiewicz's semantic theory of knowledge is, therefore, limited to the latter's using

some of the results that the former obtained on the basis of logical semantics.

Stating this, I am also aware that it is possible to develop a so-called semantic-formal theory of knowledge which abstracts from the traditional epistemological opposition: the real cognizing subject—the object of cognition (the world of the real cognizing subject) and replaces this opposition with an abstract cognitive subject constructed on the basis of a given formal language of the deductive sciences with the help of appropriate logical concepts and with the object of knowledge understood as a model(s) of a theory constructed on the basis of this language. Roman Suszko initiated this semantic and formal theory of knowledge, and Jan Woleński has developed it (Suszko, 1957a; 1957b; 1966; 1998a; 1998b; Woleński, 1984; 1993; 2005; 2009). The theory of knowledge understood in this way makes significant use of the achievements of logical semantics—including from model theory, to which Tarski contributed significantly. However, I do not take into account the semantic theory of knowledge so-understood, when I find Tarski's limited influence on the semiotic or, as Ajdukiewicz called it, the semantic theory of knowledge. I am also aware of the fact that the semantic-formal theory of knowledge understood in this way was inspired by the syntactic-pragmatic theory of knowledge of Ajdukiewicz, which makes use of some results of logical semantics. I say "syntactic-pragmatic" because, in fact, that is what Ajdukiewicz's semiotic epistemology was, although it is referred to as "semantic", in the broad sense of the term. This does not mean, which I emphasize once again, that the author of the theory of knowledge understood in this way did not make use of the means of narrowly understood semantics, i.e. the semantics to which Tarski, who initiated it himself, significantly contributed to developing. But—as I emphasize—it was only as an aid.[14]

[14] At this point, I would like to recall Roman Suszko's opinion, which coincides with my own. Suszko wrote about the poor use of the achievements of modern logical semantics by Polish, but not only Polish, philosophy, and wrote about the former: "It is puzzling that in Polish philosophy, from which semantics arose and which for the past forty years has been very closely associated with formal logic, we do not actually find any serious applications of semantics to philosophical problems [...] Let us note that Prof. Ajdukiewicz, who most broadly associated philosophy with formal logic, avoided the use of semantic concepts, especially the concept of truth, in his pre-war work. His post-war work has a slightly different character in this respect. In the article [...] *Epistemologia i semiotyka* [Epistemol-

Let the conclusion to these considerations be the statement, which also in this case retains its value, of Izydora Dąmbska, who said that Ajdukiewicz was such an outstanding figure that he was rarely influenced by anyone.[15]

## 5. The Metaepistemological Project of the Semantic Theory of Knowledge

**5.1.** Let me remind readers of the project, this time in Ajdukiewicz's words:

> The theory of knowledge (epistemology) deals in some of its branches with knowledge as a psychological process, in others, with knowledge in the logical sense. The fact that knowledge in the logical sense consists of meanings relative to language implies that for any sentence about judgments or concepts (in the logical sense) there exists an equivalent sentence about sentences or terms whose meanings are those judgments and concepts. So, for example, sentences about the relation of consequence or about the relation of inconsistency, etc. between judgments are equivalent with sentences asserting suitable relations between the sentences whose meanings are those judgments. This circumstance is made use of in a certain recently developed approach to the theory of knowledge, viz. the semantic theory of knowledge in which epistemological problems are programmatically studied from the point of view of language as a system of expressions endowed with meaning. Its theses are formulated in such a way that they concern expressions, i.e. sentences and terms, but sentences and terms of a definite language which endows them with meaning. In this way the semantic theory of knowledge makes use consciously of the only method which enables one to make assertions about certain cognitions with determinate content. For it is impossible to name a given concept or judgment except by characterizing them as the meanings of certain terms or sentences. (Ajdukiewicz, 1960h, pp. 265–266)

---

ogy and semiotics], in which he demonstrates that the theses of idealism, on some interpretation of them, cannot be reasonably expressed, in the terms "true" and "signifying" which belong to semantics. However, a thorough review of the text shows that the author himself does not use these terms, but considers ways of using them by conducting a detailed analysis of the correctness of the use of semantics or the language of syntax. This analysis does not use semantic terms" (Suszko, 1957b, pp. 58–59).

[15] From my conversations with Izydora Dąmbska: October 1982—March 1983.

It would be interesting to describe the "nominalist climate" in which Polish logicalizing philosophers and logicians worked, and which they co-created, in the early decades of the 20th century, because,to some extent, from this climate arises Ajdukiewicz's epistemological idea—in practising the semiotic theory of knowledge—instead of concepts and propositions, to talk about expressions and sentences. I am aware that Ajdukiewicz was not a nominalist, as a logicalizing philosopher, he was rather a Platonist, which is reflected in his work on universals and definitions, as well as in the ideal understanding of science (knowledge), which I shall mention below (Ajdukiewicz, 1932; 1965c; 1965f). Without developing a new thread, I would like to remind the reader that this climate was characteristic of the Warsaw environment, not the Lviv one, and that Ajdukiewicz spent some time in this Warsaw environment, as an extraordinary professor of philosophy at the University of Warsaw in the years 1924–1928, where he became closer scientifically to Stanisław Leśniewski, a radical nominalist. However, I cannot resist the temptation to mention the nominalist atmosphere in which Warsaw philosophers and logicians lived, nor to recall the letter of Władysław Witwicki, which he sent from Warsaw to Kazimierz Twardowski, in Lviv, on January 11, 1920. Here is what Witwicki wrote:

> I don't know which tooth really hurts when Łukasiewicz and Lesniewski talk about "sentences" next to me, as though it were about the grammar of words, and about expressions, and not about things, objects, facts, claims, negations, and the objective world and cognizing subjects and their relationships, only about words, words and words again. These "sentences" drawn clean from all traces of beliefs, for me become combinations of murmurs [...]. I cannot begin to doubt the existence of qualities because Leśniewski makes mischief with the expression "property" and under the influence of this mischief Kotarbiński quite seriously claims that he does not believe in properties. (Jadczak, 1997, p. 32)[16]

[16] The words of Łukasiewicz, written years later in his diary on June 11, 1949, are a kind of answer, counterpointing this fragment of the letter. He wrote: "Władysław Witwicki was comprehensively gifted: in high schools he was a teacher of science, also he was a psychologist, a philosopher, a translator of Plato, and finally he drew, painted and sculpted. Of one ability, however, he was completely deprived: namely the ability for mathematics and symbolic thinking. When he was to prepare a mathematics subject in Lviv when he was taking the teaching exam in science, he turned to me for help. As a topic, he received from Puzyna,

Twardowski's article *Symbolomania i pragmatofobia* [Symbolomania and Pragmatophobia], well-known among Polish analytical philosophers, probably also has its origin in this letter. This is an article that warns against placing symbols above things, which can lead to things being bent to symbols, "[...] it means that things are said to arise from symbolic assumptions and actions, no matter what things say about themselves, or even contrary to what things say about themselves" (Twardowski, 1965c, p. 362).

---

a professor of mathematics, a third- and fourth-degree equation. I wrote an essay on this subject for him, and in return he painted a portrait for me" (after: Łukasiewicz, 2009/2010, vol. 2/3, pp. 345–346). And one more fragment from those Memoirs, concerning Witwicki indirectly (after all, he was closest to Twardowski in his philosophical views), and Twardowski directly, and in particular the issues raised by the above quote from the fragment of Witwicki's letter to Twardowski: "Twardowski highly valued the work of the second priest [second alongside F. Brentano], living in the first half of the nineteenth century, Bernard Bolzano. Bolzano was a professor of religious studies at the University of Prague and was an outstanding mathematician and logician. His works in the field of logic have an incomparably higher scientific level than the philosophical talk of Kant or Hegel. If Twardowski understood the difference of the scientific method used by Bolzano from the random and often thoughtless talk of German philosophers, he would perhaps have created a new direction of scientific philosophy, to outweigh the views of the Vienna Circle. Meanwhile, Twardowski was under the spell of not so much Brentano's Aristotelian period, but his later philosophical works infected with psychologism. The apparatus of ideas and issues that Twardowski brought from Vienna to Lviv was extremely barren and poor. There was always talk about whether belief is a psychological phenomenon of a separate kind, or whether it is a combination of concepts, constant talk about ideas, performances, concepts, their content and object, and it was not known whether the analysis that was done on that belonged to psychology, to logic, or to grammar. The first volume of Husserl's *Logical Investigations* made a great impression in Lviv, especially on me. I had long disliked the psychology, practised by Twardowski, now I completely broke with him. However, volume two of Husserl's *Logical Investigations* disappointed me. It contained some vague philosophical talk again, which repelled me from all German philosophers. I was surprised that such a difference could exist between two volumes of the same work. I found out later that in the first volume, it was not Husserl who spoke to me, but someone far larger than him, whom Husserl used in his book, and that was Gottlob Frege" (ibid., pp. 357–358).

The declared nominalists among the outstanding figures of this group were Leśniewski, Kotarbiński and Tarski. At the same time, Tarski's nominalism, which he so strongly emphasized, was only declarative, since in his logical research he used sentences-types (signs-design) that are foreign to nominalism, and not the sentences-specimens (signs-event) with which, if he were an actual nominalist, he should have operated (Tarski, 1995c, p. 19, note 5; 1995d, p. 231, note 5). On the other hand, what Witwicki could have taken as nominalism in the case of Ajdukiewicz, though Ajdukiewicz's name was not mentionedin the letter, was his approaching philosophical issues—both epistemological and ontological-metaphysical—from the language side. Because instead of concepts and judgements or propositions, Ajdukiewicz talked about sentences and names, and instead of universals—about the number of semantic categories of names, that is—speaking Quine's language—about the ontological involvement of language. However—as it appears from the considerations so far—such an approach allowed Ajdukiewicz to use epistemological and ontological logical tools in his work. It did not mean, however, that judgements, propositions and concepts disappeared from the sphere of his epistemological considerations, since they were defined by him as the psychological and logical meanings of these expressions and since they were understood—in the case of their psychological understanding—as acts of meaning-intention intertwined with these expressions, and in the case of the logical understanding of concepts and judgements (that is, propositions), as *in specie* the understood essence of these acts. Ajdukiewicz's "nominalism" was similar in the case of his ontological considerations—also in this case he approached the issue from the language side, asking whether the current Polish language is involved ontologically, in the spirit of conceptual realism or nominalism? He concluded his analysis that on the basis of the Polish language it is possible, without falling into contradiction, to state the existence of universals. Many years later, analysing nominal and real definitions, he came to the conclusion that, being logically unable to abandon real definitions in definition theory, the existence of universals should be recognized, after all they are the subject of these definitions (Ajdukiewicz, 1932; 1960c; 1965e; 1965f).

**5.2.** In Ajdukiewicz's words, quoted in section 5.1., about what the semantic (semiotic) theory of knowledge is, the key point is that the semantic theory of knowledge—focusing in its statements on expressions of the language that equips them with specific meanings—consciously uses

the only method that allows it to speak about certain content-specific knowledge. Ajdukiewicz goes on to say that one cannot name a signified concept or proposition in any other way than by describing it as the meaning of certain terms or sentences. Therefore, it becomes crucial to demonstrate that the concepts and propositions, defined in terms of their content, are the meanings of expressions. So—different again—it becomes crucial to demonstrate that

> if a concept in the logical sense and just as understood judgement, that is a proposition, did not constitute the meaning of any expression, then nothing could be said about them as to their content [and that] anything that concerned such concepts and propositions would be inexpressible, [and that] thus, it could not belong to any science, as long as science is understood as something that is socially (inter-individually) available. (Ajdukiewicz, 1936, p. 338)

The justification of this thesis, which I shall only briefly discuss, deserves special attention, because it is the only justification—known to me—in all philosophical and analytical literature, which so convincingly demonstrates that cognitive issues should be approached from the side of language.[17] This justification is based on distinguishing what an expression means from what it refers to, i.e. speaking in Frege's language—on the distinction between *Sinn* and *Bedeutung* or speaking in Husserl's language—on the distinction between *Bedeutung* and the *gegenständlicher Beziehung* (Husserl, 1928, pp. 49–50). Pointing out these distinctions, however, we must remember that in Frege's language the expression *Bedeutung* means the same as the expression *gegenständlicher Beziehung* in Husserl, while the expression *Sinn* in Frege has the meaning of the expression *Bedeutung* in Husserl. It should also be borne in mind that Ajdukiewicz was close to Hussserl's terminology and—as has already been mentioned—that he was close to the whole of Husserl's philosophy of language contained in the second volume of *Logische Untersuchungen*.

[17] A detailed analysis of this thesis, justifying Ajdukiewicz's metaepistemological project, is presented in the monograph *Semantyczna teoria poznania* [The Semantic Theory of Knowledge], in chapter. V entitled *Metaepistemologiczny projekt semantycznej teorii poznania* [The Metaepistemological Project of the Semantic Theory of Knowledge] (Olech, 2014b), as well as in the chapter entitled *On Ajdukiewicz's Project of the Semantic Theory of Knowledge* (Olech, 2018).

This philosophy underlies the justification of Ajdukiewicz's metaepistemological thesis contained in the quote in question, although it is not invoked during Ajdukiewicz's semiotic legitimization of this thesis.

Here's how this legitimization works:

(1) Language is a resource of intensionally interpreted expressions—which should be clearly stated, but we tacitly assume that some expressions also have an object reference.

(2) Thus, for example, the expression "triangle", which has its own meaning and its object reference, refers to a triangle, and the expression "trilateral" to a trilateral, but since the trilateral is the same as the triangle, these expressions have the same object reference, i.e. they are equivalent. Yet, despite their equivalence, they are not synonymous, because understanding the first of them we direct our attention to the triangular figure, and understanding the second—to the trilateral figure.

(3) The acts of understanding these expressions are not, respectively, the concepts of the triangle and the trilateral, but the concepts of the "triangle" and the "trilateral". Because the concept of a "triangle" understood psychologically is a concept that is an act of understanding the expression "triangle"—just as the concept of "trilateral" is an act of understanding the expression "trilateral". They are, therefore, different acts as to their content or—in different terminology—as to their matter. Moving from the psychological plane to the logical plane, we will say that the concept of a "triangle" in a logical sense is a concept that is *in specie* the comprehended content of the act of understanding the expression "triangle", while the concept of "trilateral", also logically, is a concept that is *in specie* the comprehended content of the act of understanding the expression "trilateral".

The acts of understanding the terms "triangle" and "trilateral" are the psychological meanings of these expressions, while the *in specie* content of these acts are the logical meanings of these expressions. Both the psychologically and logically understood concepts of "triangle" and "trilateral" are not identical in terms of content, but they are identical as to their reference, i.e. the meanings of the terms "triangle" and "trilateral" are not the same meanings, since their (material) content is different. In short: these expressions are not synonymous, although they are range-equivalent.

(4) However, when we say the concept triangle or the concept trilateral, i.e. when we use the names triangle and trilateral in ordinary rather than material supposition—as was the case previously, the graphic expression of which was quotation marks—then we mean any concept which

refers to a triangle, and therefore also refers to a trilateral; after all a triangle is the same as a trilateral. This concept is both the concept which is the meaning of the name "triangle" or the name "trilateral", as well as the name "flat figure with the sum of internal angles equal to 180°" etc. In other words: if someone named the concept triangle, we could reasonably ask exactly what content of this concept do you mean when you talk about this concept, after all, your utterance is indefinite as to content. Do you mean the content in which triangularity is referred to, or the content in which trilateralness is referred to, or maybe the content referring to the flat figure with a sum of internal angles equal to 180 °? etc.—after all, these are different contents, each of which is the meaning of the appropriate name: "triangle", "trilateral", "flat figure with a sum of internal angles equal to 180°" etc., and all of this content is contained in general and linguistic content names: the concept of triangle which you just used.

The point of justifying the metaepistemological design of the semiotic (semantic) theory of knowledge is to distinguish between simple and material supposition. For when we say: the concept of "triangle", we speak briefly, because by developing this abbreviation we would say: the concept that is the meaning of the phrase "triangle". In saying this, we mean o n l y the concept referring to the triangle—the geometric figure. The content (matter) of the concept understood in this way, which is also the meaning of the expression "triangle", is triangularity. In this case, one can speak of the content (matter) as inseparable from the act of comprehension, i.e. the act of understanding the word "triangle". One can also talk about objective (logical) content (matter) abstracted from the subjective content (matter) experienced by a given subject who understands the word "triangle". Husserl spoke of such objective content as being *in specie* content. This subjective or objective content is a triangle, as a geometrical figure, captured in its triangularity. These contents are views of a triangle—a subjective or objective view. Yet these views of the triangle can be many and different; different not only subjectively or numerically, which is the case with subjective content, but also different in their objective content.

However, when we say: the concept of a triangle, not a "triangle", then we do not mean o n l y the concept standing in the relation of designation of the triangle, but a n y concept related to the triangle. That concept is the concept of the meaning of the term "triangle", but also the concept of the meaning of the term "trilateral", etc. Therefore, it is not the concept

of the triangle, in contrast to the concept of the "triangle", defined in its content. It will become such when we extract the content from the rich content and bind it to the appropriate expression—the expression "triangle" or the expression "trilateral", etc., i.e. when that content becomes the meaning of the expression. About this rich content of the concept of a triangle, we can say that it is a class of individual concepts, each of which is the current or potential meaning of the corresponding expression. And each of these expressions refers to a triangle—a geometric figure.

## 6. Final Considerations

Speaking of the matters raised above, one must answer three fundamental questions:

(1) what is an expression?

(2) what is the content of the concepts referred to above? and

(3) what was the actual motive of the metaepistemological project of the semantic theory of knowledge?

(1) The answer to the first question arises itself; after all, the previous considerations already contain it, though not directly. The linguistic expression is—ontologically speaking—a three-tiered creation: physical, mental and logical. By "physical" I mean a layer of inscriptions or sounds, that is, a physical sign that is given to the language user in the act of sensual perception, intentionally directed at that sign. By "mental" I mean the act of meaning-intention intertwined with this sign or—more precisely—intertwined with the act of sensory perception, the object of which is this sign. By "logical" I mean *in specie* the essence of an act of meaning-intention, which is the same in the numerically or subjectively different acts of the user or users of the language.

Husserl's conception of expression is, therefore, a subjectivist-objectivist conception, which Ajdukiewicz, in his approving presentation, supplemented with some interesting modification corresponding to his fractional notation of syntactic categories, which he presented for the first time in his lectures in 1930.[18] Ajdukiewicz's key statement regarding the

[18] In *Lecture VIII*, of October 28, 1930, Ajdukiewicz presented this interesting addition: "It seems that the point to which Husserl did not pay attention in the

ontological status of the expression—the statement contained in the footnote to the fragment of his lecture cited below—is the sentence that the act of meaning-intention, entwined with the act of sensual perception of an expressive sign, is the act constituting the expression as an expression. Due to the importance of this statement, it should be recalled once more and placed in the main text—and it reads as follows: "Thought" entwined "in some way with an expression, the thought which makes of that expression an expression".[19]

Just as there is no expression in general, expression in abstraction from language (after all, being an expression is always being "in the field" of a language), so there is also no expression in abstraction from the subject of the language, i.e. in abstraction from some user. This is one of Ajdukiewicz's basic, conjunctively complex theses. I think that Husserl would also subscribe to the first part of this conjunction.[20]

The essence of an expression, its sense, that is its meaning is the *in specie* understood essence of the act of meaning-intention, which—described by Husserl as "expression meaning" (*ausdrückliche Bedeutung*)—

analysis itself, is that the expression, thanks to the thoughts that animate it [the implicit intentions of it—A.O.], has some syntactic form, whereas the symbols on the map have no syntactic form. A thought 'entwined' in some way with an expression, the thought that makes an expression out of this expression, not only has an intention that is directed to an object via the presentation content, but also has 'side protrusions' with which that thought can 'hook' on to some other thought, as long as this other thought also has such 'side protrusions' whose shapes will match. We want to point out that if an inscription is used as an expression, it is somehow associated very strictly with a certain thought, which still has the characteristic property that makes it able to connect with other thoughts entirely expressed through sentences" (Ajdukiewicz, 2014, pp. 157–158).

[19] See. ed. 18.

[20] The fact that being an expression is always being "in the field" of a language (including "in the field" of its lexical resources)—this is the thesis *expressis verbis* voiced by Ajdukiewicz. He put forward this thesis in *Lecture III* and *Lecture IV*—see (Ajdukiewicz, 2014, pp. 144–149). This approach to linguistic expressions is referred to as "inarwacyjny" (arval)—from the Latin words: *in arvum*, meaning "in the field". Husserl's approach to language is one that relativizes being an expression to the subject of the language, after all, it is the source of the acts of intentions of meaning that are the ones that constitute expressions as expressions. I think that Husserl would also subscribe to the "inarwacyjny" approach to language expressions.

is the meaning "in itself" (*Bedeutung "an sich"*), held in the act of meaning-intention. At the moment of grasping this meaning by the act of meaning-intention (the act intertwined with the act of sensual perception of an expressive sign) that meaning ceases to be a meaning "in itself" and becomes an expression meaning. This transition, through an act of meaning-intention, from *an sich* to *ausdrücklich* is the moment constituting the expression as an expression. In other words: the expression sign, recognized initially and only in the act of sensual perception, becomes the expression *tout court* due to the intention of the meaning. And let's add: the extra-linguistic and extra-subjective ideal meaning "in itself" comes, that is, "is incarnated" in the act, temporal by nature, of the intention of meaning of the empirical subject as a species essence of that sign. So—roughly speaking—Husserl's concept of expression from the period of *Logical Investigations* is presented and this concept was always recognized by Ajdukiewicz (I omit his additions). One last sentence regarding this point: to be a language expression is the same as to be used—as a physical sign—by a language user as a language expression. This sentence was spoken by Ajdukiewicz in *Lecture V* of the aforementioned series of lectures and developed in subsequent lectures, and it summarizes that the essence of the expression is the intention of meaning, and the meaning of the expression is *in specie* grasped the essence of each of the subjectively and numerically different acts of meaning-intention related to a given expression.[21]

(2) The answer to the second question is closely related to the issues of concepts and propositions defined as to content, and this is the heart of the metaepistemological project of the semantic theory of knowledge. We remember that the conclusion of Ajdukiewicz's considerations contained in this project is the fundamental statement that if the concepts and judgements or propositions about which traditional theory of knowledge treats are to be defined as to their content, they should be treated as the meanings of names and sentences: psychologically understood concepts and judgements should be treated as the psychological meanings of these expressions, and logically understood concepts and propositions as their logical (linguistic) meanings. This is equivalent to the statement that if the theoretician of knowledge intends to speak about knowledge specified

[21] This was a lecture of October 9, 1930—see (Ajdukiewicz, 2014, p. 149). See also (Husserl, 2000, pp. 119–124).

in terms of its content, he should approach knowledge from the side of language, which in turn is equivalent to the statement that reflection on logical concepts and propositions is equivalent to reflection on names and sentences whose meanings are these concepts and propositions.

The content in question in this case is the intentional content, the content of the act of meaning-intention, i.e. the content of this act that gives the expression sense, that is, meaning. This content is something different from the content of the act that fulfils the sense, that is, from the act that gives it its intuitive fullness. The act that gives the expression a meaning is a non-intuitive act, but is an indispensable act for the expression to constitute itself as an expression. Meanwhile, the act that fulfils the sense is an intuitive act and it is by no means indispensable. The content of the act giving the expression meaning, i.e. intentional content, with which we are concerned in this case, is empty; empty in the sense that it is "open" to possible intuitive fulfilment of its content. The emptiness of intentional content does not, however, mean the absence of any content; after all, in that case we are dealing with non-intuitive content—the empty content of intentional content only means the absence of intuitive content.

In any case in which we are dealing with the understanding of any expression, understanding without intuition, one with "life" in this sense—as Husserl wrote—then we are dealing only with acts that give meaning, with intentional content or with content as an intended sense (Husserl, 2000, p. 83). Philosophical tradition has appropriate terms for this—it is, for example, *intellectio*, as opposed to *imaginatio*. The first of these comes into play when one needs to name the act of understanding without sensibility (intuition) of the word "thousandagon", the second—when one needs to name the understanding fulfilled by sensible (intuitive) content. We can, understanding the word "triangle", imagine the designation of the name, that is, introduce it to ourselves sensibly (intuitively). Philosophical tradition has the term *imaginatio* to denote this sensible act. However, the understanding of the word "triangle" is not based on the person who understands the word's sensible presentation to himself of a triangle, but on the act of meaning-intention which has that empty intentional content. This empty intentional content can be, and in fact sometimes is, fulfilled by the sensible (intuitive) content of an intuitive presentation of a triangle to oneself, but it does not have to be so fulfilled; since it is not essential for understanding the word "triangle", i.e. for using it as a linguistic expression. Meanwhile, in the case of the word "thousandagon"—or

another word, such as the abstract name "time"—the act of understanding this word is based solely on the content empty act of meaning-intention (Husserl, 2000).[22] The issue of the emptiness of the content of the act of meaning-intention, also referred to as the "intended sense" or, for its specific character, the "empty x" (Husserl, 1967, pp. 454–455), I consider so important for these considerations that I would like to refer on this to Ingarden—an academic colleague of Ajdukiewicz from the time of their joint studies in Göttingen, including their joint participation in the Husserl and Reinach seminars. Here is what Ingarden wrote, referring also in the footnotes to Husserl's *Logical Investigations*:

> The content of the act must be strictly distinguished from all experienced, phenomenal-sensible content, the special case of which is sensory-impression content. The content of the act is [...] completely non-intuitive, in a sense, e m p t y. The subject does not experience it, nor is it given to him in any way. The subject fulfils it or thinks of it, in a particular case of thought. This, of course, happens only when it occurs in its original form, i.e. when it is a component of the act just performed by the subject. (Ingarden, 1987, p. 182)[23]

And Ingarden continues:

> [...] the subject of consciousness fulfils the content of the act by simply living in a given act, reliving this act. In doing so, unloading in a defined way his activity in the act, he points the content of the act into a certain object with specific (precisely that content) properties, aims it in a way, and thus defines and comprehends it, being unable to achieve it with that content or to force it into self-presence by aiming solely. The content of the opinion-act [*Meinung*] directed at some object is precisely "empty". One can "fulfil" it—as Husserl first showed—due to the fact that the subject of consciousness simultaneously experiences a certain intuitive content, foreign to himself, and that he will capture it in a special way. If the intuitive content is sensory, not imaginary, then the entity fulfilling the act achieves presenta-

[22] The issues discussed at this point of consideration are the subject of Husserl's considerations in *Logical Investigations*, in *Investigation I* (especially in paragraphs 9, 14, 15, 17, 18, 19, 30) and in *Investigation V* (especially in paragraphs 16, 17, 20, 21).

[23] Ingarden refers in the quoted passage to: Husserl (1928, vol. 2, first essay, § 34).

> tion, the self-presence of the object fully defined by its qualities. (Ingarden, 1987, p. 183)[24]

Summing up the considerations contained in this point, I would like to remind the reader that they were associated with the issues of concepts and propositions defined as to content, important for the metaepistemological project of the semantic theory of knowledge. The content in question in this case is not extensionally understood content, that is a set of common properties of the object references of these concepts and propositions or their linguistic expressions, but is interpreted intensionally as the content of acts that give meaning to these words or as the content of those acts *in specie*. In the first case, we deal with the content of psychologically understood meanings, and thus also concepts and judgments understood in this way, while in the second case, with the content of logically understood meanings, and thus also with logically understood concepts and propositions.

I would like to note that in Ajdukiewicz's works there are no such fragments that would clearly and exhaustively present the issues of the content of concepts and propositions, including the issue of being specific or indefinite as to content. Ajdukiewicz repeatedly refers to Husserl's *Logical Investigations* in his works, but he sometimes does it in such a way that he directs the reader to them, if he is interested in more detailed analysis or justification of the conclusions reached. This is the case in his *On the Meaning of Expressions* (1960c) and *Language and Meaning* (1960f). From reading the first of these papers, which is developed by the second one, the attentive reader sees that the contents of concepts or propositions, which are the meanings of the appropriate expressions, should not be understood extensionally, i.e. in a connotative manner, but intensionally—strictly: in a Husserlian way, that is, as intended senses. Because to such an understanding of content the attentive reader is directed by the considerations contained in this article, which mentions Investigation I *Ausdruck und Bedeutung* from the second volume of Husserl's *Logische Untersuchungen* (see Ajdukiewicz, 1960c, pp. 118 and 124).[25]

---

[24] The footnote, which appears in the cited passage, refers to: Husserl (1928, vol. 2, essays V and VI).

[25] In this case I use German-language titles, because they appear in this work by Ajdukiewicz and in *Language and Meaning*.

(3) The actual source of the semantic theory of knowledge—understood as a metaepistemological programme, and thus also as its implementations—was Husserl's intentional expression theory laid out in the second volume of *Logical Investigations*. This was because this theory closely links thinking with language, allowing, through this connection,the legitimate identification of psychological concepts and judgements with the psychologically understood meanings of expressions, and logical concepts and propositions with logically (linguistically) understood meanings of expressions. Consequently, it allows us to legitimately proclaim the key thesis of the semantic theory of knowledge, that reflection on concepts and propositions is equivalent to reflection on expressions whose meanings are these concepts and propositions. No other language theory associates language with thinking so closely—a linguistic act with a cognitive act—as does Husserl's theory. Yes, not all of the cognitive activity of the cogniting subject is contained in his linguistic activity—and Ajdukiewicz agreed with this statement, but emphasized at the same time that only verbal cognitive acts deserve the honourable name "cognition", if what they say is also intersubjectively verifiable (Ajdukiewicz, 1960f, pp. 146–147; Ajdukiewicz, 1965g, p. 389).

He who thinks clearly, expresses himself clearly—this sentence is usually seen as the motto of the philosophical school of Kazimierz Twardowski. In the original, this sentence reads as follows: "[...] the author who is not able to express his thoughts clearly, cannot think clearly, [...] so his thoughts are not worth making an effort to guess at" (Twardowski, 1965b, p. 348). The premise for accepting this sentence is the statement that there is a close relationship between thought and language,

> [...] the relationship is closer the more abstract the thought the speech expresses. [...] Human thought [...] is not [...] just an external expression of thought, but is also its tool, enabling us to think in an abstract way; thinking, we think in words, so in speech. (Twardowski, 1965b, p. 347)

The statement proclaiming the close relationship between thought and language is justified in Twardowski's works. However, it is doubtful because it is based on linguistic associationism. Ajdukiewicz rejected linguistic associationism as an argument in favour of a close connection between

language and thinking, and as a critical tool in this respect he used the intentional language theory of Edmund Husserl from the second volume of *Logical Investigations*.[26] For Ajdukiewicz, the argument for a close connection between language and thinking was always Husserl's theory. In the 1930s, it also became the basis for the metaepistemological project of the semantic theory of knowledge presented at the Third Polish Philosophical Congress in Krakow, which, at the same time, legitimized the implementation of the project presented at this Congress, i.e. the semiotic-logical explication of Heinrich Rickert's transcendental idealism and the rejection of that explicated claim.

## 7. Conclusion

The purpose of this article was to show the importance of Husserl's intentional theory of language for the semantic or—more precisely—the semiotic theory of knowledge of Ajdukiewicz. Since Husserl's theory had a significant impact on Ajdukiewicz's semiotic views, it could not have failed to have a significant impact on his semiotic-epistemological views. The semantic aspect of Tarski's work—the metalogical principle of the excluded middle as a consequence of the semantic definition of truth—provided Ajdukiewicz with legitimacy for the transition from reflections on the linguistic picture of the world, i.e. from reflections on the world of linguistic intensions, to reflections on the world, i.e. the world of linguistic extensions. That was the case with the criticism of Rickert's transcendentalism. However, in the case of Berkeley's idealism, an analogous factor legitimizing such a transition was Leśwski's distinction between language

[26] The criticism of language associationism based on the Husserl's intentional theory of language was carried out by Ajdukiewicz in the aforementioned *Lectures on Logical Semantics* (2014) and in the already mentioned work *On the Meaning of Expressions* (1960c). Twardowski justified the close relationship between language and thinking in the paper *Wyobrażenia i pojęcia* [Images and Concepts] (1965d) and in the paper entitled *O istocie pojęć* [On the Nature of Concepts] (Twardowski, 1965a). The first paper was originally published in Lviv in 1898. The second is, in fact, a repetition of some of the analyses of concepts that are included in the first. The paper *On the Nature of Concepts* was originally published in Lviv in 1924 as a pamphlet. I criticise Twardowski's arguments based on associationism in favour of the thesis stating the close links between thinking and language in the article (Olech, 1992).

and metalanguage, and, as a consequence of this distinction, the distinction between syntactic and semantic metalanguage, which Tarski made. It should be remembered, however, that although these semantic factors came into play in the implementation of the metaepistemological project of the semantic theory of knowledge, they did not have any impact on the project itself, which was carried out without the concepts of contemporary semantics.

Husserl's influence on Ajdukiewicz's semiotic views, including the metaepistemological project of the semantic theory of knowledge, concerns the concept of "knowledge defined as to content", i.e. "concepts defined as to content" and "propositions defined as to content", which is important for this project. The content in question in this case is Husserl's content understood as the content of the act of meaning-intention (content understood psychologically) and *in specie* the understood content of this act (content understood logically). Attention to this aspect of the semantic theory of knowledge was one of the main subjects of this essay.

## REFERENCES

Ajdukiewicz, K. (1932). W obronie uniwersaliów. *Ruch Filozoficzny*, *13*, 40b–41b.

Ajdukiewicz, K. (1934). Sprache und Sinn. *Erkenntnis*, *4*. Reprint: Język i znaczenie. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 145–174). Warszawa 1960: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1935). Der logistiche antyirracjonalismus in Polen [Logistic Anti-Irrationalism in Poland]. *Erkenntnis*, *5*. Original: Logistyczny antyirracjonalizm w Polsce. *Przegląd Filozoficzny* 1934, *37*(4), 399–408.

Ajdukiewicz, K. (1936). Zagadnienie idealizmu w sformułowaniu semantycznym. *Księga Pamiątkowa Trzeciego Polskiego Zjazdu Filozoficznego. Kraków 1936.Przegląd Filozoficzny*, *39*(4), 334–340.

Ajdukiewicz, K. (1949). *Zagadnienia i kierunki filozofii (Teoria poznania – metafizyka)* [Issues and Directions of Philosophy]. Warszawa – Kraków: Spółdzielnia Wydawniczo-Oświatowa „Czytelnik".

Ajdukiewicz, K. (1960a). Reizm. (Tadeusz Kotarbiński: Elementy teorii poznania, logiki formalnej i metodologii nauk). In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 79–101). War-

szawa: Państwowe Wydawnictwo Naukowe. Original: Przegląd Filozoficzny 1930, *33*.

Ajdukiewicz, K. (1960b). Przedmowa [Preface]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. V–VIII). Warszawa: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1960c). O znaczeniu wyrażeń [On the Meaning of Expressions]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 102–136). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Księga Pamiątkowa Polskiego Towarzystwa Filozoficznego we Lwowie (12. II 1904 – 12. II 1929)*. Lwów 1931.

Ajdukiewicz, K. (1960d). Definicja. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 44–61). Warszawa: Państwowe Wydawnictwo Naukowe. Original: K. Ajdukiewicz, *Główne zasady metodologii nauk i logiki formalnej*. Warszawa 1928.

Ajdukiewicz, K. (1960e). W sprawie „uniwersaliów" [On the Problem of Universals]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 196–210). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Przegląd Filozoficzny* 1934, *37*(3).

Ajdukiewicz, K. (1960f). Język i znaczenie [Language and Meaning]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 145–174). Warszawa: Państwowe Wydawnictwo Naukowe. Original: Sprache und Sinn. In:*Erkenntnis* 1934, *4*.

Ajdukiewicz, K. (1960g). *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1) [Language and Knowledge]. Warszawa: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1960h). Problemat transcendentalnego idealizmu w sformułowaniu semantycznym [Semantic Version of the Problem of Transcendental Idealism]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1920–1939* (vol. 1, pp. 264–277). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Przegląd Filozoficzny* 1937, *40*(5).

Ajdukiewicz, K. (1965a). Systemy aksjomatyczne z metodologicznego punktu widzenia. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2, pp. 332–343). Warszawa: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1965b). *Logika pragmatyczna* [Pragmatic Logic]. Warszawa: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1965c). Metodologia i metanauka. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2, pp. 117–126).

Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Życie Nauki* 1948, *31–32*.

Ajdukiewicz, K. (1965d). O tzw. Neopozytywizmie [On So-Called Neopositivism]. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2, pp. 7–28). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Myśl Współczesna* 1946, *6–7*.

Ajdukiewicz, K. (1965e). *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2) [Language and Knowledge]. Warszawa: Państwowe Wydawnictwo Naukowe.

Ajdukiewicz, K. (1965f). Trzy pojęcia definicji. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2, pp. 296–307). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Studia Filozoficzne* 1958, *5*(8).

Ajdukiewicz, K. (1965g). Zagadnienie empiryzmu a koncepcja znaczenia. In: K. Ajdukiewicz, *Język i poznanie. Wybór pism z lat 1945–1963* (vol. 2, pp. 388–400). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Studia Filozoficzne* 1964, *1*(36).

Ajdukiewicz, K. (1993). Kategorie syntaktyczne i antynomie logiczne. *Filozofia Nauki*, *1*(1), 163–182.

Ajdukiewicz, K. (2011). *Główne kierunki filozofii w wyjątkach z dzieł ich klasycznych przedstawicieli (teoria poznania – logika – metafizyka)*. Warszawa: Wydawnictwo Naukowe Semper.

Ajdukiewicz, K. (2014). Wykłady Kazimierza Ajdukiewicza z semantyki logicznej w Uniwersytecie Jana Kazimierza we Lwowie w roku akademickim 1930/1931. *Filozofia Nauki*, *22*(1), 143–158.

Ajdukiewicz, K. (1994). Przemówienie powitalne delegacji polskiej na Międzynarodowym Kongresie Filozofii Naukowej na Sorbonie w roku 1935. *Principia. Pisma koncepcyjne z filozofii i socjologii teoretycznej*, *10–11*, 123–125.

Arystoteles, *Metafizyka* (przekł. K. Leśniak, 1984). Warszawa: Państwowe Wydawnictwo Naukowe.

Giedymin, J. (ed.). (1978). Editor's Introduction. In: K. Ajdukiewicz, *The Scientific World-Perspective and Other Essays 1931–1963* (pp. IX–XIII). Dordrecht/Holland/Boston: D. Reidel Publishing Company.

Grabarczyk, P. (2019). *Directival Theory of Meaning. From Syntax and Pragmatics to Narrow Linguistic Content*. New York: Synthese Library, Springer.

Husserl, E. (1928). *Logische Untersuchungen. Zweiter Band. Untersuchungen zur Phänomenologie und Theorie der Erkenntnis* (1.Teil). Halle (Saale): Max Niemeyer Verlag.

Husserl, E. (1967). *Idee czystej fenomenologii i fenomenologicznej filozofii*. Warszawa: Państwowe Wydawnictwo Naukowe.

Husserl, E. (2000). *Badania logiczne. Badania dotyczące fenomenologii i teorii poznania* (vol. 2, pt. 1). Warszawa: Wydawnictwo Naukowe PWN.

Ingarden, R. (1987). *Spór o istnienie świata* (vol. II, pt. 1, edition III revised). Warszawa: Państwowe Wydawnictwo Naukowe.

Jadczak, R. (1997). *Mistrz i jego uczniowie*. Warszawa: Wydawnictwo Naukowe SCHOLAR.

Jedynak, A. (2003). *Ajdukiewicz*. Warszawa: Wiedza Powszechna.

Kotarbiński, T. (1986). *Elementy teorii poznania, logiki formalnej i metodologii nauk* (ed. 3). Warszawa: Państwowe Wydawnictwo Naukowe.

Łukasiewicz, J. (2009/2010). Pamiętnik (fragmenty). Spuścizna po Janie Łukasiewiczu, Archiwum Uniwersytetu Warszawskiego, Pamiętnik, 12/3. *Rocznik Historii Filozofii Polskiej*, *23*, 313–380.

Maciaszek, J. (2013). Holistyczna teoria znaczenia Kazimierza Ajdukiewicza. Próba krytyczne analizy. *Przegląd Filozoficzny – Nowa Seria*, *22*(4), 265–284.

Maciaszek, J. (2015). *Holizm znaczeniowy Kazimierza Ajdukiewicza*. Łódź: Akademia Humanistyczno-Ekonomiczna.

Nowaczyk, A. (2006). Dyrektywalna teoria znaczenia, czyli dramat Filozofa [Directival Theory of Meaning, or the Drama of the Philosopher]. In: A. Nowaczyk, *Poławianie sensu w filozoficznej głębi* (pp. 176–185). Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

Olech, A. (1992). W sprawie „jasnego i niejasnego stylu filozofowania" K. Twardowskiego. *Principia. Pisma koncepcyjne z filozofii i socjologii teoretycznej*, *5*, 85–95.

Olech, A. (2001). Ajdukiewicz a Husserl wobec kwestii znaczenia wyrażeń. *Studia Semiotyczne*, *24*, 141–161.

Olech, A. (2014a). O Ajdukiewiczu i Ingardenie – uczniach Husserla. W setną rocznicę ukazania się Księgi I „Idei". In: M. Woźniczka (ed.), *Filozofia polska na tle filozofii europejskiej* (pp. 159–176). Częstochowa: Wydawnictwo im. s. Podobińskiego Akademii im. Jana Długosza w Częstochowie.

Olech, A. (2014b). *Semantyczna teoria poznania* [The Semantic Theory of Knowledge]. Częstochowa: Wydawnictwo im. S. Podobińskiego Akademii im. Jana Długosza w Częstochowie.

Olech, A. (2018). On Ajdukiewicz's Project of the Semantic Theory of Knowledge. In: U. Wybraniec-Skardowska, A. Garrido (Eds.), *The Lvov-Warsaw School. Past and Present* (pp. 65–90). Basel: Springer/Birkhäuser.

Suszko, R. (1957a). Logika formalna a niektóre zagadnienia teorii poznania. *Myśl Filozoficzna*, *28*(2), 27–56.

Suszko, R. (1957b). Logika formalna a niektóre zagadnienia teorii poznania. Diachroniczna logika formalna. *Myśl Filozoficzna*, *29*(3), 34–67.

Suszko, R. (1966). Logika formalna a rozwój poznania. *Studia Filozoficzne*, *44*(1), 51–61.Reprint In: R. Suszko, *Wybór pism* (pp. 109–120). Warszawa: Znak-Język-Rzeczywistość, Polskie Towarzystwo Semiotyczne.

Suszko, R. (1998a). Logika formalna a niektóre zagadnienia teorii poznania. Diachroniczna logika formalna. In: R. Suszko, *Wybór pism* (pp. 57–108). Warszawa: Znak-Język-Rzeczywistość, Polskie Towarzystwo Semiotyczne.

Suszko, R. (1998b). Wstęp do zagadnień logiki. In: R. Suszko, *Wybór pism* (pp. 19–56). Warszawa: Znak-Język-Rzeczywistość, Polskie Towarzystwo Semiotyczne.

Tarski, A. (1995a). Głos w dyskusji nad referatem Marii Kokoszyńskiej zatytułowanym „W sprawie względności i bezwzględności prawdy". In: A. Tarski, *Pisma logiczno-filozoficzne. T. 1. Prawda* (pp. 203–205). Warszawa: Wydawnictwo Naukowe PWN. Original: *Księga Pamiątkowa Trzeciego Polskiego Zjazdu Filozoficznego, Kraków 1936, Przegląd Filozoficzny* 1936, *39*(4).

Tarski, A. (1995b). Pojęcie prawdy w językach nauk dedukcyjnych (1932). In: A. Tarski, *Pisma logiczno-filozoficzne. T. 1. Prawda* (pp. 9–12). Warszawa: Wydawnictwo Naukowe PWN. Original: Der Wahrheitsbegriff in den Sprachen der deduktiven Disziplinen. In:*Der Akademie der Wissenschaften in Wien. Mathematisch-naturwissenschaftlichen Klasse. Akademische Anzeiger* 1932, *69*.

Tarski, A. (1995c). Pojęcie prawdy w językach nauk dedukcyjnych (1933). In: A. Tarski, *Pisma logiczno-filozoficzne. Vol. 1. Prawda* (pp. 13–172). Warszawa: Wydawnictwo Naukowe PWN.

Tarski, A. (1995d). Semantyczna koncepcja prawdy i podstawy semantyki [The Semantic Conception of Truth and the Foundations of Semantics]. In: A. Tarski, *Pisma logiczno-filozoficzne. Vol. 1. Prawda* (pp. 228–282). Warszawa: Wydawnictwo Naukowe PWN. Original: The semantic conception of truth and the foundations of semantics. In:*Philosophy and Phenomenological Research* 1944, *4*.

Twardowski, K. (1965a). O istocie pojęć [On the Nature of Concepts]. In: K. Twardowski, *Wybrane pisma filozoficzne* (pp. 292–312). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Odczyty filozoficzne II. Polskie Towarzystwo Filozoficzne*. Lwów 1924.

Twardowski, K. (1965b). O jasnym i niejasnym stylu filozoficznym [On the Clear and Unclear Philosophical Style]. In: K. Twardowski, *Wybrane pisma filozoficzne* (pp. 346–348). Warszawa: Państwowe Wydawnictwo Naukowe. Original: *Ruch Filozoficzny* 1919–1920, *5*.

Twardowski, K. (1965c). Symbolomania i pragmatofobia [Symbolomania and Pragmatophobia]. In: K. Twardowski, *Wybrane pisma filozoficzne* (pp. 354–363). Warszawa: Państwowe Wydawnictwo Naukowe. Original: Ruch Filozoficzny 1921, *6*.

Twardowski, K. (1965d). Wyobrażenia i pojęcia [Images and Concepts]. In: K. Twardowski, *Wybrane pisma filozoficzne* (pp. 114–197). Warszawa: Państwowe Wydawnictwo Naukowe.

Woleński, J. (1984). Metamatematyka i filozofia. *Zagadnienia Filozoficzne w Nauce*, *6*, 5–17.

Woleński, J. (1985). *Filozoficzna szkoła lwowsko-warszawska* [The Lviv-Warsaw Philosophical School]. Warszawa: Państwowe Wydawnictwo Naukowe.

Woleński, J. (1993). *Metamatematyka a epistemologia*. Warszawa: Wydawnictwo Naukowe PWN.

Woleński, J. (2005). *Epistemologia. Poznanie-prawda-wiedza-realizm* [Epistemology. Cognition-Truth-Knowledge-Realism]. Warszawa: Wydawnictwo Naukowe PWN.

Woleński, J. (2009). O filozoficznym sensie metamatematycznych twierdzeń limitacyjnych. *Wiadomości Matematyczne*, *45*(2), 195–216

Originally published as "Ajdukiewicz, Husserl i Tarski – w sprawie semantycznej teorii poznania". *Studia Semiotyczne*, *33*(2), 185–223, DOI: 10.26333/sts.xxxiii2.05. Translated by Martin Hinton.

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 73–90
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.03
Article

Jan Woleński *

# LIMITATIONS OF FORMAL (LOGICAL) SEMANTICS

Summary: According to the received view formal semantics applies to natural (ordinary) language to some extent only. It is so because natural language is inherently indefinite, in particular, its expressions are ambiguous, vague and admits departures from syntactic rule. Moreover, intensional contexts occur in ordinary language—it results in limitations of the principle of compositionality. The ordinary conversation appeals to various principles, for instance, Grice's maxims which exceed logical formalism. Thus, ordinary language cannot be fully formalized. On the other hand, if $L$ is a formal language, its metalanguage $ML$, must be partially informal—for instance, it contains, terms of ordinary mathematics, especially set theory. Even, if, for instance, due to the technique of aritmetization, $ML$ can be represented in $L$, such a representation is only local. In fact, this view can be derived from some Tarski's remarks on the role played by natural language. It is usually assumed that the universality of natural language, is the source of troubles associated with antinomies. It is so this circumstance requires a solution, for example by distinguishing levels of language. However, even if antinomies are excluded, what is informal is prior with respect to what is formal. It shows that formal semantics has limitations even with respect to formalized languages.

Keywords: language, metalanguage, model, logic, syntax, semantics.

* University of Information Technology and Management in Rzeszow, Department of Social Sciences. E-mail: jan.wolenski@uj.edu.pl. ORCID: 0000-0001-7676-7839.

Although the term "semantics" occurs in many contexts, it always concerns signs. In my further remarks, I will focus on linguistic signs. At first, semantics appeared as a part of linguistics and changes of meaning were its subject. However, philosophers, in particular, logicians, very quickly became interested in semantics.[1] In the Polish tradition semantics belongs to logic *sensu largo*, next to logic *sensu stricto* (formal logic) and methodology of science. Disregarding this last part of logic, the problem arose of how semantics and formal logic are mutually related. The situation was complicated due to the introduction of (see Morris, 1938; I neglect earlier terminological proposals) the term "semiotics" denoting the general theory of signs and its division into syntax, semantics and pragmatics. Charles Morris was influenced by American pragmatism, particularly the ideas of Charles Sanders Peirce. His (Morris's) tripartite division follows the distinction of three parts of semiotic situation (semiosis), that is, such that signs function in it. Firstly, signs are related to other signs, refer to something and are used by someone—an interpreter. Summing up, signs remain in formal relations (with respect to forms) with other signs, denote something and are signs for someone—this third aspect consists in that if $S$ is a sign, and $U$—its user, $S$ expresses contents existing in $U$. It always happens, when we consider relations occurring between users of a language and expressions employed by them. For example, if we say that a person $P$ asserts or accepts a sentence A, we point at a relation between the person in question and an assertion or acceptance. Supposing, believing, doubting, questioning or demanding are further examples of pragmatic situations, frequently called—propositional attitudes.

The terminological complication is additionally made more complicated by the fact that the labels "semiotics" and "semantics" function almost as synonyms. Accordingly, we have names "semantics in a broad sense" and "semantics in a narrow sense". The latter focuses on relations between expressions and what they refer to—the concept of truth (in Alfred Tarski's sense) and denotation or designation are typical semantic notions in this sense. On the other hand semantics is also understood as the theory of meaning, not in the traditional linguistic sense, that is, as registering changes of meanings of expressions, but in a more philosophical enter-

[1] My remarks on semantics are very general and do not go beyond very elementary matters. A wider account can be found in (Pelc, 1982). I employ my considerations in (Woleński, 2020, Chapter 6).

prise, for instance, when investigations concern such categories as analyticity, synonymy or meaningfulness. If semantics is declared as a study not only of reference (more generally, referential relations), but also meaning, the characterization of this latter concept is indispensable. Since I cannot enter here even into a very general typology of meaning-theories, I limit myself to a remark that meaning is the relation which decides that we understand expressions. This statement locates the concept of meaning somewhere on the borderline of semantics as the theory of reference (an expression is understood, provided that it is known to what it refers to) and pragmatics (expressions are always comprehended by an interpreter).

Rudolf Carnap offered the following explanation:

> If in investigations explicit reference is made to the speaker, or to put it in more general terms, tie the user toa language, then we assign it to the field of p r a g m a t i c s . [...] If we abstract from the user of the language and analyze only the expressions and their designata, we are in the field of s e m a n t i c s . And, if finally, we also abstract from the designata and analyze only the relations between the expressions, we are in (logical) s y n t a x . The whole science of language, consisting of the three parts mentioned, is called s e m i o t i c s . (1939, p. 146; emphasis in the original—J.W.)

According to Williard Quine:

> When we cleavage between meaning and reference is properly heeded [...], the problems of what is loosely called semantics become separated into two provinces so fundamentally distinct as not to deserve a joint appellation at all. They may be called the t h e o r y o f m e a n i n g and the t h e o r y o f r e f e r e n c e . "Semantics" would be a good name for the theory of meaning, were it not for the fact that some of the best works in so-called semantics, notably, Tarski's, belong to the theory of reference. The main concepts in the theory of meaning, apart from meaning itself, are s y n o n y m y (or sameness of meaning), s i g n i f i c a n c e (or possession of meaning), and a n a l y t i c i t y (or truth in virtue of meaning). Another is e n t a i l m e n t , or analyticity of the conditional. The main concepts in the theory of reference are n a m i n g , t r u t h , d e n o t a t i o n (or truth-of), and extension. Another is notion of v a l u e s of variables. (1953, p. 130; emphasis in the original—J.W.)

This view sees a sharp contrast between theory of meaning and theory of reference and reserves the name "semantics" to the latter.

What Tarski himself understood by semantics is indicated in the following passages:

> (a) [...] we attempted to go further and to construct [...] definitions and concepts belonging to semantics of a language—i.e. such concepts as satisfaction, denoting, truth, definability, and so on. A characteristic feature of the semantical concepts is that they give expression to certain relations between the expressions of language and the objects about which these expressions speak, or that by means of such relations they characterize certain classes of expressions or other objects. We could also say (making use of the *suppositiomaterialis*) that concepts serve to set up the correlation between names of expressions and the expressions of themselves. (Tarski, 1933, p. 252)

> (b) The word "semantics" is used here in a narrower sense than usual. We shall understand by semantics the totality of considerations concerning those concepts which, roughly speaking, express certain connexions between the expressions of a language and the objects and states of affairs referred to by these expressions. As typical examples of semantical concepts we may mention the concepts of d e n o t a t i o n , s a t i s f a c t i o n , and d e f i n i t i o n , [...]. The concept of t r u t h —and this is not commonly recognized—is alsoto be included here, at least in its classical interpretation. (Tarski, 1936, p. 401)

> (c) the study of the relations between models of formal systems and the syntactical properties of these systems (in other words, the semantics of formal systems). (Tarski, 1954, p. 714)

Although Quine offered serious argument for his account of the theory of meaning and the theory of reference, it is difficult to agree that the contexts "$S$ means that $m$" and "$S$ refers to $o$" are mutually separated. Tarski saw this in the following way:

> It remains perhaps to add that we are not interested here in "formal" languages and sciences in one special sense of the word "formal", namely sciences to the signs and expressions of which no material sense is attached. For such sciences the problem here discussed [the problem of truth—J.W.] has no relevance, it is not even meaningful. We shall always ascribe quite concrete and, for us, intelligible meanings to the signs which occur in the languages we shall consider. The expressions which we call sentences still remain sentences after the signs which occur in them have been translated into colloquial language. The sentences which are distinguished as axioms seem to us to be materially true, and in choosing rules of inference we are

> always guided by the principle that when such rules are applied to true sentences the sentences obtained by their use should also be true. (Tarski, 1933, p.166/167)

Although in his writings Tarski rather avoided answering about what meaning is, on the other hand, he maintained that semantic problems can be considered only with respect to languages with expression equipped with "quite concrete and, for us, intelligible meanings".

The circumstances pointed out above concern various aspects of adding the adjective "logical" to the nouns "semiotics", "syntax", "semantics" or "pragmatics". The sequence <syntax, semantics, pragmatics> is related to a passing from simpler to more complex matters. As a matter of fact, the syntactic description of a language is the simplest, because it takes into account exclusively the material side of signs and their corresponding relations, for instance, that the sign $S$ is contained in a sign $S'$. The semantic treatment has to consider relations of signs to their objectual (principally, extralinguistic) correlations and, finally, the pragmatic aspects require an appeal to the interpreters (users) of expressions. Accordingly, syntax is relatively simple (in this respect, it is analogous to grammatical syntax), logical semantics touches "logic" (quotes intended), but logical pragmatics appears as the most complicated part of semiotics. Consequently, the term "logical semiotics" (or "logical semantics in a wider sense") refers to considerations consisting of syntax, semantics and pragmatics, each qualifies as logical.

Yet we can observe that more proper is the succession <pragmatics, semantics, syntax>, because signs, as was earlier noticed, always function as items referring to something and used by someone (an interpreter). Hence, every language possesses an irremovable pragmatic factor. Morris (1938) presented particular parts of semiotics by the sequence <semantics, pragmatics, syntax>, but it was rather an accidental convention. Carnap (1939) offered the already mentioned succession <pragmatics, semantics, syntax>. It has (Carnap probably considered it as so obvious that he did not mention it) a simple justification. Semantics has arisen by abstraction from the pragmatic aspect, and syntax omits referential relations. Perhaps more important is that a natural way of defining signs consists in pointing out that it is an object possessing meaning. Independently of complications associated with any analysis of meaning this category, clearly distinctive for sign, has a semiotic character, not only semantic or syntactic, but just pragmatic. This decides that pragmatics

(or its common terrain with semantics) is the proper place for a theory of meaning. If we say that, for example, a word is a bearer of a sign $S$, this fact, according to our main presumption, consists in possessing a meaning by $S$, independently whether meanings are conceived as mental states, ideal entity, etc. Consequently, the concept of meaning is assumed just in the definition of the sign-bearer.

On the other hand, it would be difficult to agree with logical empiricism that the concept of meaning can be exclusively explained on the base natural (material, physical) properties of signs, that is, their syntactic attributes. Suppose that I observe a combination of sand-pieces forming the word "horse" on a beach. Until I know whether it is a result of "cooperation" of water and wind, or written by a man or woman, I cannot decide whether it is a sign or not. That semantics is not reducible to syntax can be regarded as a canon of contemporary analytic philosophy. The relation between pragmatics to logical semantics appears less explicitly. The basic difficulty in this respect stems, to stress this point once again, from a proper location of the concept of meaning. If it belongs to pragmatics, elimination of pragmatic coordinates, in particular, propositional attitudes (or other pragmatic parameters) must be considered as dubious, but if the concept of meaning is placed within semantics, it is possible to try various formalizations by means of so-called intensional logics (see Carnap, 1947 for early attempts of intensionality analysis; van Benthem, 2002 for formal logical constructions; Parsons, 2002 for a survey of semantic constructions and elimination of such concepts as intensions, senses, meanings, etc. to referential relations).

I will not continue a further analysis of various possible settings or terminological proposals. Let us agree to employ the label "logical semantics" as referring to considerations about language which applies the apparatus of formal logic to analysis of referential relations of expressions, but assuming that they have meaning. Accordingly, logical semantics can be also regarded as formal semantics. Here appears a crucial question "Which languages admit applications of logical (formal) semantics?" In general, we have two standpoints as answers to this question, namely formalism and anti-formalism. To begin with the latter, Wittgenstein and representatives of so-called ordinary language philosophy (in particular, John L. Austin, Gilbert Ryle, Peter Strawson) entirely rejected employing for-

mal-logical methods to analysis of languages, particularly common speech.[2] In formalism, we can distinguish two versions of this view, namely radical and moderate. The former view maintains that formal semantics is possible only for formalized languages, but the latter, assumes the so-called Montague thesis (Montague, 1970; see Cann, 1993 for an extensive treatment)—that there is no principal difference between formalized (artificial) languages and natural (ordinary) languages. In particular, according to Richard Montague, every natural language is an interpretation of a formal language, and, if so, its (natural) logical analysis is fully justified. At the beginning of his career, Tarski accepted radical formalism, but he (1944) modified it to some extent. He admitted so-called languages with specified structure—they are local, that is, they do not constitute ordinary language in its integrity. Tarski always stressed (see above) that formalized languages are interpreted, that is, their expressions have meanings. On the other hand, he did not accept the Montague thesis, because, according to his view, formalization of an ordinary language always changes its character.[3]

Due to controversies around the Montague thesis we have a broad and narrow understanding of formal semantics. Under the former, it applies to every language (perhaps only to some extent in the case of ordinary language), but formalized languages (for simplicity, I omit languages with specified structure) become its proper scope under the latter approach. For closer account of this issue, I appeal to four contrasts

(A) natural–artificial;

(B) informal–formal;

(C) non-formalized–formalized;

(D) interpreted–non-interpreted.

Although the above distinctions cross over each other, it is profitable to introduce them and briefly characterize them. Natural (ordinary) language functions in our daily life and is accessible to everybody. It is con-

[2] I do not enter into a closer characterization of this orientation, although some anti-formalistic arguments will be brought up below.

[3] Jaakko Hintikka told me in a private conversation that Tarski explicitly criticized Montague's thesis. It happened in discussions—Tarski's writings contain nothing of this question.

trasted with artificial languages constructed for special tasks, for instance, logical symbolism, Morse's alphabet, binary code, chemical symbolism, etc. Such languages are formed in order to replace ordinary parlance in explicitly prescribed situations. They always have a well-defined structure, their syntax is regular and recursive (except admitting expressions of an infinite length, but it is a purely theoretical case), they do not need to be sets of sentences and usually satisfy the compositionality principle, that is, the rule that compound expressions are functions (in the mathematical sense) of their sub-expressions, provided with what we do with these sentences—for instance, chemical symbolism is not sentential and not compositional. Formal languages are constructed and then described according to strict rules, independently of the meanings or contents of expressions in question. Such rules can be identified with syntactic ones, that is, associated with form. On the other hand, informal languages require descriptions taking into account meanings (senses, contents) of expressions. A non-interpreted language has no interpretation—an interpreted language is such that it possesses a given interpretation via an interpretative rule. Finally, a formalized language arises as a product of formalization, but non-formalized language is not a result of formalization.

Limitations of formal semantics (at the moment I understand it as an analysis of signs via tools of formal logic) with respect to ordinary language are known and stressed for a long time. One of the reasons for scepticism in questions is (Kisielewicz, 2017) ambiguity, vagueness, homonymy, synonymy, amphibology, contextual dependency, etc. "Counterlogicality" (relatively to formal logic) of these properties of ordinary speech was particularly stressed by the ordinary language philosophy (the Oxonian School) and regarded as the circumstance which decided the lack of adequacy of formal semantics with respect to common parlance. Tarski (1933) pointed out that although it is possible to prepare ordinary languages toward well-defined logical artefacts, such a treatment deprives ordinary language of its naturalness as its essential feature and will result in converting it into an artificial system. Tarski also stressed that colloquial language is universal—it is its virtue, because if we want to say something, we always can do that in this language. Alterntively, the universality in question leads to semantic antinomies, because if **L** is a natural language, its metalanguage is its part. Logicians consider the properties of colloquial speech mentioned in the former paragraph as defects, requiring at least partial improvement, for instance, in the form of regulative definitions liquidating vagueness, ambiguities or other means toward

normalization of inaccuracies in question (see Trzęsicki, 2017 for an extensive treatment of these questions).

However, the foregoing observations require some corrections. It is true that so-called inaccuracies of ordinary language impede human communication on many occasions, because they can result in misunderstanding stemming from ambiguity or vagueness, but, on the other hand, they basically reduce the number of words indispensable for conversations. It is easy to imagine enormous troubles in transmitting information, provided that instead of the adjectives "tall", "short" and "medium height", we would need separate words for all possible cases of human height. If the mother says to her son "Bring me the picture of the castle in Kraków", she does not need to add "But remember that I am not speaking about hockey castle in Kraków", because the contexts of her request makes clear what is going on. Consequently, such circumstances as ambiguity and vagueness can act as benefits of communications, because they contribute to language-economy, although it results in troubles sometimes. If precision is required, for instance, in a legal text, we can always use definitions or other means of improving quality of our communication. Furthermore, although ordinary language does not precisely distinguish **L** and **ML**, this distinction is present in another one, namely *oratio recta* and *oratio obliqua* (the latter is intentional) and means to mark quotation. Finally, as Donald Davidson (1967) observed nobody uses the entire natural language, but always limits oneself to some part of it. Accordingly, this fragment can be logically improved, if it is justified for some reasons, e.g. for doing automatic translations or for resolving doubts language-users have by participating in an exchange of information,

The relation of ordinary language (more properly, its selected fragments) and its formalized version can be compared to that holding between theoretical physical models and corresponding "pieces" reality. One could say that laws of theoretical physics do not apply to the real world, because there is no absolute vacuum or mass of a body is not concentrated in one single point., etc. That all is true, but, in spite of these "theoretical" facts, mechanics (as a part of theoretical physics) is employed in practical statics and dynamics, laws of thermodynamics—in projecting equipment that secure temperature, hydrodynamics in construction of ships, etc. Since theoretical models are approximations of reality, these and similar applications are possible and legitimate. If this picture is correct, so-called defects of colloquial language have a deep cognitive importance and although they result in limitation of formal semantics,

should not be considered as circumstances testing its total non-applicability to analysis of daily parlance. Arguments invoked in this paragraph justify Tarski's already mentioned view (I recall that it was a revision of his earlier position) that a strict logical analysis can be performed not only with respect to fully formalized languages but also—to linguistic systems with a specified structure. Perhaps the Montague thesis should be weakened to the assertion that if we take into account an arbitrary portion of ordinary language, it always can be approximated (idealized) by a formal system. Consequently, some features of a formalized fragment disappear in the process of idealization, that is, considering a theoretical model (a formal system) as an admissible approximation of ordinary language. Consequently, limitations of formal semantics as applied to natural languages do not appear so fundamental as anti-formalists argue. It seems that they frequently confuse language in daily actions, that is a collection of concrete speech acts, and language as a product (a set of expressions) subjected to investigations by various methods, including formal-logical ones.

Formal semantics assumes formal logic or, in other words, the latter is a part of the former. It means that i.a. various logical operations have to be semantically legitimate. The concept of logical entailment (consequence) provides perhaps the best example. This notion can be defined syntactically, that is as the relation $X \vdash B$—a sentence $B$ is deduced from the set $X$ of sentences if and only if $B$ is obtainable (provable) from $X$ via inferential rules given in advance, for instance, we say that $B$ follows inferentially from the set $\{A, A \Rightarrow B\}$ according to the detachment rule. On the other hand, we say that $B$ follows semantically from $X$ (symbolically, $X \models B$), if it is excluded that sentences belonging to $X$ are true, but $B$—false. One can consider these definitions as an example of syntactic-semantic parallelism. Yet not every operation performed in practice has such legitimacy. The issue does not concern logical errors or various rhetorical games, but situations which have some rational justification from the point of view of interpersonal exchange of thought via linguistic expressions. This is a subject of the famous theory of so-called conversational maxims, formulated by Grice (1975). According to this idea, participants of an effective communication must mutually cooperate. This means that they should preserve some principles (maxims), in particular (I use a different terminology than Grice): (I) the truth–maxim (do not employ sentences, if you know that they are false); (II) the information-maxim (provide adequate information that is required by a given conver-

sation); (III) the substantiality-maxim (keep the topic of the conversation in question); (IV) the understanding-maxim (say clearly).

All of Grice's maxims are practical in their character, they formulate conditions of rational conversation. Additionally, they have an ethical dimension because if the task of conversation consists in the exchange of justified information, false sentences, or such that their correctness can be questioned, should be avoided, and transmitted information should not be too narrow or too wide so far as participants should be substantiated and provided for in a precise manner. Grice called his maxims implicatures, that is, as something which is semantically implied (in a wide sense) by using expressions, particularly sentences. The word "implicature" immediately brings associations with logic and logical entailment. However, it is impossible to reduce implicatures to logical consequence. Consider (I) and (II). The first recommends that falsehoods should not be sued. It could be eventually justified by appealing to a logical principle that a false sentence implies every sentence. Nevertheless, even if we say that a participant of a conversation can imply everything from a falsehood, it will not deduce arbitrary statements from such a premise. He or she will rather think (Grice himself strongly stressed this point) about intentions of his or her interlocutor or deliberated whether the falsehood in question perhaps contains a grain of truth or not. If the issue concerns (II), assume that someone answers to the question "What day of the week is today?" by saying "Today is Thursday or Friday", provided that he or she knows that the first eventuality holds (the question is stated on Thursday). Although the answer is true, it will be considered by the hearer as an expression of ignorance on the side of the questioned person. Yet this explanation is not correct, because the latter person just knows that today is Thursday. The maxim (III) requires a maximally true answer, but not—partial. The questioning person expects such an answer or "I do not know", if the questioned person does not actually know. One could say that if $A$ is a correct answer to a given question, but the questioned person uses a sentence $B$ such that $B$ logically follows from $A$, but is not equivalent to it, $B$ violates (II). Thus, although logic certainly touches various aspects of Grice's maxims, it neglects their pragmatic dimension, which is fundamental concerning their regulative role in conversational performances. We have made various attempts to construct a formal pragmatics (see Martin, 1959 for example), but all hitherto accessible evidence points out that limitations of formal semantics in analysis of

conversational contexts are fundamental just because irremovable pragmatic elements are present in using language.

I move on now to limitations of formal semantics with respect to languages inherently associated with logic. At this point, one should observe some relativity associated with the understanding of names "formal language" and "formalized language". Assuming that we have to do arithmetic of natural numbers in its shape known from mathematical practice. This theory is axiomatic, expressed in a "mixed" language containing arithmetical expressions as well as ordinary words—the latter are accustomed to expressing properties of natural numbers and relations holding between them. After formalization, we obtain a language, which can be qualified as formal. Clearly, it is assumed that the expression of the resulting formal system inherits the meaning (sense) of their counterparts before formalization. Let us consider a language $\mathbf{L}^*$ in which the symbol $^*$ functions as the only primitive. Moreover, we have only the one rule of forming new expressions of our language:

(R) if $\mathbf{E} \in \mathbf{L}^*$, then $\mathbf{E}^* \in \mathbf{L}^*$.

Due to these conventions, we conclude that $* \in \mathbf{L}^*$, $** \in \mathbf{L}^*$, $*** \in \mathbf{L}^*$, etc. Until now, nothing is known about the meaning of the expression *—in particular, we do not know whether it is a propositional symbol or not. Although the expressions "if, then" (we can admit that its meaning is established in propositional calculus) and $\in$ (the symbol of set-theoretical membership) appeared in the description of $\mathbf{L}^*$, they do not influence the meaning of the inscription *. Yet we can speak about formal language in the case of the language of arithmetic as well as in the case of $\mathbf{L}^*$constructed *ad hoc.* In both cases, if we have a language $\mathbf{L}$, its description is done in a suitable **ML**. This description covers syntax (a definition of an expression and rules of constructing compound expressions from simpler ones) As I noticed earlier the relation between $\mathbf{L}$ and **ML** is just as crucial for many problems of formal semantics, including its limitations.

We can think about $\mathbf{L}^*$ as the set of terms of English, the star $^*$refers to a term consisting of a single word, but the rule (R) establishes that concatenation of simple terms is also a term. This explanation introduces an interpretation (this notion appeared earlier but only implicitly) of $\mathbf{L}^*$. The contemporary approach to semantic interpretation is closely associat-

ed with model-theoretic semantics. Assume that **L** is a language, that is a set of sentences. Let $\mathbf{X} \subset \mathbf{L}$, where **X** is consistent.[4] A model of **X** is a structure **M**, such that sentences belonging to **X** are true.[5] Intuitively, the truth of a given sentence $A$ depends on the understanding of constituents of this sentence. Every model can be presented as an object $<\mathbf{U}, \mathbf{P_1}, \mathbf{P_2}, \mathbf{P_3}, ...>$, where **U** is a non-empty set of objects, but $\mathbf{P_1}$, $\mathbf{P_2}$, $\mathbf{P_3}$, ... are subsets of **U**. This description is associated with considering formulas of **L** as constructed from proper (individual) names, individual variables, predicates (predicate-letters) and logical constants. We assume that meanings of elements of this last catalogue (propositional connectives, quantifiers, identity) are established by logic. What about extralogical expressions? If $a$ is a proper name or variable, its value in **M** is an object belonging to **M**; if $P_i$ is a predicate it refers to the set $\mathbf{P_1}$. For instance, the sentence "Kraków is a city" expresses that Kraków is the value of the term "Kraków", but the set of cities is denoted by the predicate "is a city". Accordingly, the interpretation of the sentence in question can be formally accounted for by the expression "Kraków $\in$ **City**", where the word written in bold letters refers to the set of cities. This also means that that we apply set theory in the metalanguage, because the symbol $\in$ belongs to this theory. In general, an interpretation of expressions of a language **L** is a function, which maps its elements into their values, that is, objects from **M**. We can additionally say that interpretations determine that some sentences are true, but others false.[6]

Now the problem arises whether interpretations in the above sense ascribe intuitive meanings to expressions of a given language **L**? As I have

[4] **L** in its integrity is inconsistent, because for any sentence $A \in \mathbf{L}$, contains a negation.

[5] Model-theoretic semantics is based on the semantic theory of truth, introduced by Tarski (Tarski, 1933; see Woleński, 2020 for an extensive analysis of this theory). For simplicity, I neglect the situation of having many models by **X**. I return to this problem in connexion with non-standard models. I also ignore the distinction of first-order and higher-order logic, although intuitions and examples concern the former. My exposition is very simplified, but, I hope, it does not lead to confusion.

[6] According to one of the most fundamental metalogical results (the Gödel-Malcev completeness theorem), a set of sentences is consistent if and only if it has a model. Note that inconsistent sets of sentences have interpretations, though they possess no models.

already noticed, syntax of formal languages satisfies the principle of compositionality, that is, any compound sentence is a function of its simpler constituents. Since syntax and semantics should be parallel, this postulate motivates the compositionality (extensionality) of semantics. On the other hand, many reasons justify a sceptical attitude toward the universality of the compositionality of semantics. In particular, many colloquial contexts, including those typically analyzed via using logic, for instance, epistemic modalities ("I know that $A$"; or erotetic "I ask whether $A$") are non-extensional, etc.—I based this question above on the remarks on intensional logic. Since, to say that once again, prospects for overcoming difficulties in logical analysis of intensionality are problematic, we encounter here explicit limitations of formal semantics.

If we recognize semantics of classical calculus of sentences and predicates as a paradigm, we must conclude that model theory for intensional logics requires rather complicated tools such that their compositionality is dubious.[7] Independently of the problem of compositionality, model-theoretic semantics ignores the distinction, a fundamental one, of intension (meaning, content) and extension (reference, denotation, scope). It is particularly seen in the case or relation between predicates and sets as values of the former. It was observed for a long time that, for example, two expressions "the largest city on the Vistula river" and "the capital of Poland" have different intensions, but the same extension, that is Warsaw. In the case of predicates properties are considered as their intensions and sets—their extensions. Accordingly, the identity of meanings guarantees the identity of extensions, but not reversely—in the case of predicates, the identity of properties is sufficient for the identity of scopes. For instance, the proposition "Warsaw is the capital of Poland" does not entail the proposition that Warsaw is the largest city in Poland. Consequently, something more than information of extensions is necessary for making the model-theoretic semantics workable. And if we say that semantics is also occupied by senses, the answer is simple: to consider an interpretation of a formalized language $\mathbf{L}$ and its connection with a model $\mathbf{M}$, we need to know not only extensions of expressions but also their intensions. Although we can suppose, to return to one of the earlier examples, that the

[7] It does not mean that the construction satisfying the principle of Compositionality is of small importance or non-interesting. Introducing this contrast, I have in mind related differences, which are important in the present context.

interpretation of the sentence "Kraków is a city" employs set theory relatively to the relation expressed to the symbol $\in$, but this supposition is mediated by corresponding senses.

How to deal with this question, provided that if $E$ is an expression of **L**, then its semantic analysis is limited to its value in **M**? The only reasonable solution to this problem which comes to mind, consists in also taking into account information about the meaning of $E$—the information in question is present in **ML**. It seems that this circumstance is fundamental in this sense that although the interpretation function maps expressions of **L** into their extensional values, it does so relatively to intensions. This fact explains Tarski's view (see above) that expressions of formalized languages always have concrete and intelligible (for us) meanings. The reason is that formalization does not depart from meanings possessed by expression before its undertaking and finishing.[8] The role of pragmatics is basic in this respect—in fact, metalinguistic explications of meaning typically follow usages of words and their complexes by people, particularly by competent users of language.

One can ask for a need of model-theoretic semantics in the situation that it invokes intensions. The answer points out that the construction of a model only on the intensional base appears as insufficient. It was confirmed by the discovery of non-standard models of arithmetic of natural numbers. This was done by considering model-theoretic constructions in which non-standard natural numbers greater than all numbers from the sequence 0, 1, 2, 3, ..., $n$, ... exist. The theory of the non-standard model has the same axioms as the usual arithmetic. Accordingly, semantic (semiotic) analysis of Peano axioms was not sufficient for the discovery of the non-standard model. On the other hand, the meaning of the term "natural number" was essential in this case as well. If a language is richer, the role of intensions become greater—the passing from propositional logic to predicate calculus, and further, e.g. the arithmetic of integers provides a good illustration here. To sum up, we need to consider that the meaning of **L** is the next limitation of formal semantics, because it must be done in an informal metalanguage. **ML** is of course normalized

[8] One should remember that Tarski was not entirely univocal in this respect. On one hand, he made various remarks on meanings, but, on the other hand, he expressed critical opinions about this notion and recommended its omission in semantics (Kokoszyńska, 1936, Tarski, 1936).

relatively to some explicit tasks, for instance, mathematical ones, but it is still not formalized, well at least partially. Gilbert Ryle (1953) also pointed out that words belonging to specialized terminologies (languages) have their ordinary meaning—in this case, "ordinary" means the same as "standard". This category is openly pragmatic. Ryle's observation justifies, to some extent, my earlier observation that pragmatics precedes semantics.

So-called limitative theorems (see Murawski, 1999), in particular, Gödel's first incompleteness theorem and Tarski's theorem on undefinability of truth, are still another manifestation of limitations of formal semantics. Consider formalized arithmetic of natural numbers (**AR**). If it is consistent, it is incomplete, that is, the sentences $A$ and $\neg A$, expressed in its language, such that both are not provable in **AR**. Let the symbol **Tr** denote the truth-predicate for **AR**. In other words, the set of truths of **AR** is the extension of **AR**. Tarski's theorem says that **Tr** is not definable in **AR**. Both these results imply together that the semantic concept of truth cannot be reduced to the syntactic notion of proof. Another manifestation of this situation is the version of Gödel's theorem stating that the set of arithmetical truths is not finitely axiomatized—the concept of axiomatizability is also syntactic. The situation is actually intriguing, because the syntax of $\mathbf{ML}^{\mathbf{AR}}$ (the metalanguage of **AR)** can be arithmetized, that is, reduce to $\mathbf{L}^{\mathbf{AR}}$. One can see the reduction to arithmetic syntax (I do not consider the general case), means the full formalization of what is reduced. Now we immediately see that the full formalization of semantics is impossible.

Observations from the last paragraph throw some light onto the meaning of the adjective "formal" in the expression "formal semantics". If we say that the model theory of **AR** functions as a formal theory of this theory, it means only that **AR**-semantics employs various devices, for instance, set-theoretical or algebraic, which are located in the metalanguage which is always less formalized than the language of the object-theory. In the case considered, semantic $\mathbf{ML}^{\mathbf{AR}}$ is less formal than the syntactic $\mathbf{ML}^{\mathbf{AR}}$—the latter is subjected to arithmetization. Additionally, whereas Gödel's first theorem has a semantic (constructive and finitary even in a very restricted sense) proof, Tarski's theorem has to employ infinitary devices and thereby is non-constructive. Accordingly, semantics transcends (in the sense customary in philosophy) the syntax and appears as a fundamental fact, closely related to the situation that the former contains more informal ingredients than the latter. Although one could say that the syntax is limited as compared with semantics due to its (syn-

tax) conceptual simplicity smaller that semantic, but it does not change the opinion that limitations of formal semantics, constitute an intriguing phenomenon just pictured by its formality. A philosopher could say that it is a sign of the priority of content over form, but it does not mean that syntax is a complete arbitrary game. Formal semantics suggests that both, content and form, should be normalized by formalization. And this is a virtue for formalizing languages and theories.

## REFERENCES


Cann, R. (1993). *Formal Semantics. An Introduction.* Cambridge: Cambridge University Press.

Carnap, R. (1939). *Foundations of Logic and Mathematics.* Chicago: University of Chicago Press.

Carnap, R. (1947). *Meaning and Necessity. A Study of Semantics and Modal Logic.* Chicago: University of Chicago Press.

Davidson, D. (1967). Truth and Meaning. *Synthese*, *17*, 304–323.

Grice, P. D. (1975). Logic and Conversation. In P. Cole, J. Morgan (Eds.), *Syntax and Semantics* (vol. 3, pp. 41–58). New York: Academic Press.

Kisielewicz, A. (2017). *Logika i argumentacja. Praktyczny kurs krytycznego myślenia* [Logic and Argumentation. A Practical Course of Critical Thinking]. Warszawa: Wydawnictwo Naukowe PWN.

Kokoszyńska, M. (1936). W sprawie względności i bezwzględności prawdy [Concerning Relativity and Absoluteness of Truth]. *Przegląd Filozoficzny*, *39*, 424–425.

Martin, R. M. (1959). *Toward a Systematic Pragmatics*. Amsterdam: North-Holland Publishing Company.

Montague, R. (1970). Universal Grammar. *Theoria*, *36*, 373–398.

Morris, Ch. (1938), *Foundations of the Theory of Signs*. Chicago: University of Chicago Press.

Murawski, R. (1999). *Recursive Functions and Metamathematics. Problems of Completeness and Decidability.* Dordrecht: Kluwer.

Parsons, D. (2016). *Intensionality. A Critical Survey.* Berlin: Springer.

Pelc, J. (1982). *Wstęp do semiotyki* [Introduction to Semiotics]. Warszawa: Wiedza Powszechna.

Quine W. V. O. (1953). Notes on the Theory of Reference. In W. V. O. Quine, *From a Logical Point of View* (pp. 130–138). Cambridge, Mass.: Harvard University Press.

Ryle, G. (1953). Ordinary Language. *The Philosophical Review*, *42*, 301–319.

Tarski, A. (1933). *Pojęcie prawdy w językach nauk dedukcyjnych* [The Concept of Truth in Formalized Languages]. Warszawa: Towarzystwo Naukowe Warszawskie; Eng. tr.: A. Tarski, *Logic, Semantics, Metamathematics* (pp. 152–278). Oxford: Clarendon Press.

Tarski, A. (1936). Głos w dyskusji nad referatem M. Kokoszyńskiej [A Contribution to Discussion on M. Kokoszyńska Paper]. *Przegląd Filozoficzny*, *30*, 425.

Tarski, A. (1944). The Semantic Conception of Truth and the Foundations of Semantics. *Philosophy and Phenomenological Research*, *4*, 341–375.

Trzęsicki, K. (2016). *Semiotyka i logika dla kognitywistów* [Semiotics and Logic for Cognitive Scientists]. Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

Van Benthem, J. (2002). *A Manual of Intensional Logic.* Stanford: Centre for the Study of Language and Information.

Woleński, J. (2020). *Semantics and Truth.* Cham, Switzerland: Springer Nature.

Originally published as "Ograniczenia semantyki formalnej (logicznej)". *Studia Semiotyczne*, *33*(2), 225–239, DOI: 10.26333/sts.xxxiii2.06. Translated by Jan Woleński.

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 91–126
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.04
Article

Maciej Tarnowski *

# IS HAVING CONTRADICTORY BELIEFS POSSIBLE? DISCUSSION AND CRITIQUE OF ARGUMENTS FOR THE PSYCHOLOGICAL PRINCIPLE OF NON-CONTRADICTION[1]

Summary: The aim of this paper is to present and analyze arguments provided for the Psychological Principle of Non-Contradiction which states that one cannot have, or cannot be described as having, contradictory beliefs. By differentiating two possible interpretations of PNC, descriptive and normative, and examining arguments (ontological and methodological) provided for each of them separately I point out the flaws in reasoning in these arguments and difficulties with aligning PNC with the empirical data provided by research done in cognitive and clinical psychology. I claim that PNC cannot be derived from any metaphysical stance regarding the mental phenomena and that having contradictory beliefs should be regarded as possible. Furthermore, I argue that interpreting a subject as having contradictory beliefs, and therefore abandoning PNC, can be more effective in explaining the phenomena of contradictory beliefs and irrational behaviour than solutions consistent with the PNC.

* University of Warsaw, Faculty of Philosophy. E-mail: m.tarnowski3@student.uw.edu.pl. ORCID: 0000-0003-3824-4134.

[1] I would like to thank Joanna Komorowska-Mach and Tadeusz Ciecierski for the helpful and illuminating remarks made during the writing of this paper, and to the anonymous reviewers for pointing out some issues that were not included in the previous version of this paper.

KEYWORDS: principle of non-contradiction, rationality, principle of charity, intentional stance, belief ascription, delusion, folk psychology.

The logical principle of non-contradiction, codified in the classic propositional calculus as $\neg(p \wedge \neg p)$, is one of the most stable, basic and obviously true laws that apply in every deduction. By rejecting it, in the vast majority of logical systems we are obliged to follow the so-called principle of explosion (*ex contradictione quodlibet*), which states: from contradiction anything follows / can be proven. Then in our inference system it is possible to prove any claim, which makes this system useless from a practical point of view and makes it impossible to distinguish true and false statements. Both classic and many commonly used non-classical logic systems recognize the logical principle of non-contradiction.

But does the principle of non-contradiction also cover our beliefs? Many philosophers, despite its initial counter-intuitive nature, have given this question positive say. The purpose of this article is to thoroughly analyze the arguments supporting this thesis, here referred to as the Psychological Principle of Non-Contradiction, presenting an extensive critique of this view and argue, that its common acceptance is unjustified.

The first philosopher arguing for the Psychological Principle of Non-Contradiction was Aristotle. In Book IV of *Metaphysics* we find the following passage: "For it is impossible for any one to believe the same thing to be and not to be, as some think Heraclitus says. For what a man says, he does not necessarily believe" (Met., 1005b).[2] Łukasiewicz (1987) considered this formulation to be separate from the other formulations of the principle of non-contradiction, which consist of the Logical and Ontological Principle (in later studies also called a "metalogical" principle), calling it the Psychological Principle of Non-Contradiction. In his view, the Aristotelian thesis should be formulated as: "Two acts of believing which cor-

[2] Citations from Aristotle's works in this paper come from ("The Internet Classics Archive", n.d.). Translation of *Metaphysics* by W. D. Ross, *On Interpretation* by E.M. Edghill.

respond to two contradictory propositions cannot obtain in the same consciousness" (Łukasiewicz, 1987, p. 13).[3]

I reformulate this principle for the purposes of this article as follows:

(PPNC) It is impossible for one agent to hold two mutually contradictory beliefs at the same time.

This reformulation aims to eliminate ambiguities in Łukasiewicz's formulation. Łukasiewicz accepts that beliefs, being psychic entities, can't be contradictory—that's why he uses the notion of a proposition. Currently, however, talking about contradictory beliefs has entered everyday philosophical use, and simultaneously many problems regarding the ontological and logical status of propositions arose. This approach seems clearer to me. Also, because of the change in commonly used terminology, I exchange the concept of consciousness for a concept of an agent. The statement "it is impossible", used instead of the original "cannot", more clearly than in the original indicates the modal nature of this thesis.

There are, despite its counterintuitive nature, important and recurring arguments offered in support of PPNC in philosophical discussions. A special case of such a stance is the position of Classical Interpretationism (Quine, 1960; Davidson, 1974) and the theory derived from it, Daniel Dennett's Intentional Stance (1978; 1981a). What will become clear further in this analysis, is the method of justifying PPNC depends on the theoretical context in which we view the concept of "belief" present in the wording included here. In particular, it will be whether we will adopt realism or instrumentalism about beliefs.

In a realistic reading PPNC remains descriptive. It may be regarded as any other sentence about mutually exclusive phenomena: "it is impossible for it to rain and not to rain at the same time", "It is impossible that there will be night and day at the same time", etc. Adopting such a thesis supports a realistic approach to the set of beliefs as a "map by which we steer" (Ramsey, 1931); the model of the world from which we derive justification for our actions, by its very nature, cannot be contradictory according to this thesis. PPNC understood as a *descriptive* statement will be from now on marked as PPNC-D.

---

[3] Translation of citations from Łukasiewicz's work is based on the partial translation of Łukasiewicz's treatise by Vernon Wedin (Łukasiewicz, 1971).

One can also read PPNC (recognizing the instrumental interpretation of "belief') in a normative way, as a result of accepted methodology, not metaphysics. According to the instrumentalist interpretation, the condition for recognition of some agent as having beliefs is the usefulness of its description in such categories. Therefore, PPNC can be defended in an alternative way: two contradictory beliefs cannot exist at the same time in one mind, because such a description of it is forbidden by the theory within which the concept of belief is defined. Therefore, whether or not one can attribute contradictory beliefs to the subject depends not as much on facts about the mind (as realists would postulate) but on whether or not such an attribution shows its usefulness and whether it is allowed by folk psychology (or another true theory of belief ascription).

I refer to the interpretation described above as PPNC in its n o r m a t i v e reading. One can state it in a simple form like this:

> (PPNC-N) An agent cannot be ascribed two contradictory beliefs at the same time.

In this article, I want to reconstruct two argumentation strategies used in justifying PPNC. I define the first of them as ontological argumentation and the other as methodological—they serve respectively to justify the principle in its descriptive and normative formulation. I will briefly discuss their history and its versions put forward by different authors. Then I will criticize these arguments, pointing out the flaws in provided reasoning and citing conflicting evidence from the fields of cognitive and clinical psychology.

Before going on to analyze these arguments, we must clearly note that the two interpretations of PPNC are not mutually exclusive. A realist who believes that folk psychology apparatus is accurate can accept them both: argue that having contradictory beliefs is both metaphysically impossible and impossible to assign to a subject from the point of view of folk psychology. Views on the "methodology" of folk psychology (whether it can be treated akin to a scientific theory, and whether it forbids assigning contradictory beliefs) are only conventionally, not logically, related to one's stance in the metaphysics of mind or philosophy of science. Hence it seems that sometimes the statements supporting both interpretations have the status of a silent premise. To distinguish between these two strategies and ways understanding PPNC while analyzing the correctness of this principle is therefore essential for presenting the debate clearly.

## 1. The Ontological Argument From the Mutual Exclusion of Properties

The first author arguing for PPNC is its creator, Aristotle. In Book IV of Metaphysics, he devotes a lot of space to it, arguing for adopting the principle of non-contradiction by at least few separate arguments—proving that the principle of non-contradiction should be treated as one of the basic laws of thought (Łukasiewicz, 1987). Łukasiewicz and Gottlieb distinguish chapters 4, 5 and 6 of Met. IV as containing the argument for adopting the principle of non-contradiction in its psychological version (in the wording provided in the previous section). Fragments associated with this line of argument also appear in *On Interpretation* and *Posterior Analytics* (Łukasiewicz, 1987; Gottlieb, 2007). Aristotle tries to show that PPNC may be proven on the basis of ontological and logical formulations (Łukasiewicz, 1987). He writes:

> [I]f it is impossible that contrary attributes should belong at the same time to the same subject (the usual qualifications must be presupposed in this premiss too), and if an opinion which contradicts another is contrary to it, obviously it is impossible for the same man at the same time to believe the same thing to be and not to be; for if a man were mistaken on this point he would have contrary opinions at the same time. (Met. IV, 1005b)

As Łukasiewicz notes, it is problematic in this fragment that Aristotle equates the notions of being contrary and contradictory: the former belongs to pairs of properties (attributes), the latter—to propositions and beliefs. Referring to the fragments of *On Interpretation* (*On Interpretation*, 14, 23, 27–39), he indicates that Aristotle, in order to avoid this difficulty, treats beliefs as properties of the mind—then mutually contradictory beliefs correspond to contrary properties. Thus, if one man believed the same thing to be and not to be—he would hold two contradictory propositions—he would have contradictory beliefs, and therefore could be attributed contrary properties, which would contradict the ontological formulation of the principle of non-contradiction:[4]

[4] Łukasiewicz in his reconstruction of Artistotle's argument holds that Stagirite bases his proof of PPNC on the Logical Principle, which concerns propositions. He writes: "on the basis of the logical principle of contradiction, it is impossible that incompatible characteristics hold of the same object at the same time"

(OPNC) "To no object can the same characteristic belong and not belong at the same time". (Łukasiewicz, 1987, p. 10)

We can try to reconstruct Aristotle's argument as follows:

(1) (OPNC) It is impossible for one object to both possess and do not possess some property.
(2) Beliefs expressing contradictory propositions are contrary properties.
(3) Contrary properties are mutually exclusive.
(4) Beliefs expressing contradictory propositions are mutually exclusive (from [2]—[3]).
(5) It is not possible for a single entity to have mutually exclusive properties (from [1]).
(6) (PPNC) It is impossible for one agent to hold two beliefs expressing contradictory propositions at the same time (from [4]—[5]).

Significantly, from the point of view of the analysis of Aristotle's ontological argument, will be his acceptance of premises (2) and (3). The author clearly emphasizes that this argument depends on the accepting the truth of OPNC, which he considers to be the basic ontological principle: thus questioning this premise does not overtly attack the soundness of Stagirite's reasoning.

Premise (2) is justified, according to Łukasiewicz, as follows: since Aristotle interprets beliefs as properties of mind, it is necessary to equate two concepts, contradiction (with regard to propositions and beliefs expressing them) and contrariness of properties, to justify adopting this premise. Aristotle writes in *On Interpretation*:

> But if, in thought, it is not the judgement which pronounces a contrary fact that is the contrary of another, then one affirmation will not find its contrary in another, but rather in the corresponding denial. (*On Interpretation,* 14, 24b)

(Łukasiewicz, 1987, p. 24). Since the Logical Principle of Non-Contradiction in Łukasiewicz's reconstruction justifies such thesis, and therefore the equivalence of the Logical and Ontological Principle, I assume that a reconstruction provided here, based on OPNC is also valid.

The contradiction that appears between the propositions expressed in beliefs will, in Aristotle's terms, correspond to the contrariness of properties. It is difficult to consider what the contrariness is actually in this argument: Łukasiewicz writes that "contrary beliefs are those that are answered by an affirmative and negative judgment about the same subject, e.g. 'Callias is just'—'Callias is not just'" (Łukasiewicz, 1987, p. 21).

Łukasiewicz subjects the above reasoning in a similar reconstruction to thorough criticism. His attention is focused on two issues: equating the concepts of contradiction and the contrariness of properties in relation to beliefs, and the unjustified mixing of logical and psychological concepts in premise (2). In this fragment, I will reconstruct Łukasiewicz's criticism, analyze it and draw conclusions regarding the status of Aristotle's argument for PPNC.

In analyzing the justification of premise (2), he assumes both the assumption that beliefs can be treated as properties and that properties can be contrary to each other. But for what is Aristotle's contrariness of properties or characteristics—and consequently the contrariness of belief? Łukasiewicz finds a partial answer to this question in fragments of *On Interpretation*:

> We must therefore consider which true judgement is the contrary of the false, that which forms the denial of the false judgement or that which affirms the contrary fact. [...] Now that which is good is both good and not bad. The first quality is part of its essence, the second accidental; for it is by accident that it is not bad. But if that true judgement is most really true, which concerns the subject's intrinsic nature, then that false judgement likewise is most really false, which concerns its intrinsic nature. [...] Thus the judgement which denies the true judgement is more really false than that which positively asserts the presence of the contrary quality. (*On Interpretation,* 14, 24b)

According to Łukasiewicz, there is an unsound transition from the domain of logic to the domain of psychology, especially visible in another fragment from *On Interpretation*, in which Aristotle states that "the judgement that that which is good is bad is composite. For presumably the man who forms that judgement must at the same time understand that that which is good is not good" (*On Interpretation*, 14, 23b). Łukasiewicz points out that a similar relationship (of logical consequence) occurs between propositions, but not necessarily between beliefs. For if we regard beliefs as properties, we cannot attribute either truth or falsehood

to them—those attributes belong then only to propositions or sentences. Talking about the truth or falsehood of beliefs makes sense as long as it refers to their linguistic representation or the proposition they express. This is a problem for Aristotle's reasoning: it is impossible to simply translate the truth or falsehood of the belief that $p$ in the above sense into any characteristic of the property of mind, such as believing that $p$. Since properties are neither true nor false, they cannot be contradictory either.

Thus, even if we treat beliefs as properties of the mind, we cannot show that the contradiction of beliefs treated as propositional attitudes entails the contrariness of beliefs interpreted as properties, so PPNC cannot be deduced from OPNC. Therefore, Aristotle's argument in favor of PPNC should be rejected.

Another view that derives PPNC from the characteristics of beliefs as properties is dispositionalism, which considers beliefs to be dispositions to display certain behaviors. A representative analysis for this trend is that carried out by Ruth Barcan Marcus. In her analysis of the concept of belief, she reduces it to the disposition "to act as if S, the actual or non-actual state of affairs, obtains" (Barcan Marcus, 1990, p. 241). What would it mean to act as if the law of non-contradiction would not apply? Barcan Marcus seems to follow the views of Wittgenstein from the *Tractatus*[5] regarding the cognitive status of tautology and contradiction. You cannot act, for example, as if it was raining and not raining at the same time, because there are no conditions (a possible world) in which a similar (impossible) state of affairs could be the cause of your behavior. Since we cannot characterize the disposition to act as if $p$ and not-$p$ was true, it is impossible to have two contradictory beliefs.

Without entering the ontological discussion of the status of beliefs, I believe that no form of dispositionalism logically entails PPNC. For the contradiction of beliefs does not translate (for the same reasons as in Aristotle's case) directly into the mutual exclusion of two dispositions. Any behavior that is the basis for ascription of a belief must be behavior that positively indicates a possession of such belief. Believing that not-$p$ can-

[5] "4.461 Propositions show what they say: tautologies and contradictions show that they say nothing. A tautology has no truth-conditions since it is unconditionally true: and a contradiction is true on no condition. [...] (For example, I know nothing about the weather when I know that it is either raining or not raining)" (Wittgenstein, 2020).

not be just simply n o t behaving as if $p$ was the case—then not believing that $p$ would be tantamount to believing that not-$p$. If, on the other hand, there are patterns of behavior suitable for believing that $p$ and believing that not-$p$, the consequence that forbids us to ascribe the belief that $p$ and not-$p$, in the absence of evidence of the agent's rejection of any of the beliefs, is dogmatic. At least intuitively, there are also ways in which a pattern of behavior can be explained by being convinced of some impossible state of affairs, as Wittgenstein notes in *Remarks on the Foundations of Mathematics*:[6]

> I feel a temptation to say: one can't b e l i e v e that 13 × 13 = 196, one can only a c c e p t this number mechanically from somebody else. But why should I not say I believe it? For is believing it a mysterious act with as it were an underground connexion with the correct calculation? At any rate I can say: "I believe it", and act accordingly. (Wittgenstein, 1998, I–106)

### 1.1 The Ontological Argument From the Function of Mind

However, there is also a version of the ontological argument which, although rarely stated explicitly, seems to have been silently adopted by many contemporary philosophers arguing for PPNC. I will try to refer to it in the hope that it will clear the methodological points brought up further in the paper—even if the argument in the following version is not adopted as such by any philosopher.

This argument, although significantly different from the one described earlier, belongs to the ontological argumentation in the distinction used here, because it tries to derive PPNC in its descriptive version: that it is impossible for an agent to simultaneously have contradictory beliefs. However, it concerns a much narrower group of cases. According to this line of argument, an agent cannot hold two beliefs of which he knows (or thinks) to be contradictory.

---

[6] Barcan Marcus interprets this passage as an introduction of a distinction between "believing" and "claiming to believe" impossibilities (Barcan Marcus, 1990, p. 253). However, accepting a dispositionalist account of belief, this distinction is pretty dogmatic (if we, as Barcan does, assume "claiming to believe" as a form of behavior positively indicating possession of belief). Also, even if Wittgenstein ever maintained such a distinction, he clearly abandons it further in the text (see the remarks I–106 to I–119).

In Wilfrid Hodges's *Logic*, we can find the following formulation, probably the closest to the thesis discussed here:

> It is simply impossible to believe, fully and without reservation, two things which you know are inconsistent with each other. It seems we are obliged to believe only what we think is consistent without having any real choice in this matter. (Hodges, 1977, p. 15)

A similar passage may be found in Quine's and Ullian's *The Web of Belief*:

> [O]ne can't believe a thing if one sees that it is impossible. [...] We saw it as the very reason for taking thought, for sifting evidence and revising one's system of beliefs. When conflicts arise, creating impossible combinations, we cannot rest with them; we have to resolve them. (Quine, Ullian, 1978, p. 37)

Such claims require a certain assumption about the purpose of the system of belief formation—namely, that forming true beliefs is its proper function. As Ruth Barcan Marcus rightly points out, commenting on Hodges' remarks: "Why focus on contradiction? Is it possible to believe that p when you know that p is false?" (Barcan Marcus, 1990, p. 145). One can therefore interpret Hodges' and Quine's thesis that we are "obliged to believe only what we think is consistent" as follows. Assume that a natural inclination and the purpose of the human cognitive system is to have true beliefs: if you are given information that counters certain belief or directly contradicts it—be it empirical evidence or the result of deductive inference—you are forced to reject a belief that turns out to be false. Only if we will assume that the purpose of our cognitive system is to maintain true beliefs, we can consider that it would have some kind of incentive to get rid of those false beliefs. Because the contradiction is an obvious sign of falsehood, one cannot hold contradictory beliefs while being aware that they are such.

### 1.2 Criticism of the Argument From Function of Mind

The claim that maximizing the amount of true beliefs is a systemic function of our mind appears to be intuitive, however it has rarely been directly defended. The only significant attempt to do that is an argument referring to the principles of natural selection (given by e.g. Fodor and

Dennett)—however, it seems that it results from the insufficient consideration of competing evolutionary strategies.[7] But if we were to accept it, even without justification, it is still possible to question whether this claim can play any role in justifying PPNC.

First, it seems that by arguing for PPNC this way we fall into a vicious circle. The principle of eliminating false beliefs, which we take as a premise in our reasoning may be expressed like this:

(PE) If an agent A has a belief that $p$, and learns that $p$ is false, A gets rid of the belief that $p$.

PE therefore means that with acquiring the justified, true belief that $p$ is false an agent has to get rid of the previously held belief that $p$. From that it immediately follows that an agent cannot simultaneously hold a belief that $p$ and that $p$ is false. The latter belief does not seem to differ significantly from the belief that not-$p$—if so, then we have already established the PPNC among the premises.

Another noteworthy assumption in this argument is that the recognition of self-contradiction in some belief (of the form $p$ and not-$p$) is an obvious evidence of its falsehood. One should wonder what exactly counts as an obvious falsehood of contradictory sentences and beliefs. Not every self-contradictory sentence is obviously contradictory: it can be proved by, for example the history of mathematics where this happened more than once in the mathematician community to accept fake proof of the claims that later turned out false. Most of us would probably consider as self-contradictory (and therefore false) certain counter tautologies of propositional calculus: propositions of the form $p$ and not-$p$ or not-not-$p$ and not-$p$, however, at first glance, we won't say so about the proof of the theorem of algebraic geometry "proven" by Francesco Severi in 1934 (and its falsehood which was proven 34 years later), not to mention troubling inconsistencies in the naive set theory. So where does an obvious self-contradiction of a sentence begin? Doesn't recognizing a sentence as self-contradictory therefore not the same to our understanding as recognizing it is false (which, again, simply assumes PPNC)? Are dialetheists, such as

[7] One may find a complex critique of such an argument (advanced e.g. by Daniel Dennett in his [1978]) in Stich's (1985) and Lewis & Cooper's (1979).

Graham Priest (who believes in true contradictions), wrong in asserting certain sentences or misinterpreting our concept of contradiction?

I am not going to answer these questions here, but rather point out that accepting this seemingly innocent argument requires a precise (and highly debatable) answer to each of them. Rather, it seems that considering self-contradiction as obvious evidence of falsehood, one must act and infer in accordance with the PE, and therefore this premise also cannot rightly justify PPNC. So it is possible that the Hodges-Quine condition concerning awareness of the contradiction (as we seem to understand it) that an agent must possess, is already assumed to be acting in accordance with PPNC and therefore cannot help us in justifying it.[8]

### 1.3 The Aposteriority Problem

As has been shown above, the indicated attempts to prove PPNC in its descriptive reading fail due to an unjustified mixing of logical and psychological concepts or the tacit adoption of conclusions along the premises. I would also like to draw attention to a more general argument, which in a similar form was directed by Łukasiewicz against the PPNC itself in its Aristotelian formulation (Łukasiewicz, 1987, pp. 30–34).

---

[8] Another, although similarly interesting in this context group of cases are the cases of contradictory beliefs which mutual inconsistency cannot be recognized by the agent even if we assume (s)he is ideally rational. Those might be e.g. Kripke's Puzzle (Kripke, 1979) or Richard's Problem (Richard, 1983): in both cases, generally speaking, we have to do with beliefs acquired in isolated epistemic or linguistic contexts, which are about the same object, given in those two contexts in different ways. Then, as Kripke points out, "no amount of pure logic or semantic introspection suffices for [an agent] to discover his error" (Kripke, 1979, p. 451): figuring out the internal contradiction by the agent may be done only by acquiring new belief on the basis of empirical evidence (e.g. that "London = Londres" in Kripke's case or that "you (the person I'm talking to by the phone] = he [the person I see on the street]" in Richard's case). If an argument which uses those cases as evidence that one may possess contradictory beliefs is sound (which I do not want to get on in this paper), then not only (as I have tried to show above) it is possible, that some agents internal inconsistency may not be an obvious evidence of the falsity of their beliefs, but also that there are some pairs of beliefs the inconsistency of which cannot be recognized through logical analysis—then even the assumption of strong procedural rationality of an agent does not suffice to prove the weakened version of PPNC-D.

As Lewis Carroll (1995) famously noted, an attempt to justify inference by referring to the axioms themselves (that is, justifying logical inference using purely logical tools) leads to an infinite regress. In addition to the axioms—recognizing certain sentences or formulas as true—we also need to adopt a rule of inference. As Penelope Maddy puts it:

> There [...] would be [no such problem] if I stipulated the truth of all the axioms of ZFC, but when we try to stipulate the truth of logic itself, we find our explicit conventions must be general, and then that these general conventions are without their intended force unless logic is already available to oversee the derivation of particular logical truths from the generalities. (Maddy, 2012, p. 496)

Whether or not a subject reasons in accordance with the principles of logic cannot therefore be determined by reference to any general laws of belief formation. Even if we (hypothetically) discovered in the human mind a representation of the law of non-contradiction, in order to justify PPNC in this way, it must be assumed that the agent thinks logically, applying the general law to its individual cases. We would have to do likewise with PE or other psychological belief formation laws. Thus, no general psychological principle has sufficient strength to prove PPNC-D either.

Therefore, if it is impossible to derive PPNC-D from the general laws of belief formation, the only possible form of justifying this principle is to interpret it as a well-proven empirical hypothesis. This can be viewed as the aposteriority problem: PPNC in its descriptive version cannot be justified *a priori*, but only as a result of empirical research.

Such an approach to the matter seems quite problematic in a philosophical discussion—even if PPNC-D was a well-confirmed hypothesis, many philosophers would find it undesirable to grant an empirical status to a principle that was initially described as one of the basic principles governing human thought. The assumed 100% compliance of the studied cases with PPNC would not prove that it is (in principle) impossible to have contradictory beliefs.

However, if this were the current state of psychology research, it could convincingly justify PPNC-D or at least make it sufficiently plausible. I would like to conclude my deliberations on the descriptive reading of PPNC by challenging its interpretation as a positively verified empirical hypothesis.

As long as we do not question the conclusiveness of the results of these studies, as philosophers who interpret PPNC in a normative way will try, we will have no reason to consider PPNC-D as a well-confirmed claim of psychology. I will provide two groups of examples: well-known research on cognitive heuristics, which shows how often agents unknowingly adopt contradictory beliefs, and clinical cases, which are radical examples of irrational and self-contradictory beliefs.

The first set of examples of interest to us that may undermine the truth of PPNC as an empirical hypothesis are studies from the so-called "heuristics and biases" research programme, which have been conducted by cognitive psychologists and cognitive scientists since the 1960s. These studies try to show that the majority of people (even up to 87% of respondents [Tversky, Kahneman, 1983]) use simple heuristics rather than rules of logical and probabilistic inference in their everyday thinking[9]—and that the two strategies often come into conflict with each other. I will briefly present two studies showing two popular inference fallacies: conjunction and disjunction fallacies, which seem to be the closest related to logical inference and as such may prove that the agent holds obviously contradictory beliefs.

The conjunction fallacy may be illustrated by the classical study of Tversky and Kahneman (1983).[10] A group of 93 respondents was given the following task:

> Suppose Bjorn Borg [a famous Swedish tennis player] reaches the Wimbledon finals in 1981. Please rank in order the following outcomes from most to least likely.
>
> A. Borg will win the match (1.7)
>
> B. Borg will lose the first set (2.7)
>
> C. Borg will lose the first set but win the match (2.2)

[9] The beliefs about the probability of some events happening are mostly dismissed as atypical or unimportant class of beliefs; one may although notice it's commonness in the everyday use of such phrases as: "Under condition, that...", "We need to be prepared for...", "It's likely to happen that...", "It's very unlikely that...", etc.

[10] A classic example from this study is, of course, "Linda, the feminist bank teller"; however, due to its wide coverage in the literature and the methodological concerns it has raised, I decided to use a different experiment illustrating the same effect.

> D. Borg will win the first set but lose the match (3.5). (Tversky, Kahneman, 1983, p. 302)

The numbers in parentheses represent the average rank given to this opportunity among the other four. A large part of the respondents considered that C is more probable than B, which is impossible from the point of view of probability calculus (C is the intersection of two events, one of which is represented in B—it cannot therefore be more probable). The researchers explained this phenomenon by the existence of so-called representativeness heuristic—the subjects, knowing Borg's reputation as a great tennis player, immediately considered any sentence that predicted his victory to be highly probable. Similar studies (Bar-Hillel, Neter, 1993) also concerned reasoning in a situation when we are dealing with the union of two events, expressed as a disjunction—due to the use of the representativeness heuristic, the respondents often also considered that one of the events is more likely than its union with another event.

It is worth emphasizing that the vast majority of respondents in both studies cannot be described as unaware of the basic laws of probability. In the first of these studies, it was even checked in a separate study whether the fallacy was not caused by the common interpretation of the conjunction as an implication (Tversky, Kahneman, 1983, p. 302); it seems that most of the people who made a mistake in one or the other study are also familiar with the rules of probability calculus and can apply them in some cases (this is confirmed, inter alia, by studies using a different, statistical approach to the "Borg problem" [Fiedler, 1988]).

Another, much more direct example of agents having conflicting beliefs are cases of patients with clinical delusions.[11] The presence of similar disorders—resistant to counterexamples, not following the norms of rational inference of beliefs—may indicate that the empirical hypothesis of human rationality may be thoroughly false: those are not cases of minor or explainable deviations from rationality as in research on heuristics, but very serious impairments of the ability to think logically and evaluate given evidence. However, does it also contain direct cases of contradiction?

[11] A similar interpretation is presented in the paper by Tadeusz Ciecierski (2017) whom I thank for bringing my attention to this group of cases.

The most direct example would be certain cases of Cotard's delusion,[12] consisting in the patient having the belief that (s)he has no internal organs, is dead, immortal, currently in hell or does not exist. A patient examined by Ryan McKay and Lisa Cipolotti, LU (2007, p. 353), when asked how she knew she was dead and whether she had ever seen a dead person, replied that she had seen her grandmother's body after her death and knew she was dead because her eyes were closed and she was not moving. An example of a similar contradiction can be seen in the case of the patient described in the study by Nishio and Mori:

> He said to his doctor (Y. N.), "I guess I am dead. I'd like to ask for your opinion". Later, his conviction about death became firmer. He said, "My death certificate has been registered. You are walking with a dead man", and "I am dead. I will receive a death certificate for me from my doctor and have to bring it to the city office early next week".
>
> His discussion of his demise was not associated with a depressed mood or feelings of fear. When his doctor asked him whether a dead man could speak, he understood that his words defied logic, but he could not change his thinking. (Nishio, Mori, 2012, pp. 217–218)

There is little doubt that we can attribute contradictory beliefs to these two patients: for example (1) that they speak, (2) that they are dead, and (3) that the dead cannot speak. In the second case, we even seem to deal with the recognition of this contradiction by the patient himself, combined with the inability to renounce clearly incompatible beliefs.

I am not saying that the cases mentioned above cannot be disputed. One may try to argue that people with Cotard's syndrome really mean something else by "death", and the cases of incorrect inference in the research of Tversky and Kahneman are not examples of contradictory beliefs. These statements, however, belong to the argument for a normative reading of PPNC, as they provide clear indications on how to interpret the given results. Moreover, it will be the obligation of every philosopher supporting PPNC-N to show that the interpretation of the research results given here is wrong—later in this paper I will explain why such stances do not meet this requirement. However, if we interpret PPNC

[12] A good overview of other delusionary cases is presented in (Breen et al., 2000), and their philosophical implications are robustly discussed in (Bortolotti, 2010).

only as an empirical hypothesis, we are forced to consider it as at least dubious in the light of the examples given above.

## 2. Methodological Arguments for PPNC

In this section I will focus on the methodological arguments in favor of adopting PPNC. According to the distinction introduced above, it will be an argument supporting the principle in its normative reading:

> (PPNC-N) An agent cannot be ascribed two contradictory beliefs at the same time.

Adoption of such a thesis, as outlined above, is set in a different philosophical context than the adoption of PPNC-D. First of all, it is most often associated with instrumentalism or at least agnosticism with respect to the ontological status of beliefs. The essence of the arguments presented below is to recognize "belief" as a theoretical concept of folk or scientific psychology and to show that the adoption of PPNC-N is necessary precisely from the point of view of theories allowing the possibility of belief ascription. Such a position seems to more or less presuppose interpretationism with regard to beliefs—and I am not going to question that assumption in here.

A useful distinction—before going on to discussing the arguments properly—is of that between individual and scientific belief ascriptions. I borrow the terms from Richard Dub (2015) who uses them to distinguish two levels of argumentation for the rationality assumption put forward by Daniel Dennett. However, I consider this distinction to be much more basic and crucial for the disclosure of specific assumptions and goals that individual theories and arguments set for themselves.

Individual ascription is, in short, a belief ascription that every competent language user familiar with the notion of "belief" makes in everyday situations. They accompany the most common uses of phrases such as: "He / she believes that...", "I think he thinks...", "He thinks that...". These ascriptions are quite frugal in terms of the data used: we make them under time pressure, often without having much knowledge about someone else's life, behavior, habits, etc. They are formulated somewhat automati-

cally and are not subject to advanced process of reflection.[13] Maintaining the PPNC-N with regard to individual ascriptions would mean that our everyday use of folk psychology requires assuming the consistency of the beliefs of the agent to which we ascribe beliefs. Traditionally, the justification for such a claim will be based on describing the ordinary use of language and showing that it results from the "method" and nature of the notions of folk psychology.

A completely different context for using the above-mentioned linguistic constructs is to make a scientific ascription. "[Individual and scientific ascriptions] are distinguished by who it is that does the ascription: the first is employed by individuals in real-world situations, and the second is employed by scientists and philosophers in the development of theories" (Dub, 2015, p. 98). The arguments for PPNC-N with regard to scientific ascriptions will focus not on how the concept of belief is, but how it should be used when terms derived from folk psychology are adopted in scientific psychology. Even if the everyday use allows us to break PPNC-N, it cannot be allowed to do so when it comes to "adult" belief theory—some theorists seem to say. Arguments following a similar line will try to prove PPNC-N by referring to the methodological foundations of psychology, anthropology or linguistics. I will try to show that even with the assumptions made by the authors, the adoption of PPNC-N in terms of both individual and scientific assignments is at least problematic.

### 2.1 The Argument From Daniel Dennett's Intentional Stance

The main supporter of PPNC-N with respect to individual ascriptions is Daniel Dennett from the period of developing the Intentional Stance theory and in later works.[14] Dennett assumes that the concept of belief is part of a broader strategy of predicting and describing the behavior of other cognitive systems, which he calls "Intentional Stance". It consists in assuming that the described subject is rational and ascribing him/her the

[13] Dennett himself describes them in his response to Dub as "the time-pressured quick-and-dirty attributions of folk psychology" (Dennett, 2015, p. 206).

[14] "In *Content and Consciousness*, Dennett is clear that his concern is mental ascription of the second [scientific] type. [...] The ground shifted somewhat when Dennett developed the Intentional Stance. The Intentional Stance became a piece of individual ascription: interpretation was now spoken as something that we all naturally do" (Dub, 2015, p. 98).

beliefs, desires and intentions explaining his/her action and their consequences in accordance with the accepted canon of rationality ("assign those beliefs that an agent should have") and further predicting his/her actions as consistent with assigned beliefs.[15] According to Dennett, intentional stance is part of our daily practice: something we do when we use the term "belief' in everyday language to interpret the behavior of others. Hence, the main emphasis in Dennett's argument is on individual ascriptions (his argument for the adoption of PPNC-N in scientific psychology is in line with the remarks made by Quine and Davidson, whose views I will discuss later).

It is difficult to say at first whether Dennett considers PPNC inviolable. Certainly, there is an important fragment in which he considers the inclusion of cases of the interpretation of irrational behavior into the principles of intentional stance:

> What rationale could we have, however, for fixing some set between the extremes and calling it the set for belief (for S, for earthlings, or for ten-year-old girls)? This is another way of asking whether we could replace Hintikka's normative theory of belief with an empirical theory of belief, and, if so, what evidence we would use. "Actually", one is tempted to say, "people do believe contradictions on occasion, as their utterances demonstrate; so any adequate logic of belief or analysis of the concept of belief must accommodate this fact". But any attempt to legitimize human fallibility in a theory of belief by fixing a permissible level of error would be like adding one more rule to chess: an Official Tolerance Rule to the effect that any game of chess containing no more than $k$ moves that are illegal relative to the other rules of the game is a legal game of chess. (Dennett, 1978, p. 21)

However, do we seek an explanation following the ideal of rationality—or do we refrain from judgment—in cases such as delusions or mental

[15] Dennett differentiates the intentional stance from other strategies of description: "design stance" (which refers to the function an object is designed to perform) and a "physical stance" (which refers to physical properties and the laws of physics. Those stances are differentiated by the complexity and accuracy of its predictions: an operation of an alarm clock may be described and predicted by a physical model, by referring to its designed function (e.g. ringing at the exact time it was set) or by ascribing it a set of beliefs and desires (e.g. a desire to wake us up at specific time and a belief concerning times of day; see Dennett, 1981a).

illness, or in everyday cases of actions suggesting a deviation from the normative pattern? It seems that although we can begin our process of interpretation by referring to the model of a fully rational agent, with time we abandon this assumption, adapting our model to accommodate new evidence. In a discussion with Stephen Stich (1981), who made similar allegations, Dennett (1981) argued that an explanation for such cases is only available through a lower-level stance.

In Dennett's interpretation, the description of irrationality in the language of intentional stance is impossible: expressions such as "it slipped my mind", "I made a mistake", etc. are made from a stance explaining my behavior through the malfunction of one of the functions (memory, vision, etc.) of the subject. Examples of irrationality, therefore, can only be explained as performance errors, not competence errors.[16, 17] So it is not that in the above-mentioned situations I am obliged to explain it (using intentional stance) by referring to the extensive rationalization of my behavior or the rejection of the possibility of interpretation. I am simply referring to the error at a lower level of explanation, as when the alarm clock failure (i.e. acting against the predictions of the "design stance") is blamed on a wiped gear or battery discharge (i.e. events described by a "physical stance").

Providing a wide range of counterexamples is therefore not sufficient to challenge Dennett's argument. There are two key theses in it. First, that the pattern on which we construct a particular concept of an intentional system is an ideal agent that rationally formulates beliefs (avoiding contradictions, among other things) and acts in accordance with them. Second, when a given intentional system works against expectations, we are obliged to explain its behavior by referring to the error at the functional ("design"), not the intentional level. People who otherwise make a mistake in using the concepts of folk psychology. These theses are both descriptive (this is how we use the concept of belief) and normative (in the case of the inconsistency of predictions with effects, we should prefer

[16] This distinction is, of course, borrowed from Noam Chomsky—it is used in this context e.g. by Stich (1985).

[17] A similar line of argument—treating all the irrationality cases as "performance errors"—is supported by authors seeking justification of validity of logic in psychology (Cohen, 1981; Sober, 1978). A critique of their stances is included in (Stich, 1985; Thagard & Nisbett; 1983).

an explanation at the functional level). Below I will try to elaborate on the critique of this line of argument offered by Stich (1981; 1985), first referring to the descriptive side of Dennett's premises, and then to the normative side.

Stich (1981), arguing with Dennett, makes the accusation that his concept, regardless of the adopted interpretation, does not allow to explain the simplest cases of deviations from rationality. He divides Dennett's analyzes and suggestions into "hard" and "soft" lines, accusing him of inconsistency in his arguments. According to Stich, the "hard line" includes the assumption of rationality of an agent, the consequence of which is the adoption of the PPNC-N. The "soft line", on the other hand, consists in viewing this assumption and approach to PPNC-N (which can be deduced from some fragments of Dennett's writings) only as a necessary condition for starting the interpretation process; these conditions do not apply to us later, after acquiring more knowledge of the agent's behavior. Stich finds a hard line impossible to defend. It is not just the intuitive absurdity of the idea that anyone who knows the basics of classical propositional calculus also believes the infinite number of tautologies. The hard line strategy fails to describe the most common cases of irrationality:

> When a neighborhood boy gives me the wrong change from my purchase at his lemonade stand, I do not assume that he believes quarters are only worth 23 cents, nor that he wants to cheat me out of the 2 cents I am due. My first assumption is that he is not yet very good at doing sums in his head. (Stich, 1981, p. 50)

On the other hand, the "soft line" suffers, in Stich's view, from another drawback—if we accept it, it is difficult to understand why the image of "ideal rationality" would be the starting point for our theory and why we do not use the modified concept of rationality based on how usually our inference process is carried out, for example based on research of cognitive heuristics. The "soft line" thus leads to the recognition that the "ideal" we consider to be the first model in the process of interpretation differs from Dennett's understanding of rationality.

As I outlined above, Dennett's theory, however, escapes the simple division into "soft" and "hard line". The author himself writes: "These distinct lines are Stich's inventions, born of his frustrations in the attempt to make sense of my expression of my view which is both hard and soft—that is to say, flexible" (Dennett, 1981b, p. 73). Dennett sees cases similar to the one cited above as only possible through the lens of the "design

stance". After all, the explanation that the boy is "not yet very good at doing sums in his head" seems to come from this level of description. With such an interpretation, Dennett is able to retain the full power of the "hard line" while explaining its hypothetical ineffectiveness.

However, it is difficult not to notice some problems with this formulation of Dennett's position. Do we always prefer an explanation in terms of "design stance"? And do these explanations really result from our aversion to breaking PPNC? In my opinion, the answer to both of these questions is no.

First of all, the design stance is not always available to us—our common intuitions about it often seem ambiguous. Interesting material for consideration is the research conducted by Wason (1969), in which the impact of explanation and the pointing to contradictions on the improvement in solving the Wason selection task was examined (Wason, 1968). The subjects who failed the task of selecting cards, not following the rules of elementary logic (in this case *modus tollens*),[18] the researcher tried to present the subject as having made a mistake in their reasoning so as to convince them to change the previous answer. First, it was made sure that the subject understood the question well and knew that the given rule, which (s)he was asked to check, could also be false. The experimenter began by asking, "If there were a [stimulus mentioned first by the subject] on the other side, could you say anything about the truth or falsity of the sentence?" (Wason, 1969, p. 474). And when increasingly persuasive, but still hypothetical considerations failed, in which the respondents remained self-contradictory when declaring answers (they maintained that the conjunction of the premise and the negation of the conclusion did not falsify the implication), the researchers asked the respondents to reveal the cards. If the subject was still unable to choose the appropriate card, the experimenter would directly inform him/her that (s)he was wrong and asked him/her to think about his/her answer. The

[18] Original research (Wason, 1968) consisted in showing the subject four two-sided cards with two letters and two numbers (e.g. "D", "3", "B", "7"), where on one side of the card was the letter and on the other—a number, with a task of selecting the cards which should be turned over to find out whether a certain implication is true (e.g. "If there is a D on one side of the card, then on the other there is 3"). Only a relatively small group of subjects was able to select the cards appropriately (select the cards "D" and "7"). In the further research the content of cards and a formulation of implication has varied.

study showed that 12% of the respondents were unable to change their minds at any stage of the considerations.

At the moment when a given subject does not want to admit that (s)he made a mistake despite the best efforts of the experimenter, are we still able to recognize it as a "performance error" and use the "design stance"? It seems that it is not—the illogicality here is not only a matter of a temporary disturbance of inference competence, because despite long attempts this mistake cannot be corrected. Although it should not be ruled out that often these errors can (and are) corrected, and our language allows us to "rationalize" them in the manner given by Dennett, however,

> What is really remarkable about these and other experiments in which everything was done to encourage the subjects to gain insight is not the improvements in performance so much as the numbers of subjects who never, no matter what was done to them, selected [the wrong answer]. (Manktelow, 1981, p. 259)

The same is true when we turn again to the examples of people suffering from delusions. The method of "Socratic discussion", according to which by demonstrating the contradiction hidden in the words of a patient, one can persuade him/her to change his/her mind and thus heal, is also often ineffective (Bortolotti, 2010, pp. 86–96). An example could be a case of the patient from the above-cited study, who, after recovering and leaving the mental hospital, continued saying, "Now I am alive. But I was once dead at that time" and "I saw Kim Jong-Il in the hospital where I stayed" (Nishio & Mori, 2012, p. 218). At the same time, it is not absurd or inconsistent with the ordinary use of language in the light of the above data to say that Nishio's patient is convinced that he was once dead, or that the respondents in the Wason test are convinced that the card containing the premise and denial of the conclusion does not falsify the rule stating its implication. This means that, in a situation where we only obtain a little more data about the subject, describing the contradiction of beliefs as part of an intentional stance is perfectly possible and preferable to Dennett's alternative: using a design stance or refraining from describing it in any terms.

Another descriptive element of Dennett's proposal is the recognition that the use of design stance stems from our reluctance to describe others or ourselves as irrational or having contradictory beliefs. However, this claim needs to be substantiated: to prove that these ways of speaking or

linguistic constructs derived from functional strategy are "rationalizations", we must show that it is precisely rationality and consistency that we care about when we use them. This, however, is not the case. One can find many other justifications for this use of language, not having much to do with rationality.[19] However, it does not even seem necessary. As already mentioned, we ascribe errors on the "design stance"-level automatically—it is our first assumption, and not a rationalization that comes to the fore when the possibilities of a consistent explanation of our behavior are exhausted. Importantly, therefore, in Stich's argument, Dennett is wrong in explaining the course of our interpretation of the situation, and not in the conclusion to which his theory obliges him.

It is therefore necessary to carry out the critique to the end and turn to the normative aspect of Dennett's stance. By adopting an interpretationist stance, we must further consider why it is the rationality and consistency that should be the ideal that we follow in individual ascriptions. If we take into account the above-mentioned studies by Wason, Kahneman and Tversky, Bar-Hillel or cases of delusions, it should surprise us how much the intentional stance deviates from actual human behavior in its predictions—how many cases such a theory excludes. If we believe that the intentional stance should allow us to predict someone else's behavior in the best possible way, we must assume that, at least statistically, the most useful description of our behavior is its description in terms of a rationally acting and belief-forming agent. This, however, as the examples above show, is at least far from certain: the human system of inference and belief formulation simply does not seem to follow these standards. A famous example can be the gambler's fallacy—an incorrect inference according to which the probability of an event decreases if the event has happened frequently before (e.g. that the probability of an eagle falling in a toss of a reliable coin is less than ½ if it has previously fallen twenty times). Committing this error is relatively intuitive for most respondents and common among them (Tversky & Kahneman, 1971), they often use a similar principle in predicting facts that depend on probability,

[19] To stipulate such explanations one may discern between consistency and ordinarily understood cohesion: there is nothing contradictory or illogical in many of our actions we tend to explain in a similar way (e.g. slips of the tongue or "socially awkward" or unwanted behavior).

alternating with the contradictory "hot hand fallacy", [20] according to which the probability an event increases when it is repeated enough times (Konold et al., 1993). It is not important here, as in the situations mentioned earlier, whether people are able to recognize such behavior as wrong, but that they often act in accordance with these wrong principles. Thus, if an intentional strategy were to depend on a model that most often produces correct predictions, it should not assume that the subject is procedurally rational, but rather that it forms its beliefs based on certain heuristics consistent with the gambler's and "hot hand" fallacies—a useful "intentional stance" should allow for contradictory beliefs.

The indicated problems with Dennett's theory can be generalized to all stances treating the concept of belief as a concept of folk psychology, which postulate PPNC-N as an element of the practice of individual belief ascriptions. For if there are indeed cases of individual ascriptions that favor the ascription of contradictory beliefs instead of describing a given behavior as a "mere deviation" from the PPNC-N, the thesis about its universal validity is empirically false. However, even if we turn a blind eye to these cases or deny the intuitiveness of such individual ascriptions, there is a much more serious problem for each of these theories. Since in so many cases people, even superficially, tend to act in accordance with the procedurally irrational rules allowing for the inference of mutually contradictory information, the rules governing "time-pressured, quick and dirty ascriptions of folk psychology" should contain these rules and not a rigid canon of procedural rationality.

Maintaining the PPNC-N with respect to individual ascriptions and recognizing it as a methodological principle of folk psychology in its everyday use is therefore unjustified, and the PPNC-N itself presented in such a context is probably false. Therefore, it is necessary to refer to the arguments that defend PPNC-N with regard to scientific ascriptions.

### 2.2 Consistency and Meaning

Donald Davidson, one of the main supporters of the PPNC-N among contemporary philosophers, shares with Daniel Dennett a set of intuitions about the origin and conditions of the correct use of the terms of folk

[20] This fallacy was first discovered and described in the famous study concerning perception of free throws by basketball fans (Gilovich et al., 1985).

psychology. Davidson's theory, however, clearly refers to interpretation theory as a scientific theory that allows us to produce a "unified theory of meaning and action" inspired by the preference-based belief ascription models proposed by Frank Ramsey in decision theory (Ramsey, 1926; Davidson, 1980). The ascriptions that Davidson talks about will therefore be scientific ones, resulting from appropriate theoretical reflection, explaining to us in the most truthful way verbal and non-verbal human behavior.

Both theories are inspired by the observations of Willard Quine, of whom Davidson and Dennett were students,[21] especially by the thesis of indeterminacy of translation. While Quine's main focus has been on translation and the notion of linguistic meaning, many of his remarks also apply to belief ascription and correspond to the views of his successors. In a famous passage from *Word and Object*, Quine argues that every translation must follow the basic laws of logic:

> That fair translation preserves logical laws is implicit in practice even where, to speak paradoxically, no foreign language is involved. Thus when to our querying of an English sentence an English speaker answers "Yes and no", we assume that the queried sentence is meant differently in the affirmation and negation; this rather than that he would be so silly as to affirm and deny the same thing. Again, when someone espouses a logic whose laws are ostensibly contrary to our own, we are ready to speculate that he is just giving some familiar old vocables ("and", "or", "not", "all", etc.) new meanings. (Quine, 1960, p. 59)

According to Quine, we are obliged to interpret the statements made by others in such a way that will be in accordance with the laws of logic—including the principle of non-contradiction. This thesis can also be presented in the following way: the subject's acceptance of mutually contradictory sentences proves that our translation of a language or idiolect of a given subject is wrong rather than (s)he possesses such beliefs. Logical connectives are functionally defined (by a truth table) and it is impossible by definition to understand a conjunction or negation as we under-

[21] An extensive analysis of similarities and influences between their views may be found in (Dub, 2015, pp. 94–98).

stand them in logic and at the same time recognize the proposition of the form $p$ and not-$p$.[22]

A similar motivation seems to stand behind Davidson's Principle of Charity. According to it, in order to start the interpretation process at all, it should be assumed that as many beliefs as possible of a given subject are true, and that this subject does not have overtly false beliefs—e.g., logically contradictory ones. Where Quine is looking for a translation, that is, to use its terminology, a stimulus synonymy between sentences of two languages, Davidson tries to find the equivalence at the level of the truth conditions of sentences of both languages—and in order to talk about the knowledge of truth conditions by language users, we must assign certain beliefs to them. In some readings of Davidson's thought, it is often believed that the Principle of Charity consists of two separate principles: the principle that as many beliefs and sentences as possible expressed by the interpreted subject should be true, and the principle that the statements and beliefs of the subject should agree with the canon of rationality (Joseph, 2004, pp. 62–64). These two principles, however, seem to have a common origin: rationality is understood in them as a principle of action aimed at preventing the maintenance of overtly false beliefs, including those that are internally contradictory, and thus maximizing the number of true beliefs.

The above reasoning leads Davidson to the adoption of the following principle as one of the main methodological laws in the process of interpreting others language or idiolect:

> (PC) If an agent asserts or utters mutually contradictory sentences according to the current interpretation of his/her language or idiolect, then interpret his/her statements as non-contradictory in the language or idiolect of this agent.

Since one of the main methodological recommendations made by Davidson is to treat all statements as honest and true for the interpreted subject—and thus entailing that (s)he believes their content—PC can be considered a consequence of adopting PPNC-N.

---

[22] A similar argument against the notion of "paraconsistent logic" (as changing the subject rather than logic) may be found in (Slater, 1995).

So is PC a good and universally valid methodological principle? The argument most often presented for the affirmative answer takes the form of a slippery slope. According to it, once we suspend the validity of the PC, then we are forced to adopt a different rule for the interpretation of the subject, which, while remaining in accordance with the modified inference rules, will result in beliefs and statements "as queer as one pleases" (Quine, 1960, p. 58). However, a similar reasoning cannot be accepted as a justification for the universal application of PC and PPNC-N. The partition between translations and interpretations in accordance with the laws of classical logic and those in accordance with different laws of inference is not complete, as it does not include different degrees of agreement; interpretations can also vary by subject and may not necessarily cover the entire community and language.

The analysis of two different interpretations: compatible and incompatible with the PC, can be carried out on the example of the heated debate on the ontological status of delusions. Their general characteristics have already been outlined above. Many authors, following the suggestion of Dennett and Davidson, have denied giving delusions the status of beliefs, explaining them as imaginations of which agents mistakenly believe to be beliefs (Currie, 2000), or as cases of distinct propositional attitudes referred to as "in-betweenish or grey-area-cases of belief" (Schwitzgebel, 2010) or "bimaginations" (Egan, 2008). These solutions, although compatible with PC (not imposing "responsibility for the given word" on the subject), do not seem to be scientifically useful, but rather constitute a trick needed due to the failure of the more fundamental hypothesis, according to which delusionary patients differ from the standard in their understanding the concepts of "being dead" or "identity". One of the most extensive discussions of various solutions formulated in this spirit is the paper by John Campbell (2001). The basic intuition of Campbell and others seems to be summarized in the following passage:

> Indeed, the patient may say that she is dead even though she realizes that no one else would accept this claim. The trouble is, how can the patients really be said to be holding on to knowledge of the meaning of their remarks when they are using words in such a deviant way? (Campbell, 2001, p. 91)

Campbell recognizes two possible strategies for describing delusions that are compatible with PC: he labels the first as empiricist and the second as rationalist. The empiricist strategy tries to explain the patient's behavior as resulting from data that (s)he begins to receive at some point

(e.g. as a result of damage to the centers responsible for facial recognition in the brain, see [Ellis, Young, 1990]). One can then try to explain the patient's behavior as rational in a broad sense—if a close person, although identical in appearance, ceases to be associated with a subjective feeling of familiarity, the patient comes to the conclusion that the close person has been replaced by an impostor (Capgras delusion) or that the patient himself is dead (Cotard's delusion), which is the reason for the lack of emotions related to a perception identical to the previous one.[23] As Campbell himself notes, this is not a satisfactory "rationalization" strategy for delusions: there are people with similar neurological problems who do not draw similar conclusions. There is also nothing in our experience that could be a possible rationale for accepting the claim of self-non-existence—the neurological disorders listed, at least in the case of Cotard's syndrome, may thus be correlates, but rather not causes of delusions.

The rationalist strategy seems to follow the indications of PC more directly, interpreting the behavior of delusional patients as a result of adopting different framework propositions (Campbell, 2001, p. 96). The concept of framework propositions is borrowed from Wittgenstein's *On Certainty*, who describes them as irresistibly certain propositions which create a frame within which the process of inference and evaluation of the truth or falsehood of other sentences is made. All justification must take place within such a framework (Wittgenstein, 1969).

Although Wittgenstein's concept has never been refined in detail, we may assume, following Campbell, that the beliefs specific to a particular delusion: "I am dead", "This [now seen] woman is not that [once seen] woman" could constitute framework propositions for patients in the proposed sense. Going further, it can be concluded that some patients use some "deviant logic"[24] that allows them to align data from the world with the content of their framework propositions. According to it, e.g. Leibniz's Law of Indiscernibility of Identical functions as a law allowing the identity of objects that have several different properties, which allows us to justify the view according to which e.g. the patient is identical to the

[23] A further discussion on such explanations may be found in the work of McKay and Cipolotti (2007, pp. 351–352).

[24] After Quine, by "deviant logic" I mean here a system of inference in which terms such as "negation", "identity" or "conjunction" have different properties than their counterparts in classical logic (although the rules of inference stay the same).

Virgin Mary (Evnine, 1989, pp. 7–8). However, here we are not dealing with a real violation of the principles of logic and contradiction—such a patient simply understands in a different way (in a different theoretical context or frame) concepts such as "negation", "identity" or "being dead".

There are two problems with the proposal cited above—I will start with a less fundamental one, and then show a more general methodological problem with PC visible in these examples. First, as Bayne and Pacherie (2005) and Bortolotti (2010) note, not all delusions can be defined as framework propositions, because in many cases patients feel the content of their delusions improbable; not all delusions present us with a similar dilemma of application of PC (e.g., persecutory delusions), although we could also describe them as instances of introducing further framework beliefs into a belief system. In many other domains, the reasoning of delusional people remains invariably correct, and they also seem to recognize the gap between laws of logic and their own words (as in the study by Nishio and Mori [2012] cited above).

Second, the fact that the patients *use* the notions of "being dead" or "negation" differently than logicians or doctors do not imply that they *understand* it differently or that it *means* something else to them. Why should we assume that they understand them the same as we do? As I have pointed out, patients, when not asked about the content of their delusions, seem to reason in a classical way, and not according to any "deviant logic". In this context, PC would require postulating that the patients possess an inference system explaining the changes in the rules of inference depending on its content. However, let us recall for a moment the question about the probability of certain events and facts in the research on heuristics. There are multiple contextualizations[25] that significantly increase the number of correct answers among the respondents—and in fact researchers describe the respondents as using different methods of inference. But does it mean that for the respondents the word "probability" means something different in one context than in another? No—the most effective way of explanation is to say that they have contradictory intuitions regarding the interpretation of specific situations and, what is more, those are not conscious intuitions, and the change of reasoning is not volitionary.

[25] See, e.g. a paper by Fiedler (1988) mentioned above.

A much more fertile hypothesis is to recognize that in all these cases we are dealing with objectively false sentences also in the idiolect of an agent, which, however, (s)he considers to be true. The problem for patients with Cotard's delusions, or with the respondents in the research of Kahneman, Tversky and Wason, is not a purely linguistic problem. When using PC, we keep asking the question: how can someone rationally be convinced of such a preposterous thing, and each subsequent answer to it seems to be sensitive to the counterexamples provided by forthcoming empirical data. Thus, this leads to the high instability of hypotheses, which ought to be avoided in empirical sciences. Moreover, it seems strange to prefer the hypothesis of such a bizarre and similarly irrational way of using language over the hypothesis of having a bizarre and irrational belief system. It is more scientifically useful to assume that a person believes in absurdity and try to find out: what may be the cause[26] independent of the agent for the emergence of such a strange belief formation system? This question is empirically decidable on the basis of the assumption adopted and constitutes a step towards a fertile scientific explanation.

I do not want to delve into the extent to which acting in a manner consistent with the PC and PPNC-N (note that it is not to say: in accordance to PC and PPNC-N) is necessary in interpreting the language and behavior of entire communities. If we are to believe in some anthropological evidence (e.g., Rudiak-Gould, 2010; Thagard & Nisbett, 1983, pp. 253–255), assigning entire communities the possession of certain contradictory beliefs, as well as the content of delusions considered both contradictory and true by those who support them, is not problematic and may lead to interesting conclusions.[27] Empirical data, however, are too scarce and the methodology of anthropological research too heterogeneous to draw decisive conclusions.

---

[26] To reverse a Davidsonian slogan: I mean here the causes which are *not* reasons.

[27] Rudiak-Gould (2010) attributes the natives living in the Marshall Islands contradictory beliefs regarding their past, which is simultaneously portrayed as idyll destroyed by the coming of colonizers and the state of war and barbarity brought to an end by the Christian morality brought by the colonizers as well. The author explains it by grounding these beliefs by the natives in two different identities: national or communal (Marshallian) and religious (Christian). The natives have seen the inconsistencies in their visions of past; however, they could not abandon any of them.

## 3. Summary

In this article, I tried to analyze in detail the argumentation presented in favor of adopting the Psychological Principle of Non-Contradiction. I have singled out two different interpretations: descriptive and normative, which correspond roughly to the realistic and instrumentalistic approach to folk psychology. I examined arguments proposed for a descriptive reading of PPNC, both those based on the interpretation of beliefs as properties and on assumptions about the systemic functions of the human mind, which would be to uphold true beliefs. I have shown that both of these arguments are insufficient for the adoption of the PPNC. Then I pointed out a more general argument showing why PPNC in a descriptive reading can only be interpreted as an empirical hypothesis, and cited studies in cognitive and clinical psychology that allow us to regard it as implausible. Later, I singled out two main lines of argument for PPNC in a normative reading: the argument from Daniel Dennnett's intentional stance and the argument of Donald Davidson and Willard Quine which states, that scientific belief ascription requires the assumption of mutual consistency of beliefs. Using the example of the debate on the interpretation of delusional cases in clinical psychology, I showed why the methodological strategy offered by Davidson and Quine leads to high instability of the initial hypotheses and therefore is no more scientifically useful than assigning contradictory beliefs to the patient.

In the light of the above arguments, it should be concluded that the Psychological Principle of Non-Contradiction in the formulation adopted here does not find a satisfactory ontological or methodological justification. As the Principle of Non-Contradiction seems to be one of the key elements of procedural rationality, it is therefore also doubtful that assigning beliefs and other intentional states requires assuming the rationality of the interpreted agent. The question remains whether the criticism offered here requires a reformulation of the assumptions of interpretationism that most strongly posits a similar assumption, or the adoption of a different model of ascribing beliefs. I believe that the construction of such a model is possible and will allow for a more adequate explanation of the empirical data showing that rationality is a much less common human trait than some philosophers suggest.

## REFERENCES

Bar-Hillel, M., Neter, E. (1993). How Alike Is It Versus How Likely Is It: A Disjunction Fallacy in Probability Judgments. *Journal of Personality and Social Psychology*, *65*(6), 1119–1131.

Bortolotti, L. (2010). *Delusions and Other Irrational Beliefs*. Oxford: Oxford University Press.

Breen, N., Caine, D., Coltheart, M., Hendy, J., Roberts, C. (2000). Towards an Understanding of Delusions of Misidentification: Four Case Studies. *Mind & Language*, *15*(1), 74–110.

Campbell, J. (2001). Rationality, Meaning and the Analysis of Delusion. *Philosophy, Psychiatry, & Psychology*, *8*(2–3), 89–100.

Carroll, L. (1995). What the Tortoise Said to Achilles. *Mind*, *104*(416), 691–693.

Ciecierski, T. (2017). Attitudes and Normativity. *Axiomathes*, *27*(3), 265–283.

Cohen, L. J. (1981). Can Human Irrationality Be Experimentally Demonstrated? *The Behavioral and Brain Sciences*, *4*(3), 317–370.

Currie, G. (2000). Imagination, Delusion and Hallucinations. *Mind & Language*, *15*(1), 168–183.

Davidson, D. (1974). Belief and the Basis of Meaning. *Synthese*, 27(3–4), 309–323.

Davidson, D. (1980). Toward a Unified Theory of Meaning and Action. *Grazer Philosophische Studien*, *11*(1), 1–12.

Dennett, D. (1978). *Brainstorms*. Cambridge: MIT Press.

Dennett, D. (1987). True Believers: The Intentional Strategy and Why It Works. In D. Dennett (Ed.), *The Intentional Stance* (pp. 13–36). Cambridge: MIT Press.

Dennett, D. (1981). Making Sense of Ourselves. *Philosophical Topics, 12*(1), 63–81.

Dennett, D. (2015). Not Just a Fine Trip Down Memory Lane: Comments on the Essays on Content and Consciousness. In C. Muñoz-Suárez, F. De Brigard (Eds.), *Content and Consciousness Revisited* (pp. 199–218). New York: Springer.

Dub, R. (2015). The Rationality Assumption. In C. Muñoz-Suárez, F. De Brigard (Eds.), *Content and Consciousness Revisited* (pp. 93–111). New York: Springer.

Egan, A. (2008). Imagination, Delusion, and Self-Deception. In T. Bayne, J. Fernandez (Eds.), *Delusion and Self-Deception: Affective and Moti-*

*vational Influences on Belief Formation (Macquarie Monographs in Cognitive Science)* (p. 263–280). London: Psychology Press.

Ellis, H. D., Young, A. W. (1990). Accounting for Delusional Misidentifications. *British Journal of Psychiatry*, *157*(2), 239–248.

Evnine, S. J. (1989). Understanding Madness? *Ratio*, *2*(1), 1–18.

Fiedler, K. (1988). The Dependence of the Conjunction Fallacy on Subtle Linguistic Factors. *Psychological Research*, *50*(2), 123–129.

Gottlieb, P. (2007). Aristotle on Non-Contradiction. *The Stanford Encyclopedia of Philosophy*. Retrieved from: https://plato.stanford.edu/archives/sum2015/entries/aristotle-noncontradiction/

Hodges, W. (1977). *Logic*. Harmondsworth: Penguin Books.

Joseph, M. (2004). *Donald Davidson*. Chesham: Acumen.

Kahneman, D., Tversky, A. (1971). Belief in the Law of Small Numbers. *Psychological Bulletin*, *76*(2), 105–110.

Kahneman, D., Tversky, A. (1983). Extensional Versus Intuitive Reasoning: The Conjunction Fallacy in Probability Judgment. *Psychological Review*, *90*(4), 293–315.

Konold, C., Pollatsek, A., Well, A., Lohmeier, J., Lipson, A. (1993). Inconsistencies in Students' Reasoning about Probability. *Journal for Research in Mathematics Education*, *24*(5), 392–414.

Kripke, S. (1979). A Puzzle About Belief. In A. Margalit (Ed.), *Meaning and Use* (p. 239–283). Dordrecht: D. Reidel.

Lewis, H. A., Cooper, D. (1979). The Argument from Evolution. *Proceedings of the Aristotelian Society*, *53*, 207–237.

Łukasiewicz, J. (1971). On the Principle of Contradiction in Aristotle. *The Review of Metaphysics*, *24*(3), 485–509.

Łukasiewicz, J. (1987). *O zasadzie sprzeczności u Arystotelesa*. Warsaw: PWN.

Maddy, P. (2012). The Philosophy of Logic. *The Bulletin of Symbolic Logic*, *18*(4), 481–504.

Manktelow, K. I. (1981). Recent Developments in Research on Wason's Selection Task. *Current Psychological Reviews*, *1*(3), 257–268.

Marcus, R. B. (1990). Some Revisionary Proposals About Belief and Believing. In R. B. Marcus (Ed.), *Modalities: Philosophical Essays* (pp. 143–162). New York: Oxford University Press.

McKay, R., Cipolotti, L. (2007). Attributional Style in a Case of Cotard Delusion. *Consciousness and Cognition*, *16*(2), 349–359.

Nishio, Y., Mori, E. (2012). Delusions of Death in a Patient with Right Hemisphere Infraction. *Cognitive and Behavioural Neurology*, *25*(4), 216–223.

Pacherie, E., Bayne, T. (2005). In Defence of the Doxastic Conception of Delusions. *Mind & Language*, *20*(2), 163–188.

Quine, W. V. O. (1960), Word and Object. Cambridge M.A.: MIT Press.

Quine, W. V. O., Ullian, J. S. (1978). *The Web of Belief*. New York: Random House.

Ramsey, F. (1926). Truth and Probability. In R. B. Braithwaite (Ed.), *The Foundations of Mathematics and Other Logical Essays* (pp. 156–198). New York: Harcourt Brace.

Ramsey, F. (1931). *General Propositions and Causality*. In D. H. Mellor (Ed.), *Philosophical Papers* (pp. 145–163), Cambridge: Cambridge University Press.

Richard, M. (1983). Direct Reference and Ascriptions of Belief. *Journal of Philosophical Logic*, *12*(4), 425–452.

Rudiak-Gould, P. (2010). Being Marshallese and Christian: A Case of Multiple Identities and Contradictory Beliefs. *Culture and Religion: An Interdisciplinary Journal*, *11*(1), 69–87.

Schwitzgebel, E. (2010). Acting Contrary to Our Professed Beliefs or The Gulf Between Occurrent Judgment and Dispositional Belief. *Pacific Philosophical Quarterly*, *91*(4), 531–553.

Slater, B. H. (1995). Paraconsistent Logics? *Journal of Philosophical Logic*, *24*(4), 451–454.

Sober, E. (1978). Psychologism. *Journal for the Theory of Social Behaviour*, *8*(2), 165–191.

Stich, S. (1981). Dennett on Intentional Systems. *Philosophical Topics*, *12*(1), 39–62.

Stich, S. (1985). Could Man Be Irrational Animal? *Synthese*, *64*(1), 115–135.

Thagard, P., Nisbett, R. (1983). Rationality and Charity. *Philosophy of Science*, *50*, 250–267.

The Internet Classics Archive. (n.d.). Retrieved from: http://classics.mit.edu/index.html

Wason, P. C. (1968). Reasoning About a Rule. *The Quarterly Journal of Experimental Psychology*, *20*(3), 273–281.

Wason, P. C. (1969). Regression in Reasoning? *British Journal of Psychology*, *60*(4), 471–480.

Wittgenstein, L. (2020) *Tractatus Logico-Philosophicus* (Side-By-Side-By-Side Edition). Retrieved from: http://people.umass.edu/klement/tl

Wittgenstein, L. (1998). *Remarks on the Foundations of Mathematics*. Oxford: Blackwell.

Wittgenstein, L. (1969). *On Certainty*. Oxford: Blackwell.

Originally published as "Czy posiadanie sprzecznych przekonań jest możliwe? Omówienie i krytyka argumentów za psychologiczną zasadą niesprzeczności". *Studia Semiotyczne*, *33*(2), 323–353, DOI: 10.26333/sts.xxxiii2.11. Translated by Maciej Tarnowski.

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 127–147
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.05
Article

Elżbieta Magner *

# CERTAIN ISSUES WITH THE COMMUTATIVITY OF THE CONNECTIVE "I"[1]

Summary: The conjunctive "i" is one of the four interpretations of the Polish connective "i" ("and" in English), along with the accessory, sequential and explicatory ones, which are distinguished by Olgierd Wojtasiewicz. Its characteristic feature, as in the case of the functor of conjunction in logic, is commutativity. However, this property is associated with certain problems of a stylistic or phonetic nature, problems related to building an open series of compound sentences or the occurrence of the component expressing the attitude of the speaker.

Keywords: the "i" connective, conjunction, commutativity.

Searching for natural language equivalents of logical functors remains a very topical problem. In Polish, the most commonly accepted equivalent of the functor of conjunction is the connective "i". We might, however,

* University of Wroclaw, Chair of Logic and Methodology of Sciences. E-mail: dr.em@wp.pl. ORCID: 0000-0002-9329-0136.

[1] A part of this article was presented at a conference organised in memory of prof. Jerzy Pelc, entitled *Usage and Meaning* which took place in Warsaw (8th and 9th of December 2018). The author wants to express her gratitude to Joanna Paluszkiewicz-Magner, *Ph D.* for translating this article into English as well as to Barbara Bacz (retired professor, Université Laval, Canada) for her thoughtful insight and comments.

encounter a problem here: commutativity, which is characteristic of the functor of conjunction, is not so clear in the case of the connective "i", not even for the conjunctive connective "i".

In standard university textbooks of logic, reflections concerning problems with the commutativity of the "i" connective—which is undoubtedly the basic Polish equivalent of the functor of conjunction—are often missing altogether. However, here I would like to focus on some titles which do acknowledge these problems. Wojciech Patryas observes that "the word 'i' is not a perfect equivalent of the functor of conjunction" for at least three reasons (Patryas, 1996, p.15). The first reason is that, usually, the connective "i" joins together sentences which are close in meaning. Secondly, it is considered incorrect to connect by means of the word "i" sentences which imply some type of contrast in their meaning (the connective "a" should be used in such cases in Polish). The third reason is the order of events described by the conjoined sentences and imposed by the connective, i.e. the question of sequentiality (idem.), Zygmunt Ziembiński also draws attention to the issue of sequentiality of "i": "In spoken colloquial language, the order of sentences joined with the connective 'i' may determine the temporal order of events described in these sentences [...] while the order of arguments in the truth-functor conjunction is of no importance" (Ziembiński, 2001, p. 86). According to Barbara Stanosz, the connective "i" is an equivalent of the functor of conjunction only in one of its possible meanings, the conjunctive meaning (Stanosz, 2000, p. 27). To illustrate her point the author observes that the expression "a następnie" (and then) can be the synonym of the connective "i", but that meaning automatically eliminates it from the list of the functor-of-conjunction equivalents of the factor of conjunction in logic (idem.). This line of reasoning excludes not only the sequential connective "i" from the set of the functor-of-conjunction equivalents, but also the explicatory connective "i" (linking an action which is a cause with an action which is its consequence), as well as the accessory connective "i" (linking the principal action and an accompanying action). The following question arises here: do issues concerning commutativity of the conjunctive "i" exclude some types of the conjunctive "i" from the set of the functor-of-conjunction equivalents?

The conjunctive "i" is one of the four types of "i"—together with the explicatory, sequential and accessory ones—as distinguished by Olgierd

Wojtasiewicz (1972, pp. 109–144).[2] It is characterized by the commutativity of the parts it links, by a lack of temporal or causal factors and by a balance in weight of the connected elements: one cannot distinguish between the main and the accessory ones. Because of these characteristics, the conjunctive connective "i" best resembles the functor of conjunction in logic, which is also commutative. Linguists, however, have noticed, and described, a number of problems the conjunctive connective "i" poses. The list of issues examined in this article should not be viewed as exhaustive nor should the order in which they have been presented be seen as an indication of their importance.

## Testing the Conjunctive Interpretation of the "I"

Before describing problems with the commutativity of the conjunctive "i", I would like to propose a test which will allow me to identify statements in which "i" is actually conjunctive. This test will be based on the classification proposed by Wojtasiewicz.[3] Thus, in order to identify the conjunctive "i", the sequential, explicatory and accessory interpretations must be eliminated. In my opinion, the best way of eliminating these interpretations will be to replace the "i" in question with synonymous expressions that best characterize each of the three interpretations we are trying to eliminate. Expressions characteristic for each interpretation are expressions which can be used in the same context to replace the "i" without modifying the meaning of the sentence. I assume that for the explica-

[2] Some linguists make finer distinctions than the one I presented here, but I have chosen it because it distinguishes the conjunctive "i" and its commutativity characteristic. For example, Jadwiga Wajszczuk writes about the following functions/relationships in which the "i" connective can be used: conjoining, proceeding/resulting from, cause-effect, opposition/contrast, permission, time relation. She also notices that "next to the possibility of expressing a conjoining relation there is also a possibility of expressing an adjoining relation" (Wajszczuk, 1986, pp. 123–124) and that the connective "i" may also be an indicator of a disjoining relation (idem, p. 124) This classification is equivalent to the classification of Wojtasiewicz only in two cases: the temporal function equals Wojtasiewicz's sequential interpretation and function and the cause-effect relation equals his explicative interpretation.

[3] There have been some attempts of reducing all the types of "i" distinguished by Wojtasiewicz to the conjunctive "i" alone (*vide* Magner, 2005).

tory "i" the word "dlatego" (meaning roughly the same as "that's why" or "so") would be the best choice, for the sequential "i", it would be the phrase "a potem" (and then) and as for the accessory "i", the expression "a przy tym" (and at the same time).

Let us look at some examples:

a) Artur kieruje autobusem i słucha radia [Arthur is driving the bus and listening to the radio].

In this case, without modifying the meaning of the whole sentence, we can replace "i" with "a przy tym". We are dealing here with two actions which are happening simultaneously and moreover, one of the two actions is the main action (driving the bus) while the other one is secondary, in other words, accessory (listening to the radio). Replacing the "i" with "a przy tym" emphasizes its accessory character.

a') Artur kieruje autobusem, a przy tym słucha radia [Arthur is driving the bus, and at the same time (he is) listening to the radio].

In the example a) the "i" is not conjunctive. Let us look at another sentence:

b) Artur wszedł do pociągu i odjechał [Arthur got on the train and left].

In this case, the action described by the verb to the left of the connective happened earlier than the one described by the verb to the right of the connective. A temporal element is clearly present. Arthur got on the train first and he left afterwards. That is why we can use "a potem"[4] in place of "i" thus emphasizing the sequential character of the connective.

b') Artur wszedł do pociągu, a potem odjechał [Arthur got on a train and then left].

The possibility of replacing the "i" with "a potem" defines the "i" as sequential. Only the impossibility of this replacement would allow us to

[4] Sometimes, the expression "a następnie" (and afterwards) is used to emphasize the sequential character of the connective "i", as proposed by Barbara Stanosz (2000, p.27).

determine that we are dealing with the conjunctive "i". Let us look at another example:

c) Kózka skakała i złamała nóżkę [A goat was jumping around, and (it) broke (its) leg].

In this case, the emphasis is on the cause, the effect of which is described by the verb to the right of the "i" connective. For this reason, the best expression to replace the "i" connective here is "dlatego" (that's why).

c') Kózka skakała, dlatego złamała nóżkę [The goat was jumping around, that's why (it) broke (its) leg].

The possibility of replacing "i" with "dlatego" eliminates the conjunctive interpretation.[5]

One might ask why I do not use commutativity as a criterion to determine the conjunctive character of a given "i". After all, commutativity is characteristic only of the conjunctive "i". It is very clear that we cannot talk of commutativity in the case of the sequential, the explicatory or the accessory "i". The answer is provided in the discussion to come: in certain expressions, even though the "i" appears to be conjunctive, its commutativity is problematic.

[5] However, while trying to apply this test, we might encounter some difficulties. In the examples below, I mentioned, in the brackets, the expressions characteristic for the given type of "i". No brackets or the inclusion of "i" in the brackets indicates that we are dealing with the conjunctive "i". Problematic examples have more than one element in the brackets. Examples are mainly from www.biblioteka.kijowski.pl: Modlimy się i (a przy tym, dlatego, a potem, i) śpiewamy [We pray and (at the same time, that's why, and then, and) we sing]; Tezeusz zabił go (Minotaura) i (a potem) wyszedł... po czym wsiadł na okręt i (a potem) odpłynął [Theseus killed him (the Minotaur) and (and then) went out... then embarked on a ship and (and then) sailed away]; Apollo [...] uczył strzelać z łuku i grać na cytrze [Apollo taugth how to use a bow and how to play the cithar]; (posąg Heliosa) uległ trzęsieniu ziemi i (dlatego) rozbił się na kawałki [(the statue of Helios) was brought down by an earthquake and (so) it broke into pieces); z oczu ich bił ogień i (a przy tym, i) z paszcz ciekła jadowita ślina [Fire beamed from their eyes and (while, and) poisonous saliva dripped from their mouth]; Augiasz był królem Elidy i (dlatego) miał nieprzebrane stada bydła [Augeas was the king of Elis and (that's why) he owned countless herds of cattle].

## Problems

In his discussion of the conjunctive "i", Wojtasiewicz mentions that it is the only one among all the types of "i" he distinguished which actually fulfills the condition of commutativity (1972, pp. 135–137). He also draws attention to the fact that for this reason, it is similar to the functor of conjunction in logic: "in this case, 'i' is commutative, just as in the propositional calculus" (idem, p. 135).

Let us consider an example, in which actions performed by Jan are to him of equal importance, and he applies himself to both with identical passion.

> d) Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego ($p \wedge q$) [Jan plays the accordion and teaches at the Academy of Physical Education].

Let us ask firstly whether it is possible, with no change to the meaning of the sentence, to replace the "i" with "a potem", "a przy tym" or "dlatego". If not, the sequential, accessory and explicatory interpretations are thus eliminated.

> d?) Jan gra na akordeonie a potem / a przy tym / dlatego wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and then / and at the same time / that is why he teaches at the Academy of Physical Education].

The activity mentioned to the left of the connective is not the main activity nor is the one to its right a secondary one. Both actions have the same level of importance, so the accessory interpretation is out of the question. There is no temporal relationship between the two activities (we cannot assume that he plays the accordion before teaching) and no causal relationship either (we cannot say that he plays the accordion and that's the reason why he teaches at the Academy). Thus, the only possible interpretation of the "i" here is the conjunctive interpretation. In the sentence d) mentioned above, the "i" is commutative and, therefore, "nothing prevents us from saying the following" (Wojtasiewicz, 1972, p. 135):

d') Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie ($q \wedge p$) [Jan teaches at the Academy of Physical Education and plays the accordion].

After the commutation, this particular sentence did not change its meaning, so we can say that the "i" used here is commutative ($p \wedge q \leftrightarrow q \wedge p$).[6]

However, can we really be sure that nothing else prevents the "i" from being commutative? Not quite. Wojtasiewicz himself mentions two problems: phonetic reasons (concerning mainly intonation) and stylistic reasons. Let us consider the following example:

e) Grzmiało i białe płatki śniegu tańczyły z wolna na błyszczącej powierzchni góry pokrytej lodem [It thundered and white snowflakes were dancing slowly on the glittering surface of the ice-covered mountain].

The "i" used in this sentence is a conjunctive "i". Thus, it should be possible to modify the sentence to demonstrate the commutative character of the "i" connective.

e?) Białe płatki śniegu tańczyły z wolna na błyszczącej powierzchni góry pokrytej lodem i grzmiało [White snowflakes were dancing slowly on the glittering surface of the ice-covered mountain and it thundered].

The question-mark indicates a certain problematic issue: "The final position of the verb in this sentence gives the impression that the sentence is unfinished" (Wojtasiewicz, 1972, pp. 135–136). It is so because the rule of augmenting segments is not being respected here. This rule stipulates that "segments joined by the 'i' should be placed in order from the shortest to the longest" (Bednarczuk, 1972, p. 27).[7]

[6] Wojtasiewicz draws attention to the fact that examples in which sentences preceding and following the "i" have the same subject are the most common. When we are dealing with different subjects, the word "a" instead of "i" is usually used.

[7] Krystyna Kallas and Leszek Bednarczuk also draw attention to euphonic and stylistic problems with the commutativity of the connective "i". According to Bednarczuk, the order of segments is determined "by different factors, usually of

Maciej Grochowski draws attention to another problem. He distinguishes two types of relationship which the connective "i" can suggest. In the first one, the "i" can be replaced by expressions such as "a także", "jak również", "jak też", "oraz", "tudzież", "zarówno... jak i" (which all translate roughly as: "as well as", "and also") without modifying the meaning of a given statement. This "i" is commutative. However, some conditions apply. In the second type of relationship, the "i" connective can be replaced by "następnie", "potem", "po czym" (roughly translated as: "and then", "and afterwards"). This "i" is not commutative (cf. Grochowski, 1984, pp. 280–281). I will accept that the connective "i" forming relationships of the first type is conjunctive, while the one forming relationships of the second type is sequential. The question I am trying to answer here is the following: why do certain conditions apply when the commutativity of the connective "i" in the first type of relationship (in other words, with the conjunctive "i") is concerned? An answer to this question can be found when the traditional classification into compound versus complex structure types is examined.

In the traditional classification of connective-linked sentences in Polish (sentences containing clauses linked by a connective),[8] paratactic (compound) and hypotactic (complex) sentence types are usually distinguished. The criterion of this classification is based on the type of the connective word used in a given structure.[9] Connectives characterizing

stylistic nature" (Bednarczuk, 1972, p. 24) He also mentions that "the position of clauses or conjugated (tensed) verbs in a coordinate structure can be changed without modifying the overall meaning of the sentence [...] but [...] it cannot be done in a random way" (idem, pp. 23–30). He mentions and analyses three factors which influence the order of the coordinate structure's clauses or predicates: phonetic form, rhythmical structure and semantic value. However, he makes the following remark: "From a grammatical point of view, the order of elements in a coordinate expression is irrelevant" (idem, p. 29). According to Kallas, "a close analysis shows that there are some grammatical limits as to the commutativity of these elements" (Kallas, 1993, p. 128). She adds however that "constructions in which a change in the order of elements leads to incorrectness can be seen as non-standard" (idem, p. 128).

[8] There is no term in English grammar equivalent to "zdania złożone" in Polish. This expression includes sentences which would be classified in English as compound or complex depending on the case.

[9] The terms "parataksa" and "współrzędność" are used interchangeably in Polish syntactical terminology. Stanislaw Karolak draws attention to the degree of

the first type are, for example, "i" [and], "lub" [or], "albo" [or else]; those defining the second type are "ponieważ" [because], "chociaż" [even though], "zatem" [so]. [10] Independently of this traditional classification, we also distinguish sentences containing clauses which are syntactically equivalent ("równoważne syntaktycznie" in Polish[11]), for example, two or more main clauses in a compound sentence and sentences containing clauses which are not syntactically equivalent (for example, a combination of main and subordinate clauses).

Hypotactic sentences belong to the group of sentences whose clauses are not syntactically equivalent while paratactic sentences can belong to either of the two groups. The classification is based on the analysis of a given sentence's structure. The following question arises: what are the conditions which have to be met by a connective-linked sentence ("zdanie

---

generality of these terms: "parataksa" has a more restrained meaning than "współrzędność", because it applies only to coordinate clauses (Karolak, 2003d, p. 642). Similarly, the term "hipotaksa" in Polish terminology is used interchangeably with the term "podrzędność". The difference between the two words is that "hipotaksa" usually applies to complex-compound sentence structures (Karolak, 2003c, p. 443). There are also some combinations without any connecting word, but I have consciously left them out of the present reflection.

[10] Kazimierz Polański mentions that there have been some attempts "to search for structural differences between parataxis and hypotaxis. A. M. Peskovskij proposed the criterion of commutativity here. Commutativity is possible in paratactic constructions (compound sentences—"zdania złożone parataktycznie", in Polish), but it is supposed to be impossible in cases of hypotaxis" (Polański, 1967, p. 26). This criterion, however, is not quite reliable, for, as Polański also observes "Generally speaking, parataxis allows commutativity of segments [...]. But this commutativity of segments is usually limited by some additional features of each segment" (idem, p. 29).

[11] Grochowski mentions that this expression was originally used by Andrzej Bogusławski who introduced it in his book *Semantyczne pojęcie liczebnika i jego morfologia w języku rosyjskim* [The Semantic Concept of Numerals and Their Morphology in Russian] (Grochowski, 1974, p. 241). According to Bogusławski, "Between phrases, as well as between a phrase clause and parts of another phrase clause (a word, a combination of words or a part of a word, which might be a word itself), a particular relationship can sometimes be observed, as they can freely change places if a specific intonation line is applied in the enumerated sequence. We shall name this relation a relation of syntactic equivalence" ("stosunek równoważności syntaktycznej" in Polish; see Bogusławski, 1966, p. 40).

złożone" in Polish) for its elements to be syntactically equivalent ("równoważne syntaktycznie" in Polish)?

The main criterion for the analysis of a compound sentence stipulates that clauses ("zdania składowe" in Polish) can be added one to another freely and their combination is not limited to a pair of clauses but constitutes an open series. (Grochowski, 1984, p. 240). That means that the syntactic relationship among the connective-linked elements (the constituent clauses) is based solely on enumeration. In such cases, "from the point of view of the syntactical structure of the whole sentence, the order of the enumerated simple clauses ("zdania proste" in Polish) is not relevant, and they can freely exchange their places; in other words, they are commutative" (idem, p. 241). However, a specific intonation contour is observed in the enumeration process, a fact noticed by Bogusławski as well as by Grochowski (Bogusławski, 1966, p. 40; Grochowski, 1984, p. 241).

The connective "i" which is the object of this study is a paratactic connective. As such, it can connect both syntactically equivalent ("równoważne syntaktycznie" in Polish) and syntactically non-equivalent elements. Although we do encounter certain problems, the "i" in its conjunctive interpretation is essentially commutative. That means that the segments it connects can freely exchange places. The unconstrained ordering of clauses in a compound sentence is characteristic of syntactically equivalent components. Therefore we can say that the conjunctive "i" is commutative when it connects syntactically equivalent components ("independent clauses" in the English grammar terminology).

The following question arises, however: can we assume that the connective "i" of the first relationship type (in which the "i" is, on certain conditions, commutative and can be replaced by the phrases "a także", "jak również", "jak też", "oraz", "tudzież", "zarówno... jak i" (they all roughly translate as "also" or "as well as") with no meaning change to the expression as a whole) is really conjunctive? Let us recall that Grochowski does not mention either the "i" which could be defined as accessory nor the "i" we could classify as explicatory. If these two types were included in the relationship of the first type, they would not form an open series and they would not be commutative. However, this observation seems irrelevant at this point because expressions characteristic of the accessory "i" (a przy tym) and of the explicatory "i" (dlatego) are not included in his list of phrases that can substitute the connective "i" in his first type of conjunctive relationship. It appears, then, that the conjunctive "i" can also produce combinations that will not be syntactically equivalent, a situa-

tion which could, for instance, be attributed to the absence of a specific enumeration intonation contour in a given case. Thus, to ensure the commutativity of the "i", a test excluding the explicatory and the accessory interpretations must be applied, with due consideration of the specific intonation contour in the case of an open-series enumeration (by means of the connective "i").

Syntactic equivalence of independent clauses allows us to freely add new ones to the ones already there so that the connective-linked segments constitute an open series which is not limited to just one a pair of clauses.[12] Let us consider the following example:[13]

f) Śpiewam w operze i gram na giełdzie [I sing in the opera and (I) gamble on the Stock Exchange].

f+) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

f++) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie, i kibicuję Monice Soćko [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko].

---

[12] Paratactical combinations combine clauses which are syntactically non-equivalent as well as clauses which are syntactically equivalent, while hypotactical combinations contain only syntactically non-equivalent segments/clauses. Polański remarks that one of the criteria distinguishing parataxis from hypotaxis is the maximum possible number of combined segments. "According to some authors, a parataxis relationship allows for more segments to be linked together, while hypotaxis permits only two segments" (Polański, 1967, p. 28). In the present analysis, this limitation is irrelevant.

[13] Among the basic combinations of a growing enumerative series, Jadwiga Wajszczuk lists the following possibilities of compound sentences with the connective "i": "(i) the connective occurring before the last segment, (ii) the connective before each segment except for the first one, (iii) the connective occurring once before any of the segments except for the first and the last one (iv) the connective before each segment, including the first one" (Wajszczuk, 1997, p. 91).The author observes that "the type (i) is characteristic of an enumerative series" (idem, p. 92). My example belongs to her type (ii). The first type gives the impression of the enumeration being finished (closed) while the second type suggests an unfinished series. Type (ii) illustrates the case of an open series better.

f+++) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie i kibicuję Monice Soćko, i... [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko, and...[14]]

The question of whether this open series is somehow limited remains unanswered. Grochowski suggests certain limits following from "the limits of human perception and our ability to memorize" (Grochowski, 1984, p. 244).

Considering the possibility of an open series, we should distinguish between the connective "i" and the connective "I... i" (which roughly translates as "both... and also").[15] The "I... i" connective is not, contrary to what we might suppose, just a stylistic variant of the "*p* i *q*" because it excludes the explicatory interpretation (Wojtasiewicz, 1972, p. 137). Typically, it will be interpreted as the conjunctive or the sequential connective. This applies not only to the doubled "i" ("I... i") but also to the structure "I... i" followed by one or more "i". Thus, we have here a connective which can be used to start a series of enumerated segments/clauses and which, through repetition, emphasizes the enumerative character of a given expression. In the example (g) below, the connective "i" (of examples f, f+, f++, f+++) has been replaced by "I...i".[16]

---

[14] It has to be remarked that conjunctive-connective enumeration in English requires an overt presence of the subject in each of the independent clauses that are being conjoined, even if all of these clauses have the same subject. Polish, which is a no-overt-subject language, prefers and sometimes requires an overt conjunctive connective in a series of enumerated events expressed by conjugated verbs alone. In English, it is possible (and often preferred) to link a series of independent events in enumeration clauses (i.e. conjugated verbs expressing events of equal importance) in a series by means of a comma (instead of e.g. the connective "and"). That's why English translations of the Polish examples might have to be analysed syntactically using different grammatical classifications and terminology.

[15] Treating the "I...i" connective as distinct from the "i" connective has the advantage of eliminating a theoretical difficulty noticed by Jadwiga Wajszczuk, which is that, as a matter of fact, the "i" before the first segment is not a connective and not even a particle (Wajszczuk, 1997, p. 93).

[16] In English, the connective "and" before the first segment of a series is impossible. The phrase "Both... and... and..." can be used, but the open-series compound sentences are grammatical only when the subject remains the same. However, it is not a perfect equivalent of the "I... i... i..." connective in Polish because

g) I śpiewam w operze, i gram na giełdzie [I both sing in the opera and gamble on the Stock Exchange / I sing in the opera, and (I) also gamble on the Stock Exchange].

g+) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

g++) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie, i kibicuję Monice Soćko [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears, and (I) am a fan of Monika Soćko].

g+++) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie i kibicuję Monice Soćko, i... [I sing in the opera and (I) gamble on the Stock Exchange and (I) feed polar bears and (I) am a fan of Monika Soćko, and...].

In examples f–f+++ and g–g+++, the connective "i" as well as the connective "I...i" are conjunctive. It seems, however, that the connective "I...i" emphasizes the open character of the series more clearly.

The conjunctive interpretation, both for the connective "i" and the connective "I...i", and independently from the number of repetitions, allows for a combination of syntactically equivalent clauses, and, consequently, it guarantees the possibility of a free exchange of the position of each segment in the sequence, regardless of their number. Let us consider the following example:

f+) Śpiewam w operze i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera, and (I) gamble on the Stock Exchange, and (I) feed polar bears].

g+) I śpiewam w operze, i gram na giełdzie, i dokarmiam białe niedźwiedzie [I sing in the opera and (I) gamble on the Stock Exchange and (I) feed polar bears].

---

the first two elements seem to be more closely linked to one another than the following elements of the series.

Let $p$ stand for the first clause, $q$ for the second and $r$ for the third one. Sentences represented by $p$, $q$ and $r$ are syntactically equivalent, so we can freely exchange their positions in the sequence. The following combinations are thus possible: $p$ i $q$ i $r$, $p$ i $r$ i $q$, $q$ i $p$ i $r$, $q$ i $r$ i $p$, $r$ i $p$ i $q$, $r$ i $q$ i $p$ (and for the "I...i" connective: I $p$ i $q$ i $r$, I $p$ i $r$ i $q$, I $q$ i $p$ i $r$, I $q$ i $r$ i $p$, I $r$ i $p$ i $q$, I $r$ i $q$ i $p$). Since the relationship between $p$, $q$ and $r$ is based on enumeration only, each of these combinations retains the original meaning of the first combination $p$ i $q$ i $r$ (I $p$ i $q$ i $r$).

Another problem arises concerning the occurrence, in a given sentence, of an element expressing the attitude of the speaker as to the truth or falsehood (fallacy) of a given statement. This element expresses assertoric modality or assertion-suspending modality (non-assertoric modality). "Suspending assertion means that the speaker is not expressing his opinion as to the truthfulness of a predicative-argumentative statement, but is talking about its greater or lesser probability" (Karolak, 1984, p. 27). Jerzy Bralczyk remarks that between a complete assertion and a negation of a given statement, one can distinguish three basic "degrees of probability" (Bralczyk, 1978, p. 31).[17] The highest level will be characterized by such expressions as: "na pewno" (for sure), "jestem pewien" (I am sure), "z pewnością" (surely), "niezawodnie" (certainly), "niewątpliwie" (undoubtedly), "bez wątpienia" (without any doubt), "z całą pewnością" (with certainty) (cf. Bralczyk, 1978, pp. 31–32). The second degree is characterized

[17]A similar remark can be found in a book by Jerzy Bartmiński and Stanislawa Niebrzegowska-Bartmińska, *Tekstologia*, in which the authors write that between assertion ("it is true that...") and negation ("it is false that...") we have a whole range of possibilities which weaken the assertion or even suspend it. All these expressions from assertive to negative ones can be named "operators" (cf. Bartmiński, Niebrzegowska-Bartmińska, 2009, pp. 172–173). According to Kazimierz Ajdukiewicz in *Logika pragmatyczna* [Pragmatic Logic], "When someone expresses his conviction by means of a sentence, we can say that he accepts this sentence as true" (Ajdukiewicz, 1974, p. 105). We can "accept a sentence with more or less certainty" (idem, p. 105). Thus, there is a whole range of possibilities, where the highest degree of acceptance will be expressions like "z całą pewnością" or "z całą stanowczością" (both roughly mean "with utmost certainty"; idem, pp. 113–119). Let me add as well that Ajdukiewicz distinguished between logical and psychological probability. "The psychological probability is the degree of certainty with which we actually accept the truthfulness of a given sentence. The logical probability of a given sentence is the degree of certainty with which we have the right to accept it as true" (idem. p.119).

by expressions such as "chyba" (possibly), "przypuszczam" (I suppose), "sądzę" (I consider), "myślę" (I think), "wierzę" (I believe), "spodziewam się" (I expect), "pewnie", "pewno", "zapewne" (all three mean, roughly speaking, probably), "raczej" (rather), "przypuszczalnie" (possibly), "prawdopodobnie" (probably) (idem, pp. 31, 35). Expressions such as "może" (maybe), "możliwe" (it's possible), "jest prawdopodobne" (it's probable), "istnieje prawdopodobienstwo" (there is a probability), "istnieje możliwość" (there is a possibility), "móc", "może", "mógł" (can / could), "być może" (maybe) (idem, pp. 31, 36) are characteristic of the lowest degree of probability.[18] All these modal operators introduce the *dictum.*[19]

Let me start my reflections with the following sentence:

d) Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and teaches at the Academy of Physical Education].

The attitude of the speaker concerning this whole compound sentence is assertive. "Assertoric modality does not have a specific verbal representation (a word or a phrase that expresses it overtly), but is implicit in the sentence (we say that it has a zero factor)" (Karolak, 1984, p. 27). How-

[18] It is difficult, with no context provided, to translate accurately all these expressions into English while taking into account the degree of assertiveness of the speaker.

[19] In the *Encyklopedia językoznastwa ogólnego* [Encyclopedia of General Linguistics], we read the following "According to the logico-semantic analysis, a sentence is divided into two basic components: the representation component, ("składnik przedstawieniowy" in Polish) or *dictum,* and the modality component ("składnik modalny" in Polish) or *modus*. The representation component presents the state of things while the modality component expresses the speaker's attitude of the speaker to this state of things". (Karolak, 2003b, p. 121). This situation can be illustrated by the formula $M(D)$, where $M$ stands for *modus* and $D$ stands for *dictum* (idem.) Let us consider an example of two different attitudes towards the same dictum: "*Prawdopodobnie* dzisiaj są urodziny babci Gertrudy" [Probably today is Grandmother Gertrude's birthday]; "*Zapewne* dzisiaj są urodziny babci Gertrudy" [Most probably today is Grandmother Gertrude's birthday]; "*Z pewnością* dzisiaj są urodziny babci Gertrudy" [Surely today is Grandmother Gertrude's birthday].

ever, it can also be expressed explicitly[20] and then, the statement would read as follows:

> d1) Prawdą jest, że Jan gra na akordeonie i prawdą jest, że wykłada w Akademii Wychowania Fizycznego [It is true that Jan plays the accordion and it is true that [he] teaches at the Academy of Physical Education].

Sentences d) and d1) have the same meaning, and so they are semantically equivalent. What differentiates them is the way they are formulated: by revealing assertion, we do not act without a goal, but in order to put emphasis on the truthfulness of the *dictum*. Let me also add that "the semantic structure of basic sentences that are represented on the surface by affirmative sentential expressions ('wyrażenia zdaniowe' in Polish), is such that the predicative-argumentative content is combined with the modal assertoric content and is subordinated to it" (Karolak, 1984, p. 27).

Let us now add to our example d) an overt expression of non-assertoric modality, the word "prawdopodobnie" (probably). "Modal non-assertoric predicates contain specific overt factors (non-zero verbal segments) in their linguistic expressions, so they are expressed explicitly through them" (idem, p. 27). In example d2), each basic sentence (i.e.

---

[20] Stanisław Karolak writes that "the assertoric element [...] could be expressed explicitly by means of the expression 'prawdą jest, że...'" (it is true that....) (Karolak, 2002, p. 225). He also adds that there are other possibilities of expressing assertoric modality: "jestem pewien, że..." or "jestem przekonany, że..." [I am sure, I am convinced that...]. (idem.) In *Podstawowe struktury składniowe języka polskiego* [Basic Syntactic Structures in Polish], he mentions the expression "jestem przekonany, że prawdą jest to, iż *p*" [I am convinced that it's true that *p*] (Karolak, 2002, p. 225). However, Jerzy Bralczyk considers that expressions "jestem pewien, że..." or "jestem przekonany, że..." [I am sure, I am certain, I am convinced that...] actually weaken assertiveness and he places them in a group of operators which have the highest degree of probability but are not assertoric. "We are more likely to acknowledge that the equivalent of considering something as true is not so much certainty but rather knowledge" and then the author argues that "certain expressions, such as "Nie wiem, ale jestem pewien" [I don't know but I am sure] as in the sentence : "Wprawdzie nie wiem, ale jestem pewien, że tak" [Though I don't know, I am sure that yes] (Bralczyk, 1978, p. 11). Taking into account the above remarks, I shall limit myself to the expression which I find incontestably linked to assertiveness, that is "prawdą jest, że..." [it is true that...].

each independent clause, which is an affirmative assertion), is preceded with the same modal operator, the word "prawdopodobnie" (probably):

d2) Prawdopodobnie Jan gra na akordeonie i prawdopodobnie wykłada w Akademii Wychowania Fizycznego [Probably Jan plays the accordion and probably (he) teaches at the Academy of Physical Education].

It seems that a single occurrence of the modal operator is sufficient enough to convey the same meaning:

d3) Prawdopodobnie Jan gra na akordeonie i wykłada w Akademii Wychowania Fizycznego [Probably Jan plays the accordion and teaches at the Academy of Physical Education].

Both in the case of sentence d) and in sentence d1) where assertion has an explicit overt expression we can talk about commutativity:

d') Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie [Jan teaches at the Academy of Physical Education and (he) plays the accordion].

d1') Prawdą jest, że Jan wykłada w Akademii Wychowania Fizycznego i prawdą jest, że gra na akordeonie [It is true that Jan teaches at the Academy of Physical Education and it is true that (he) plays the accordion].

Similarly commutative will be example d2), in which non-assertoric modality is expressed explicitly before each segment of the compound sentence:

d2') Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego i prawdopodobnie gra na akordeonie [Probably Jan teaches at the Academy of Physical Education and probably (he) plays the accordion].

The sentence will still be commutative when the modality operator is placed in front of the whole compound sentence:

d3') Prawdopodobnie: Jan wykłada w Akademii Wychowania Fizycznego i gra na akordeonie [Probably: Jan teaches at the Academy of Physical Education and (he) plays the accordion].

However, we encounter a problem when the modal operator is different in each of the two clauses making up the compound sentence:

d4) Jan gra na akordeonie i prawdopodobnie wykłada w Akademii Wychowania Fizycznego [Jan plays the accordion and probably (he) teaches at the Academy of Physical Education].

In d4), the first segment is assertive, but the second one is not. Therefore, is this compound expression commutative? Since we have assumed that the modal operator placed in the sentence-opening position applies to the whole compound sentence or expression, we have a problem here: after the commutative transformation, the modality operator will apply to the whole sentence while in the original, pre-commutated sentence (see (d4)) it has applied only to the sentence which it directly preceded. A good solution would be to place a comma before the connective "i". Then, the operator would apply only to the sentence it applied to originally.

d4') Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego, i gra na akordeonie [Probably Jan teaches at the Academy of Physical Education, and (he) plays the accordion].

We can also express assertive modality explicitly in this example:

d4'*) Prawdopodobnie Jan wykłada w Akademii Wychowania Fizycznego i prawdą jest, że gra na akordeonie [Probably Jan teaches at the Academy of Physical Education, and it is true that (he) plays the accordion].

We see a problem of a different kind here, however. This problem is caused by the conventional way of ordering segments. "The order of segments reflects, above all, the hierarchy of importance of the segment contents" (Kallas, 1993, p. 133).

The first segment is normally reserved for expressing content that is considered more important, the first position is more prestigious, sometimes the first position is chosen for reasons of courtesy. It seems, then, that, if different degrees of assertiveness occur in a compound sentence (as in example d4), the first segment should be the one with the higher

assertiveness or higher probability. A certain hierarchy should be communicated by the ordering of the "i"-connected components: from the segment characterized by the highest probability to the one whose probability (degree of acceptance as true) is the lowest, so the operator of assertoric modality comes first and is followed by a non-asertoric operator. Of course, predicates in question should also be sensitive to this hierarchy. For this reason, I conclude that sentences d4') or d4'*) do not have the same meaning as sentence d4). Consequently, with different degrees of assertiveness in place commutativity of the conjunctive "i" has been, in a certain sense, cancelled.

## Conclusion

The connective "i" in its conjunctive interpretation is most closely related to the functor of conjunction in logic because of the commutativity feature of arguments (in a logical conjunction). However, in natural-language conjunctive expressions certain problems with the commutativity of "i" connected clauses do occur in the areas of sentence intonation (sentence's intonation contour), style, rule of augmenting segments, and because of the existence of phrases expressing the speaker's attitude as to the truth or falsehood of a given statement.

## REFERENCES

Ajdukiewicz, K. (1974). *Logika pragmatyczna* [Pragmatic Logic]. Warszawa: Państwowe Wydawnictwo Naukowe.

Bartmiński S., Niebrzegowska-Bartmińska, J. (2009). *Tekstologia*. Warszawa: Państwowe Wydawnictwo Naukowe.

Bednarczuk, L. (1972). Uwagi o kolejności współrzędnych członów wypowiedzi. In J. Zaleski (Ed.), *Symbolae Polonicae in Honorem Stanislai Jodłowski* (pp. 23–30). Wrocław: Zakład Narodowy im. Ossolińskich.

Bogusławski, A. (1966). *Semantyczne pojęcie liczebnika i jego morfologia w języku rosyjskim.* Wrocław: Zakład Narodowy im. Ossolińskich.

Bralczyk, J. (1978). *O leksykalnych wyznacznikach prawdziwościowej oceny sądów*. Katowice: Uniwersytet Śląski.

Grochowski, M. (1984). Składnia wyrażeń polipredykatywnych. In Z. Topolińska (Ed.), *Gramatyka współczesnego języka polskiego. Składnia* (pp. 213–299). Warszawa: Państwowe Wydawnictwo Naukowe.

Karolak, S. (2003a). Asercja. In K. Polański (Ed.), *Encyklopedia językoznawstwa ogólnego* (p. 60). Wrocław: Zakład Narodowy im. Ossolińskich.

Karolak, S. (2003b). Dictum. In K. Polański (Ed.), *Encyklopedia językoznawstwa ogólnego* (pp. 121–122). Wrocław: Zakład Narodowy im. Ossolińskich.

Karolak, S. (2003c). Hipotaksa. In K. Polański (Ed.), *Encyklopedia językoznawstwa ogólnego* (pp. 236, 442–442). Wrocław: Zakład Narodowy im. Ossolińskich.

Karolak, S. (2003d). Parataksa. In: K. Polański (Ed.), *Encyklopedia językoznawstwa ogólnego* (pp. 420, 641–642). Wrocław: Zakład Narodowy im. Ossolińskich.

Karolak, S. (2002). *Podstawowe struktury składniowe języka polskiego*. Warszawa: Slawistyczny Ośrodek Wydawniczy.

Karolak, S. (1984). Składnia wyrażeń predykatywnych. In: Z. Topolińska (Ed.), *Gramatyka współczesnego języka polskiego. Składnia* (pp. 11–211). Warszawa: Państwowe Wydawnictwo Naukowe.

Kallas, K. (1993). *Składnia współczesnych polskich konstrukcji współrzędnych*. Toruń: Wydawnictwo UMK.

Magner, E. (2005). Koniunkcja w ekstensjonalnej logice, a spójnik międzyzdaniowy „i" w języku naturalnym. *Studia Philosophiae Christianae*, *1*, 101–114.

Parandowski J. (n.d.). *Mitologia*. Retrieved from: http://biblioteka.kijowski.pl

Patryas, W. (1996). *Elementy logiki dla prawników*. Poznań: „Ars boni et aequi".

Polański, K. (1967). *Składnia zdania złożonego w języku górnołużyckim*. Wrocław: Zakład Narodowy im. Ossolińskich.

Stanosz, B. (2000). *Wprowadzenie do logiki formalnej*. Warszawa: Wydawnictwo Naukowe PWN.

Wajszczuk, J. (1986). Spójnik jako zobowiązanie. In: T. Dobrzyńska (Ed.), *Teoria tekstu* (pp. 117–137). Wrocław: Zakład Narodowy im. Ossolińskich.

Wajszczuk, J. (1997). *System znaczeń w obszarze spójników polskich: wprowadzenie do opisu*. Warszawa: Katedra Lingwistyki Formalnej UW.

Wojtasiewicz, O. (1972). Formalna i semantyczna analiza polskich spójników przyzdaniowych i międzyzdaniowych oraz wyrazów pokrewnych. *Studia Semiotyczne*, *3*, 109–144.

Ziembiński, Z. (2001). *Logika praktyczna*. Warszawa: Wydawnictwo Naukowe PWN.

Originally published as "Pewne problemy z komunikatywnością 'i' koniunkcyjnego". *Studia Semiotyczne*, *33*(2), 355–368, DOI: 10.26333/sts.xxxiii2.12. Translated by Joanna Paluszkiewicz-Magner.

Studia Semiotyczne—English Supplement, t. XXXI (2020), s. 149–177
ISSN 2451-2745
DOI: 10.26333/stsen.xxxi.06
Article

Janina Mękarska [*], Maciej Witek [**]

# ECHO AND PRETENCE IN COMMUNICATIVE IRONY[1]

Summary: In the article we present a model of communicative irony formulated within the framework of speech act theory. We claim that acts of verbal irony are special cases of phenomena that John L. Austin referred to as "etiolations of language". After discussing the concept of communicative irony understood in the spirit of Mitchell S. Green's expressive communication model, we propose to develop the Austinian idea of etiolation and show how cases of etiolative use of language parasitize the mechanisms of its serious or ordinary applications. In particular, we argue that echoing and overt pretence are two etiolation techniques that allow the sender to express a negative attitude towards contextually available mental or linguistic representations. We also show that the proposed model allows the explanation of verbal forms of communicative irony.

[*] University of Szczecin, Institute of Philosophy and Cognitive Science. E-mail: janka.mekarska@gmail.com. ORCID: 0000-0002-7390-5623.

[**] University of Szczecin, Institute of Philosophy and Cognitive Science. E-mail: maciej.witek@usz.edu.pl. ORCID: 0000-0002-0462-1678.

[1] The work was created thanks to the financial support of the National Science Centre in Krakow as part of research grant No. 2015/19/B/HS1/03306. The authors thank prof. Mitchell S. Green, who was a guest of the Cognition & Communication Research Group at the University of Szczecin in October and November 2019, for inspiring discussions on the ideas presented in this article. The authors also thank the Reviewer for valuable comments and suggestions, as well as Oliwia Lachowska and Dr. Agnieszka Szlachta for language correction and helpful comments on a previous version of the article.

KEYWORDS: irony, echo, pretence, speech acts, language etiolation, expressive communication.

## 1. INTRODUCTION

The purpose of this article is to describe the function of two mechanisms in ironic utterances or, more broadly, ironic acts of intentional communication (Green, 2017): echo and pretence. The first of these is highlighted by Dan Sperber and Deirdre Wilson, who propose the echoic theory of irony (Sperber, 1984; Wilson, 2006; Wilson, Sperber, 2012). Meanwhile, according to Herbert H. Clark and Richard J. Gerrig (Clark, Gerrig, 1984), the second of these mechanisms plays a key role in the functioning of ironic utterances. The theory of irony as pretence formulated by these researchers, with overt pretence being involved (Dynel, 2014, p. 621), i.e. with the intention that it be recognized by the recipient (Clark, Gerrig, 1984, p. 122), functions in literature as one of the main competitors of the model proposed by the authors of the relevance theory (Clark, Gerrig, 1984; Sperber, 1984; Wilson, Sperber, 2012).

In this article, however, we assume that the above-mentioned approaches—i.e. the echoic model of irony and the model of irony as overt pretence—are complementary to each other, not competitive. In our opinion, echoing and overt imitation are two communication techniques used in language applications that John L. Austin called parasitic and classified as cases of etiolations of language (Austin, 1975, pp. 22). We also assume that utterances considered in the literature as exemplary cases of verbal irony (Sperber, 1984; Wilson, 2006; Wilson, Sperber, 2012) or, more broadly, communicative irony (Green, 2017) have an expressive function. The ironic speaker expresses a negative attitude—distance, mockery, contempt, etc.—to the object of her irony determined by means of one of the language etiolation techniques. In other words, she creates an ironic effect that consists of presenting in an unfavourable light—e.g. ridicule, trivialisation, etc.—some contextually available thoughts, statements, opinions, hopes, fears or other propositional attitudes. In our opinion, verbal and non-verbal acts of intentional communication that meet the above characteristics do not create a homogeneous class due to the mechanisms used in them: some of them are echoic, others are associated with pretence and parody, and others use a combination of both techniques. These types of acts, however, have a common property: the mech-

anisms of linguistic etiolation used in them simultaneously serve to determine the object of irony and express an ironic attitude towards it. In other words, the two communication activities at stake—the indication of the object of irony and expression of an attitude towards it—are not really different in the sense in which reference and predication understood as aspects of the propositional act in John R. Searle (1969) are independent and realistically different. Echoing and explicit pretence are techniques that enable the performance of communicative acts or, more specifically, acts of expressive communication (Green, 2007, 2017; Bar-On, 2013), in which we simultaneously point to a certain object and express our attitude towards it. Although the two mechanisms involved—that is, indication and expression—can be distinguished conceptually, they are only abstract aspects of one whole.

It is worth emphasizing that one of the reasons for writing this article is the desire to develop the ideas on irony formulated by Professor Jerzy Pelc. In the paper *O użyciu wyrażeń* [On Using Expressions] we read:

> Ironic and anti-ironic expressions are explicit or implicit. Irony is the actual rebuke hidden under a transparent veil of alleged praise, anti-irony is the opposite—under the guise of a negative rating it contains a positive. Thus, for example, the word "beautiful" is used ironically, when in fact it means—quite strictly speaking—the same as "ugly" and the word "terrible" is then anti-irony, when it actually means "nice" or "pretty". (Pelc, 1971, p. 180)

Professor Pelc proposes a variant of the theory of irony as a stylistic trope. We argue against this theory, rejecting, among other things, its idea of ironic meaning replacing literal meaning. Pelc, however, uses the category of "rebuke hidden under a transparent veil of alleged praise", which we use to describe one of the etiolation techniques used to evoke and present the object of irony in an unfavourable light.

This article consists of several parts. In section 2, we begin with a determination of conceptual issues. We explain (2.1) why in our considerations we use, after Mitchell S. Green (2017), the phrase "communicative irony" and not "verbal irony" and, consequently, the term "ironic act of intentional communication" instead of the shorter "ironic utterance"; we also explain (2.2.) the idea of language etiolation—including the difference between parasitic and serious uses of language—by juxtaposing it (2.3.) with the dominant paradigm in which phenomena excluded by Austin from the sphere of serious uses of language are described and explained

using the category of conversational implicature. Then, in section 3, we present short reconstructions of the echoing theory of irony (3.1) and the theory of irony as pretence (3.2). Section 4 is devoted to discussing ironic acts of communication that employ various techniques of language etiolation. In section 5, we summarize the results of these considerations and set the direction for further research on irony understood as a form of linguistic etiolation.

## 2. Conceptual Issues

### 2.1. Communicative Irony and Verbal Irony

Communicative irony—both verbal and non-verbal—is one of the three main types of irony (Green, 2017). The other two types are dramatic irony and situational irony. We shall call dramatic irony a situation in which an observer, e.g. in a theatre audience, has information relevant to the main character of the play, but the observed person is not aware of it, and as a result makes the wrong choice. Situational irony is closely related to the phenomenon of absurdity. Absurdity is defined as the property of a phenomenon that perversely thwarts a certain non-moral norm. As Green notes in *Irony as Expression (of a Sense of the Absurd)* (2017), there is a specific kind of absurdity associated with glaring failure to meet certain accepted expectations, norms, standards and other psychological attitudes of the speaker. An example of such a violation is the detention of the president of the organization Mothers Against Drunk Driving while under the influence of alcohol. Every driver who drives a motor vehicle while under the influence of alcohol breaks a non-moral norm—a legal norm—but the president of the above-mentioned organization breaks it in a particularly glaring way. The point is that it does not meet a certain additional expectation that people should behave in accordance with the values and norms that they officially and loudly promote, i.e. they should strengthen their message with a personal example.

In the work mentioned above, Green proposes an original approach to communicative irony as an expression of the sense of absurdity. In his opinion, the ironist externalizes his sense of absurdity caused by the ironic situation, creating a communicative act that is an example of situational irony. In the case of communicative irony, therefore, says Green, there are two ironic situations, the second being created by the ironist and embodying or expressing his sense of absurdity caused by the first. In

other words, communicative irony is used to create situational irony: we can do this by expressing our sense of absurdity through reducing the situation in which the sender finds herself to situational irony. For example, imagine a situation where Anna and Piotr are celebrating their wedding anniversary. On this occasion, they go for a romantic dinner at a restaurant. Anna orders pumpkin soup, but the waiter bringing the order to the table pours hot soup on Anna's elegant dress. To express an ironic attitude to the event—which creates situational irony, because the waiter should, because of his profession, be especially careful that his dishes do not end up on the customers' clothes—Anna can react in several ways. For example, she can make eye contact with the waiter, smile wryly and raise her thumb. She can also do the same, except that instead of putting her thumb up she says the following words:

(1) Nice job!

We say, after Green, that in both cases Anna expresses her sense of absurdity related to the unfulfilled expectation that every person going to a restaurant has, i.e. that the waiter will serve the soup without pouring it on the customer. Both communicative behaviours can be described as ironic, but the first of them is made without using words, which is why we cannot classify it as verbal irony. This means that the name "verbal irony" is not broad enough for this group of phenomena. In connection with the above, Green proposes changing this term to "communicative irony". Thanks to such a procedure, we can expand the scope of irony to include communicative behaviours that instead of words involve, for example, gestures or facial expressions. Another argument in favour of using the term proposed by Green is the fact that some artistic works, such as photographs or paintings, may be ironic.

Consideration of whether the model of communicative irony proposed by Green is adequate, we postpone to another occasion. For the purposes of this article, however, we accept two ideas that play a key role in it. First of all, we believe that for the reasons presented by Green, it is better to use the phrases "communicative irony" and "ironic act of intentional communication" instead of the terms "verbal irony" and "ironic utterance". Secondly, we assume that acts of ironizing are communicative, as they are cases of expressive communication in the sense of Green; according to him, expression consists not only in showing, but also in signalling an introspectively available mental state (Green, 2007; cf. Witek, 2019b; forthcoming).

A certain trait of the body or behaviour of the organism reveals or shows its internal state in the sense that it allows its recognition by competent observers. For example, my blush allows others to recognize my embarrassment, and my smile reveals my joy. In contrast to a blush—says Green—a smile additionally signals the disclosed mental state, and, therefore, has a communicative character. This does not mean that it is an act of "speaker meaning" in the sense of Grice (1989). There is a model of communication as signalling and a specific concept of signal as a physiological or behavioural feature of the body designed to convey true or false information about certain states of affairs (Green, 2007). The point is that the permanent disposition to smile in moments of joy was designed by natural selection and functions as a stable element of our behavioural phenotype due to its function of providing information about our internal state to others. Meanwhile, a blush is formed as a result of vasodilatation in response to a situation that may require escape. In other words, the mechanism that causes facial blushing was designed by natural selection, not so much because of the blush's ability to convey information about embarrassment, but because of the increase in the amount of oxygen delivered to the muscles.[2]

In summary, the act of expression in Green's sense is communicative, since it is a case of signalling. A signal is a physiological or behavioural feature of an organism that has been designed for its "ability to convey information" (Green, 2007, p. 49), including incorrect information. In particular, we shall say about the expressive signal that it is designed to convey information—true or false—about the introspectively available internal state of the signal creator. The design in question may be the result of either natural selection or current intentions behind the act of expression under consideration. Due to the latter eventuality, we can speak of irony that it is an act of expressive communication, and more precisely an act whose sender intends to express his attitude towards the object of irony by means of ironic expression.

[2] According to Green (2007, p. 27), it cannot be ruled out that in the light of future research it will be necessary to consider blushing as a signalling event. In other words, whether the blush on the face is a case of expression or just a case of mere showing is an empirical issue. However, due to the need to illustrate the specific distinctions discussed here, we assume that a blush, unlike a smile, is not a signal.

### 2.2. Language Etiolation and Serious Uses of the Language

The proposed considerations are underpinned by the assumption that model examples of echoic and parodic utterances—including echoic and parodic forms of communicative irony—belong to a class of phenomena that Austin called "parasitic" or "etiolated" applications of language. We shall consider this last category more closely.

According to Austin, the aforementioned ways of using language—among which, admittedly, he does not mention irony—occur in "sea-changed" circumstances or situations of speech. "Language in such circumstances is in special ways—intelligibly—used not seriously, but in ways parasitic upon its normal use—ways which fall under the doctrine of the etiolations of language" (Austin, 1975, p. 22).[3] The doctrine in question distinguishes serious and direct applications of language mechanisms from parasitic and, in a sense, instrumental applications. Situations of the first kind can be called communication in the ordinary mode, and situations of the second kind—communication in the etiolation mode.

To illustrate how communicative mechanisms work in the first of these modes, let's consider a situation in which, during an ordinary conversation, I am serious about the following words:

(2) Jan is a good friend.

By uttering sentence (2), I refer to Jan and attribute to him the property of being a good friend. In other words, I am using words to build a linguistic representation of a state of affairs, that is, as Austin puts it, I perform a "locutionary act, which is roughly equivalent to uttering a certain sentence with a certain sense and reference, which again is roughly equivalent to 'meaning' in the traditional sense" (1975, p. 109); creating

[3] In the PWN online encyclopaedia, etiolation is defined as "changes in appearance—habit and colouring of plants, caused by a shortage or lack of light". In other words, the etiolation of a plant is caused by the fact that the typical mechanisms of its physiology function in an unusual environment, i.e. an environment in which there is a shortage or lack of light. Similarly, the etiolation of a certain utterance is a consequence of the fact that the typical mechanisms governing the use of spoken words and the grammatical structure used—and possibly other elements of the language, e.g. prosodic aspects—operate in an unusual environment, which Austin calls "non-serious" (Austin, 1975, p. 22).

such a meaningful locution, I use mechanisms in which "demonstrative conventions" and "descriptive conventions" play the main role (Austin, 1975, p. 122; Witek, 2011, p. 31). It is also worth adding that due to the grammatical mode of sentence (2) and the focus accent applied during its utterance, the considered locution has some illocutionary potential. For example, after meeting the conditions set out in the relevant procedure, more on which in the next section—it may establish a case of either classifying or ranking, or giving an example (instancing). The first eventuality would be if the focus were on the word "friend" and the second if it were on the word "Jan". Both illocutionary forces—i.e. classifying and ranking—fall under the family of speech acts that Austin called "verdictives" (Austin, 1975, pp. 153–155) or "general assertions" (Austin, 1961, p. 187), i.e. in each of them I take responsibility for the truth of the linguistic representation that I created from the words of the English language in accordance with the rules of its grammar and semantics. Let us assume that the illocutionary potential of sentence (2) belongs, along with its reference and sense, to the full locutionary meaning of the speech act under consideration.[4]

Suppose additionally that when uttering sentence (2), I behave in accordance with the requirements of a certain procedure, which establishes the conditions for the proper execution of illocutionary acts of a particular type, i.e. their felicity conditions; thus, I actualize a certain element of the illocutionary potential of the considered locution, i.e. I perform a certain illocutionary act.[5] The force of this act should be defined by reference to its conventional effect understood as a change in normative rela-

[4] According to Austin (1975, p. 93), sense and reference are elements of the rhetic meaning of a statement, and its illocutionary potential is part of its phatic meaning, with the phatic and rhetic meanings of a given statement creating its full locutionary meaning; a thorough discussion of these issues is beyond the scope of this article. It is worth turning here to the works of Maciej Witek (2015a; 2015b; 2011, pp. 43–51 and 402–404) and comparing them with Jerzy Szymura's idea of intra-language meaning (Szymura, 1982, pp. 174–187), which can be identified with an aspect of the phatic meaning in Austin's sense.

[5] I can also perform two illocutionary acts at the same time: direct, the force of which falls within the set illocutionary potential of the sentence I uttered, and indirect, where the force goes beyond this potential.

tions between relevant participants in social life.[6] What's more, in most cases I perform—or at least intend to perform—a specific perlocutionary act characteristic of the currently performed illocutionary act: by classifying Jan as a true friend, I usually want to convince my interlocutor that he can consider Jan a true friend, and giving the example of Jan as a true friend I usually want to convince the interlocutor that there are true friends. The perlocutions listed in the previous sentence are normally connected[7] with the acts, respectively, of classification and giving an example. It can be assumed, therefore, that the illocutionary potential of a given statement is associated with its perlocutionary potential, which can be presented as a class of its possible standard perlocutionary effects.

In summary, an utterance formulated in ordinary communication has two types of consequences. First, it creates a linguistic representation of a certain state of affairs, which representation can be attributed to the locutionary meaning of the utterance including its reference, sense, illocutionary potential and perlocutionary potential. Secondly, it takes effect as a felicitous illocution of a certain type, i.e. it changes the sphere of obligations and rights of conversation participants and possibly other people in a characteristic way. Both effects—locutionary and illocutionary—appear as a result of the mechanisms of the ordinary communication mode, which are semantic and pragmatic in nature.[8] Usually, a speech act formulated in the ordinary communication mode also produces a third type effect, i.e. a perlocutionary effect. The performance of a perlocutionary

[6] In other words, we adopt a normative approach to illocutionary interaction (Sbisà, 2007; 2009; 2013; Green, 2009; Witek, 2015c; 2019a).

[7] Among the perlocutionary effects of a given illocution, one can actually indicate those that connect with it in a standard or conventional way, and those that are associated with the specificity of a particular statement and the sender's immediate goals. Austin seems to mean the first kind of effects—which can be called interactive perlocutionary effects (Witek, 2011, p. 55)—when he writes that "many illocutionary acts invite by convention a response or sequel" (Austin, 1975, p. 117). For example, an order invites, by convention, its execution. The order can also be issued with a perlocutionary intention of upsetting the recipient. However, we will say that the execution of the order is, and the annoyance of the recipient is not, a standard perlocutionary effect of the order.

[8] "Semantic and pragmatic", because mechanisms responsible for the pragmatic interpretation of linguistic underdeterminacy can be included within Austin's theory of speech acts (Witek, 2015b).

act consists in "producing certain consequential effects upon the feelings, thoughts, or actions of the audience, or of the speaker, or of other persons" (1975, p. 101). Although the mechanisms responsible are psychological, not semantic or pragmatic, usually at least one of the possible perlocutionary effects of the illocution under consideration connects to it in a characteristic way, as the performance of a specific action by the recipient connects with the appropriate command of the sender, specific expectations of the recipient towards the sender with the promise made by the latter, or convincing the recipient to a certain view with the sender's argument. What's more, usually the main intention accompanying the formulation of an illocution of a certain type is the intention to produce a perlocutionary effect characteristic of it: normally, I argue my point to convince an interlocutor to accept it, I issue a command to get the hearer to perform a certain action, etc. Let's assume that these and similar regularities—the foreseeable meaning and force as well as the standard perlocutionary consequences of utterances—are manifestations of the mechanisms of ordinary communication.

Consider, however, the situation in which, when talking about Jan's disloyalty, I speak sentence (2) with facial expressions and a tone of voice suggestive of parody, mockery or contempt. Using these hints, I signal the change of the normal communication mode to the etiolation mode, in which I begin to use the mechanisms of the normal communication mode to achieve goals other than those that usually accompany their operation. More specifically, by saying sentence (2) in the etiolation mode, I construct, with the help of words belonging to the English language, a certain object—a locution understood as a linguistic representation of a certain state of affairs—which has its grammatically and semantically determined properties, including certain illocutionary and perlocutionary potentials. These properties, however, are used for another purpose, for example to evoke and ridicule a certain situation, act of speech, opinion or position. Namely, I can use a locution based on sentence (2) in order to openly pretend, parody or present a caricatured image of a speech act whose force would be within the illocutionary potential of the locution; at the same time, parodying would serve to ridicule the parodied situation, its participants or the illocutionary act formulated therein. By saying sentence (2) with mockery in my voice, I can also evoke the opinion we shared until recently about the exceptional loyalty of Jan, while expressing distance and some contempt for that opinion; in other words, the meaning of my utterance of sentence (2)—that is, its sense and refer-

ence—establishes a content for the truthfulness of which I do not take responsibility, but which is an echo of the thoughts shared so far, and an integral aspect of the act of recalling is the negative attitude to the content of the opinion or expectation thus evoked.

However, there is a problem with the use of the original Austinian etiolation category in theoretical considerations. The point being that Austin only gives a negative description of the concept in question. In other words, it includes in its scope all those uses of language that do not fit into the class of phenomena of the ordinary communicative mode. No wonder, since Austin indicates cases of language etiolation only to exclude them from the research field described in the first lectures by means of the category "performative utterances" (Austin, 1975, p. 22), and in later ones using terms such as "locutionary act", "illocutionary act", and "perlocutionary act". Austin is not, therefore, interested in the general characteristics of parasitic uses of language. Moreover, the majority of etiolation cases he considers are phenomena whose communicative nature is doubtful or at least unclear. This refers to the use of language in acting, creating literary fiction or poetry, quoting and reciting (Austin, 1975, p. 92), as well as telling jokes (Austin, 1975, p. 104).

It seems, however, that the category of linguistic etiolation can be further specified to the extent that it can be used in considering the diversity of forms of intentional communication, including communicative irony. To this end, consider the following section of *How to Do Things With Words*, which appears after discussing the distinction between illocutionary acts and perlocutionary acts.

> To take this farther [considerations on the use of language—J.M., M.W], let us be quite clear that the expression "use of language" can cover other matters even more diverse than the illocutionary and perlocutionary acts. For example, we may speak of the "use of language" for something, e.g. for joking; and we may use "in" in a way different from the illocutionary "in", as when we say "in saying 'p' I was joking" or "acting a part" or "writing poetry"; or again we may speak of "a poetical use of language" as distinct from "the use of language in poetry". These references to "use of language" have nothing to do with the illocutionary act. For example, if I say "Go and catch a falling star", it may be quite clear what both the meaning and the force of my utterance is, but still wholly unresolved which of these other kinds of things I may be doing. There are parasitic uses of language, which are "not serious", not the "full normal use". The normal conditions of reference may be suspended, or no attempt made at a standard perlocu-

> tionary act, no attempt to make you do anything, as Walt Whitman does not seriously incite the eagle of liberty to soar. (Austin, 1975, p. 104).

It is worth paying attention to the three ideas expressed in the passage quoted above. First of all, utterances formulated in the language etiolation mode should be described as uses of language that serve something (the "use of language" for something); in other words, the considered utterances are accompanied by the intention to achieve specific goals or effects, which we will call etiolative. Secondly, the etiolative effect of a given utterance should be clearly distinguished from its possible illocutionary and perlocutionary effects consistent with the potentials constituting elements of its locutionary meaning. For example, the real purpose of the poetic utterance of the phrase "go and catch a falling star" deviates from the one that can be reconciled with its quite clear illocutionary and perlocutionary potentials. Similarly, the purpose of the ironic utterance of sentence (2) is not to take responsibility for the accuracy of the opinion that Jan is an example of a good friend, which would be an illocutionary effect of this utterance understood as giving an example; nor is it the belief of the audience that there are true friends, which would be a standard perlocutionary effect of the locution being considered. The intended effect is the ironic effect of ridiculing the possible statement or thought that Jan is a true friend. Thirdly, utterances formulated in the etiolation mode do not so much disable normal mode mechanisms as parasitize them. The parasite does not block the host metabolism, but uses it for its own purposes. For example, by saying sentence (2) with the intention of irony, I use ordinary mode mechanisms to construct a linguistic representation of a certain state of affairs, and more specifically to determine the reference, sense and illocutionary potential of my words. The representation constructed in this way, equipped with such and no other semantic properties, however, serves the purpose of achieving goals other than those which would be natural for it in the ordinary communication mode.

In short, the utterance formulated in the etiolation mode (i) serves to induce an etiolative effect, which (ii) should be distinguished from the effects falling within the illocutionary and perlocutionary potentials belonging to its locutionary meaning, while in realizing this purpose (iii) the sender uses parasitically at least some of the normal mode mechanisms. These ideas will help us in section 4 to cover cases of communicative irony.

### 2.3. Strong and Weak Violation of Ordinary Communication Mechanisms

In our opinion, the category of etiolation makes it possible to accurately explain communicative irony. By adopting this point of view, we move away from taking irony as a stylistic trope (Grice, 1989; Pelc, 1971; Attardo, 2000). Proponents of this approach say that the ironic utterance is a case of figurative use of language. They also believe, after Grice (1989), that it has an inferred ironic meaning (Attardo, 2000, p. 813) communicated at the level of conversational implicature (Garmendia, 2011, p. 48; Garmendia, Korta, 2007, pp. 196–197) or constituting its literal paraphrase (Pelc, 1971, p. 180). We can, therefore, assume that on the basis of the irony as a stylistic trope model, the following two ideas are openly accepted. First, the ironic utterance is a blatant, explicit and authentic breach of conversational maxims, e.g., the quality maxim (Grice, 1989) or the appropriateness maxim (Attardo, 2000, p. 823; Witek, 2016, p. 113). Secondly, this utterance has an inferred ironic meaning understood as its conversational implicature.

However, it seems that the above-mentioned ideas do not give a full picture of the model of irony as a stylistic trope. In our opinion, it contains a third, somewhat unspoken idea. It states that irony understood as a trope is an ornament that makes the utterance more attractive and, as such, does not lead us beyond the ordinary mode of communication. The purpose of irony understood as a stylistic device is, among other things, to communicate some content with a certain illocutionary force; "among other things" because proponents of the discussed model admit that ironic utterances also express the sender's assessment of, or attitude towards, the communicated state of affairs (see Grice, 1989, p. 53; Attardo, 2000, p. 817; Pelc, 1971, p. 180 ). From the point of view of the discussed model, the ironist uttering sentence (2) classifies or gives the example of Jan as a person who is not a real friend—and these acts are made at the level of conversational implicature—and expresses his negative attitude to the fact communicated in this way. The category of conversational implicature therefore allows us to describe cases of ironizing as communicative acts that have the ironic meaning of the speaker, i.e. ironic force and ironic content. In short, this category allows ironic and non-verbal acts to be placed in the field of communicative phenomena understood as acts of speaker meaning in Grice's sense, which are ultimately governed by ordinary mode mechanisms.

Due to the above-mentioned circumstance, we can assume that the model of irony as a stylistic trope presents cases of irony as a form of weak violation of the mechanisms of the ordinary communication mode: although these mechanisms are excluded or suspended at the level of what is said—or more precisely, at the level of what is made as if to say (Grice, 1989; Garmendia, 2011)—they act at the level of conversational implicature. Meanwhile, from the point of view of the model of parasitic applications of language, cases of communicative irony are examples of a strong violation of the mechanisms of the ordinary mode. The ironic message formulated in the etiolation mode, as such, does not necessarily imply any conversational force or content. Of course, it may carry a certain implicature, e.g. the ironist uttering sentence (2) may indicate that Jan is not a true friend. However, we believe that this fact should not be considered as a necessary manifestation of the nature of irony; the essence of ironizing resides in indicating the object of irony by expressing a negative assessment of it, with the mechanisms of this indication and expression parasitizing the mechanisms of the ordinary mode.

We return to the above observations in section 4, where we use them to discuss specific examples of communicative irony and argue that these examples are cases of etiolation. Meanwhile, in section 3, we offer a brief discussion of two popular models of irony that seem to depict phenomena of interest to us as messages formulated outside the realm of the ordinary mode.

## 3. Echo Theory and Pretence Theory

The echoing model of irony and the model of irony as overt pretence—or shorter, the echo theory and the pretence theory—pose an alternative to the model of irony as a stylistic trope, which has its sources in classical rhetoric and is developed in the works of Herbert P. Grice (1989), Kent Bach and Robert M. Harnish (1979, pp. 68–69) and Salvatore Attardo (2000). The cited authors present cases of ironizing as utterances whose literal meaning is replaced by figurative meaning communicated using mechanisms of conversational implicature (Grice, 1989), conversational impliciture (Bach, 1994; cf. Witek, 2011, p. 266) or inferred meaning (Attardo, 2000). Let us add that from our point of view these mechanisms should be considered as manifestations of the normal mode of communication.

Within the irony as a stylistic trope model, irony is considered as an indirect speech act that we recognize when a speaker overtly and ostentatiously breaks Grice's maxim of quality: "don't say what you believe to be false; do not say that for which you lack adequate evidence". This maxim can be generalized, as a result of which we get the phrase "be sincere" (Levinson, 1983, p. 103). Proponents of the irony as trope model also assume that the mechanism explaining the phenomenon of irony is meaning-substitution or meaning-inversion, which leads to the replacement of literal meaning with implied meaning. However, this theory has many problems (see the discussion in Wilson, Sperber, 2012 and Green, 2017), the common source of which seems to be the fact that two key elements of the irony as trope model—i.e. the idea of explicit violation of the principle of sincerity and the concept of meaning-substitution—are used to explain other supposedly indirect speech acts, such as metaphor. This, in turn, makes it difficult to understand cases of irony as phenomena different from other stylistic tropes.

We assume that a good theory with the purpose to explain a specific communication phenomenon—including communicative irony—should answer two basic questions: a question about its mechanism and a question about its function. The theory of irony as a stylistic trope presents meaning-inversion as the mechanism underlying acts of ironizing, but we do not find it a satisfactory explanation of the function of ironic acts. As Sperber (1984, pp. 130–136) observes, the meaning-inversion model of irony does not specify the reason why the speaker decides to express his thoughts non-literally thorough the mechanisms of implicature or impliciture. An attempt to answer the above question about the function of irony is made by the echoic theory (Sperber, 1984; Wilson, 2006; Wilson, Sperber, 2012) and the pretence theory (Clark & Gerrig, 1984). Both proposals present irony as an example of a strong violation of the mechanisms of the ordinary communication mode, while the theory of classical rhetoric and theories of Grice (1989), Bach and Harnisch (1979) and Attardo (2000)—as well as the approach proposed by Joanna Garmendia (2011)—treat irony as an example of a weak violation of these mechanisms (see Section 2.3 above).

Let us present below the main ideas of echoic theory and the theory of irony as overt pretence. It is worth noting, however, that our goal is not so much to reconstruct and evaluate the considered models, but to prepare a starting point for the considerations presented below in section 4.

### 3.1. Ironizing as Echoing

Imagine a situation where Anna and Kasia are talking about Marysia's birthday party, which took place two days ago. Unfortunately, Kasia could not go, so she asks Anna how it was at Marysia's party. Anna answers, using an ironic tone of voice:

(3) Great fun!

What has been echoed—and thus negatively assessed—is the general belief about what social gatherings organized for birthdays should look like, or Anna's earlier expectation of these birthday parties. Anna distances herself from the echoed thought.

Note that Anna decides to utter a sentence whose literal meaning is the reverse of her real opinion. Thereby, she runs the risk of a misunderstanding. However, she takes it in order to express her attitude to a thought, the content of which is similar to the meaning of the uttered sentence or its contextually enriched explicature. In the echoing theory, irony is not an indirect speech act. The ironist's utterance has a literal meaning which, in the context at stake, can be enriched and modified so as to yield a certain explicature. This last, however, does not constitute the content of what is communicated. What is communicated is the speaker's explicit attitude related to the echoed thought. The explicature of the uttered sentence is an interpretation of the speaker's thoughts, which in turn is an interpretation of another thought: either a thought attributed to someone else or a contextually available thought in the sense discussed below. In short, irony within the relevance theory is an interpretation of at least the second degree. The relationship that connects the cited content with the considered utterance is a certain expression of the dissociative attitude. The theory indicates two aspects of one mechanism of echoing: recalling the content of a certain contextually available thought and expressing the attitude of the speaker to the content thus recalled. Sperber and Wilson believe that by evoking a thought—i.e. activating it as an element of contextually available content while expressing our distance from it—we create a relevant stimulus.

The key idea of the echoing theory is that ironic utterances are significantly associated with the attributive use of representations. More pre-

cisely, the speaker of such an utterance ascribes to a specific person, type of person or people in general (Wilson, Sperber, 2012, p. 136) a certain thought, while expressing her dissociative attitude towards it because of its being "ludicrously false, underinformative, irrelevant" (ibid., p. 141) or "blatantly inadequate" (ibid., p. 130). Attributive use that aims to express a relation to an assigned thought is called echoic; echoic application, which involves expressing a sufficiently strong dissociative attitude to the recalled thought—appearing e.g. in the form of mockery, ridicule or contempt—is the ironic character of the utterances being considered.

Let us use the above approach to analyse two utterances:

(4) What beautiful weather!

(5) a. Yes,

b. he's a good friend.

Let us assume that the author of utterance (4) is one of a group of tourists who have been sitting in a mountain hostel for an hour waiting for the heavy rain to stop. Everyone gathered had gone to the mountains in the hope that on this day the weather would be conducive to the implementation of their plans. The content that results from the contextual enrichment of the logical form of the sentence (4)—i.e. the explicature of the considered expression—is similar to the content of expectations clearly shared by tourists waiting in the hostel; in other words, it echoes the common content of these expectations.[9] By uttering sentence (4), the speaker distances himself from this obviously unfulfilled expectation and adopts a mocking attitude towards it. Let us also assume that the words in (5) constitute a commentary on facts suggesting that Jan behaved disloyally towards the conversation participants and revealed a secret entrusted to him. The explicature of the considered utterances echoes the content of the interlocutors' disappointed expectations regarding Jan's

[9] In fact, a proponent of the relevance theory would say that the explicature of the expression under consideration is an interpretation—i.e., is similar to—some content presented in the mind of the sender, which in turn is an interpretation of the thought attributed by the sender to another entity. For simplicity—which does not concern the heart of the echo model of irony—let us treat the explicature, not the interpretation of the content of the sender through it, as an echo of the thought attributed.

attitude. The author of utterance (5) expresses her dissociative attitude to the content of these expectations; more precisely, she expresses her contemptuous attitude to the fact that Jan's behaviour clearly did not fulfil them.

For comparison, let's imagine an exchange in which the words in (5) express approval as a summary of a conversation about Jan, whose recent actions testify to his exceptional loyalty. We shall say about this situation that it is an example of echoic use of language: the person who utters the sentence (5) simultaneously activates and positively assesses one available contextual thought. However, her attitude towards her thoughts is not dissociative. Rather, we say she is approving. That is why we consider the utterances to be echoic, but not ironic.

In summary, we can say that the formulation of a successful ironic act understood as a case of echoic use of language requires a specific conversational situation. It consists in the fact that a certain thought is contextually available, in the sense that it is ready to be echoed; it is available either because someone recently expressed it, or because it well represents the position or expectations of certain participants in a speech situation or other relevant persons, or because it is the content of commonly shared views and expectations based on them. We return to this idea in section 4.

### 3.2. Ironizing as Parody

Herbert H. Clark and Richard J. Gerrig in the pretence theory argue that cases of irony are overtly pretending to perform a certain speech act. The following example will explain the pretence theory.

Imagine a situation where Mariola and Piotr are planning their honeymoon. Due to the prices and the expenses associated with the wedding, Piotr proposes giving up on the grand wedding and choosing a more expensive honeymoon. To express her negative attitude to this idea, Mariola utters the following sentence in a tone of voice that can be described as overly enthusiastic:

(6) That's a great idea!

Mariola communicates that she doesn't like the idea. She communicates this in a specific way, pretending—by engaging in exaggerated, caricatured enthusiasm—that she accepts Piotr's proposal. By the same

token, she presents in an unfavourable light anyone who would accept Piotr's offer or think that she really likes it.

Clark and Gerrig report the main theses of their theory as follows:

> Suppose S is speaking to A, the primary addressee, and to A', who may be present or absent, real or imaginary. In speaking ironically, S is pretending to be S' speaking to A'. What S' is saying is, in one way or another, patently uniformed or injudicious, worthy of a "hostile or derogatory judgment or a feeling such as indignation or contempt" (Grice, 1978, p. 124). A' in ignorance, is intended to miss this pretense, to take S as speaking sincerely. But A, as part of the "inner circle" (to use Fowler's phrase), is intended to see everything—the pretense, S''s injudiciousness, A''s ignorance, and hence S's attitude toward S', A', and what S' said. S' and A' may be recognizable individuals (like the TV weather forecaster) or people of recognizable types (like opportunistic politicians). (Clark, Gerrig, 1984, p. 122)

According to Clark and Gerrig, the theory they propose explains the three basic features of irony. They call the first of these "asymmetry of affect". It consists in the fact that by deciding to use irony, the speaker runs the risk of being misunderstood, but if the speaker's intention, which is the desire that the ironic act of speech be recognized, is fulfilled, the speaker can gain an advantage in a communication game; this advantage is obtained by placing in an uncomfortable situation anyone who would like to agree with the literal meaning of the parodied utterance. The second feature considered is that in the case of most irony, one can speak of "victims of irony". According to the pretence theory, there are two types of victims of irony. The first type is S', i.e. the person or people S is pretending to be; while the second type is A', i.e. the recipient who exhibits an uncritical approach to S'. The third of the considered features of acts of ironizing is their characteristic ironic tone of voice: to convey her negative attitude to the parodied speech act of S', the ironist can adopt the tone of voice appropriate for S', and even parody it or display its characteristic properties in caricature.

Let us check how the pretence theory deals with the explanation of the examples discussed in section 3.1.

By saying the sentence:

(3) Great fun!

Anna pretends to be a person who enjoyed Marysia's birthday party. This communicative act of ironizing will be fulfilled provided that Kasia recognizes that Anna is pretending to be Anna'. In addition, Anna decides to use irony to take advantage of Kasia's or other people's fear of being ridiculous and make it harder for her to express a positive opinion about Marysia's birthday party. Similarly, the ironist S utters the sentence:

(4) What beautiful weather.

pretending to be an imprudent person S'. Person S' is not real, but her beliefs include the thought that the weather seen through the window by people gathered in the hostel is weather that allows one to go out into the mountains. Speaker S adopts a communicative strategy, which is parodic irony, to discredit anyone who would like to seriously express an opinion consistent with the literal meaning of the sentence (4). Finally, the ironist S uttering the words:

(5) a. Yes,
b. he's a good friend.

while talking about Jan's actions proving his disloyalty, pretends to be a person S' praising Jan's behaviour. In other words, Clark and Gerrig would say, S puts in a negative light everyone who would come forward in praise of Jan, and anyone who would understand the words under consideration as authentic praise. Thus, S makes it difficult for her interlocutors, and possibly other people, to express and adopt opinions consistent with the literal reading of sentence (5).

For comparison, consider an alternative version of the conversation between Mariola and Piotr who are planning their honeymoon. Let us assume that after hearing Piotr's suggestion, Mariola says with clear indignation in her voice:

(7) Are you feeling okay?

Also in this case, we can say that Mariola pretends to perform a certain speech act. This time, however, it is not about parodying the acceptance of the interlocutor's proposal, but about pretending to be an act of speech that could be called a "caring question", which is a question we

direct to a person displaying symptoms of feeling unwell. Importantly, this type of situation is difficult to explain using the scheme "by speaking to A, the sender of S pretends to be S', who by speaking to A' performs a certain speech act". Rather, we will say that Mariola gives Piotr to understand that his proposal is similar to the symptoms of a malaise. The pretence in question does not directly have an ironic effect and, as such, is not a subject of the theory of irony proposed by Clark and Gerrig.[10]

## 4. Communicative Irony as Language Etiolation

In our opinion, ironic utterances are speech actions performed in the language etiolation mode. They are cases of expressive intentional communication, and their purpose is to create an ironic effect recognizable to the appropriate audience. It involves the recalling and presenting in an unfavourable light—e.g. ridiculing, compromising, discrediting, trivializing, etc.—of some contextually available thoughts, statements, hopes, fears, attitudes, opinions, certain beliefs, expectations, anxieties or other states the content of which can be express with a sentence. Recalling and presenting the object of irony in an unfavourable light should be understood as two inseparable aspects of the act of expressive intentional communication: just as the unrevealed and intentionally exposed critical look directed at a restaurant guest who draws attention to himself with inappropriate behaviour, at the same time distinguishes and judges him—evaluates him expressing a negative attitude towards his way of being—so, an acts of ironizing at the same time evokes and disparages a certain thought or state. The state being the object of irony is contextually available in the sense that it could now or could have been in the past attributed to one of the participants in the current speech situation or other persons significant from its point of view. In short, irony requires a certain conversational situation, which can be described as the contextual availability of its object. It also requires some foundation: the object of irony—which, let us recall, can be represented as a certain state or propositional attitude—must actually deserve to be shown in an unfavourable light because of its falseness or other form of inaccuracy.

[10] Perhaps the considered utterance of sentence (7) should be described as a case of sarcasm. We thank the Reviewer for drawing attention to this possibility.

We postpone the discussion of the conditions for the successful completion of the ironizing task—the conversational circumstances required by it, the basis, etc. (see Witek, in preparation). In this article, we want to focus on etiolation techniques involved in creating an ironic effect, and more specifically in recalling the object of irony and showing it in an unfavourable light. In our opinion, two techniques discussed above in section 3 are involved, namely echo and explicit pretence. At the same time, we claim that the dilemma "either the echoic theory or the pretence theory" creates a false picture of the situation, because in many cases the interaction of both techniques can be observed. They have a parasitic character, i.e. they use the mechanisms of the ordinary communication mode. What's more, they can use mechanisms appropriate for both locutionary and illocutionary acts. We also claim that each of the techniques considered allows us to point out the object of irony by expressing our negative attitude towards it; in other words, it also allows us to recall and present in a negative light a certain contextually available propositional attitude.

Let us apply the above-mentioned ideas to discuss examples (3) and (4) presented in section 3.1. Recall that the speaker of the words in (3) is one of the tourists who are waiting in the mountain hostel until the heavy rain stops. Her tone of voice betrays disappointment and slight irritation. Undoubtedly, listeners have the right to think that, when uttering her words, the sender negatively assesses the current state of the weather (Attardo, 2000, p. 807). However, they would also have the same right if she said one of the following sentences in a similar tone:

(3') What weather!

(3'') But it's pouring!

So we can assume—in accordance with the main idea of the echoic theory (Sperber, 1984; Wilson, 2006; Wilson, Sperber, 2012)—that by deciding to say sentence (3), the sender wants to achieve a certain communicative effect that would not appear as a result of utterances of sentences (3') or (3''). In our opinion, it is an ironic effect, which consists in recalling and presenting in a negative light the common expectations of the majority of the tourists gathered in the hostel—expectations, let us add, contextually available—that the weather on this day will be favourable for mountain trips. This effect appears due to the parasitic use of the mechanisms of the normal communication mode: by using sense and reference conventions, the speaker creates a locution understood as a linguis-

tic representation of a certain state of affairs. This representation, however, does not serve its usual purposes: the speaker does not want to take responsibility for its veracity, but uses it to evoke and ridicule some expectations shared by all. The evoking game takes advantage of the similarity between the content of the constructed locution—or, as the authors of the theory of relevance put it, the explanation of the considered expression—and the content of the cited expectation; meanwhile, ridicule employs such expressive signals as the tone of voice and facial expressions, as well as the body posture accompanying speaking.

The act of irony performed in this way and its product, i.e. the ironic effect, have a communicative nature, just like the explicit and purposely sustained smile with which I greet my friend: my smile both indicates the person being met and assesses them as welcome (Wharton, 2003; cf. Witek, 2019b; forthcoming). In both cases there is an act of expressive communication in the sense of Green (2007). Moreover, they cannot be divided into two separate components, one of which performs the act of referring to a certain object, and the other—expressing a specific relationship to the designated object. Both the ironic utterance of the sentence (3) and the explicit and deliberately maintained smile, simultaneously point to and evaluate their objects. The difference between them is that a smile means its object using the existing causal relationship (the appearance of a friend makes my smile), while the ironic utterance of sentence (3) recalls its object on the principle of similarity in content. In short, a smile is an index and an ironic utterance is an iconic sign. The iconicity in question is possible thanks to the use of echoes understood as one of the techniques of linguistic etiolation. This technique combines two moments that can also be distinguished in a caricatured portrait: the simultaneous presentation and ridicule of the object. Importantly, it uses parasitically the mechanisms of the ordinary communication mode—Austinian demonstrative and descriptive conventions (Austin, 1961) or pragmatic processes of enriching the coded logical form in the form of an explicature (Wilson, Sperber, 2012)—which allow the construction of a linguistic representation of a certain state of affairs.

Similarly, one can describe the operation of an utterance of (4) as an act of communicative irony. The author of the words under consideration uses normal mode mechanisms to build a linguistic representation of a certain state of affairs. Importantly, the representation constructed in this way uses the purpose of evoking and discrediting the expectations—of herself, her interlocutors or other persons at stake—that Jan is a loyal

friend. Thus, it creates an ironic effect: in a way that is recognizable to others, it evokes and presents in a negative light a certain contextually available thought or attitude.

In the case of ironic utterances (3) and (4), there is a parasitic use of locutionary mechanisms. However, there are forms of irony that involve the use of illocutionary communicative mechanisms. Moreover, they interact with two etiolative techniques: echo and overt imitation. Let us consider this matter further.

Let us present the situation in which Jan and Ola are talking about their plans for a winter holiday. Jan is an avid skier. On the other hand, Ola, who is known for her reluctance towards winter sports, is quietly counting on going to a dance camp. Jan makes a proposal to go skiing, to which Ola responds in the way presented in the dialogue (8), with her tone of voice being overly enthusiastic.

(8) Jan: a. Maybe we could go skiing in Szklarska?
Ola: b. Great!
c. That's just what I've been dreaming of!

Let us assume that in an alternative version of this story, Ola utters the words (8d) and (8e) in a grim tone of voice that betrays disappointment and resignation.

(8) d. OK.
e. That's just what I've been dreaming of.

If utterances (8a) and (8b) appeared in the ordinary communication mode, they could be described as submission and acceptance of the proposal, respectively. The illocutionary potential of the exclamation "great" includes acceptance, and the combination of (8b) with (8a) indicates that this possibility has occurred. However, Ola's overly enthusiastic tone of voice acts as a signal—readable especially against the background of her known reluctance towards winter sports—that she is pretending to accept the proposal, and thus changes the communication mode from ordinary to etiolative. The act of accepting the suggestion implies, by virtue of the appropriate condition of sincerity, that the solution proposed in the previous conversational move appeals to the sender. Thus, pretending in the utterance (8b) acceptance of the proposal involves pretending that Ola likes the proposed solution and it is in line with her preferences. Note

that the second pretence, contained in the first, is in some sense reinforced by the utterance (8c). By delivering this, Ola echoes and ridicules Jan's expectation that she will share his desire to go skiing. By pretending or parodying in the speech (8b) the acceptance of Jan's proposal, Ola indirectly pretends that the sincerity condition of the parodied speech act is met; the content of this condition is similar to the content of Jan's expectation, which is echoed by the utterance of the sentence (8c). In short, we are dealing with the interaction of two etiolative techniques—explicit pretend and echoing—to achieve an ironic effect. Importantly, the pretence and echo at stake are parasitic on honest and serious illocutionary communication.

It is worth noting that from the parodic utterance (8b) it can be concluded that Ola rejects Jan's proposal. This type of conclusion—which resembles a conversational implicature—does not appear, however, in the case of the alternative course of the discussed exchange, i.e. when Ola with clear signs of resignation and disappointment in her voice says (8d) and (8e). Rather, we say that, acting against herself, Ola agrees to Jan's proposal. In other words, her act of accepting Jan's proposal—that is, the act made with (8d)—is not so much pretended as openly and intentionally dishonest. As such, it still falls under the ordinary communication mode, which allows speech acts as examples of abuse, including explicit abuse. Meanwhile, the utterance of the sentence (8e) should be treated as etiolative, in which—similarly to the utterance of the sentence (8c)—Ola evokes and discredits Jan's expectation that she will share his enthusiasm.

Let us also consider the situation in which Anna carries a tray full of cups to the kitchen. Karol approaches her and insists on helping her. Despite Anna's undisguised reluctance, he finally manages to take over the tray. However, he does it so awkwardly that the cups one by one slide down to the floor, where they break with a smash. Anna utters the following sentence:

(9) Thank you very much!

Let us assume that in an alternative version of this story, Anna says:

(10) I don't know how to thank you!

In our opinion, in the case of utterances (9) and (10) we are dealing with an overt imitation of a direct and indirect act of thanks, respectively.

As in the case of the above-mentioned utterance (8b), the parodic performance of the act of thanks serves to pretend that its felicity conditions are met. In the case of Ola's speech from the dialogue (8), it is possible to pretend that the condition of honesty is met. Meanwhile, Anna's utterance is about pretending that one of the prerequisites for felicitous thanking is met. This condition states that the action for which one thanks is beneficial to one. In other words, Anna creates an ironic effect, which consists of recalling and ridiculing Karol's efforts and intentions to do her a favour. The evocation in question uses overt pretence or a parody of performing a particular illocution and uses its felicity conditions in a parasitic way.

## 5. Summary

In this article we have presented an approach to ironizing as a specific speech action performed in the language etiolation mode. In particular, we have shown that in the mechanisms enabling successful execution of this act—i.e. creating an ironic effect—two etiolative techniques play an important role: echo evocation and overt pretence. What's more, at least in some cases—including in examples (8), (9) and (10) discussed in section 4—both techniques interact. So it turns out that the "echo or pretence" dilemma that is formulated in discussions about the nature of verbal irony (see, for example, Sperber, 1984) is erroneous: the ideas discussed are complementary, not alternatives.

We believe that irony should be understood as a speech activity that has (a) a characteristic effect, i.e. the ironic effect, (b) performance techniques, i.e. the etiolative techniques of echo and pretence, (c) conditions for successful performance, e.g. the contextual availability of the object of irony. Moreover, the ironist uses (d) characteristic signals that reveal his ironic intention. In this article, we have presented some development of ideas (a) and (b). We have found that the ironic effect consists of recalling and presenting in an unfavourable light—e.g. ridiculing, discrediting, trivializing, etc.—some contextually available thoughts, statements, opinions, beliefs, expectations, hopes, fears or other states which can be expressed by means of sentences. We have also shown how echo evocation and overt pretence use parasitic mechanisms of the ordinary communication mode to achieve the ironic effect.

The full presentation of the proposed model should include the development of ideas (c) and (d). In further work (Witek, in preparation) we

intend to use the so-called score-keeping model of illocutionary games (Witek, 2015c; 2019a) to capture the felicity conditions of irony understood as etiolative speech activity, as well as to undertake empirical research on the prosodic, kinesic and contextual indicators of irony.

## REFERENCES


Attardo, S. (2000). Irony as Relevant Inappropriateness. *Journal of Pragmatics*, *32*, 793–826.

Austin, J. L. (1961). *Philosophical Papers*. Oxford: The Clarendon Press.

Austin, J. L. (1975). *How to Do Things with Words*. Oxford: The Clarendon Press.

Austin, J. L. (2013). Truth. *Proceedings of the Aristotelian Society. The Virtual Issue*, *1*, 1–15.

Bach, K. (1994). Conversational Impliciture. *Mind & Language*, *9*(2), 124–162.

Bach, K., Harnish, R. M. (1979). *Linguistic Communication and Speech Acts*. Cambridge, Mass. and London, England: the MIT Press.

Bar-On, D. (2013). Origins of Meaning: Must We 'Go Gricean'? *Mind & Language*, *28*(3), 342–375.

Clark, H. H., Gerrig, R. J. (1984). On the Pretence Theory of Irony. *Journal of Experimental Psychology*, 113(1), 121–126.

Dynel, M. (2014). Isn't It Ironic? Defining the Scope of Humorous Irony. *Humor. International Journal of Humor Research*, *27*(4), 619–639.

Garmendia, J. (2011). She's (not) a Fine Friend: "Saying" and Criticism in Irony. *Intercultural Pragmatics, 8*(1), 41–65.

Garmendia, J., Korta, K. (2007). The Point of Irony. In: M. Aurnague and J. M. Larrazabal (Eds.), *Language, Representation, and Reasoning* (pp. 189–200). Leioa: UPV-EHU.

Green, M. (2007). *Self-Expression*. Oxford: Oxford University Press.

Green, M. (2009). Speech Acts, the Handicap Principle and the Expression of Psychological States. *Mind & Language*, *24*(2), 139–163.

Green, M. (2017). Irony as Expression (of a Sense of the Absurd). *Baltic International Yearbook of Cognition, Logic and Communication*, *12*, 1–24.

Grice, P. H. (1989). *Studies in the Way of Words*. Cambridge, Mass. and London, England: Harvard University Press.

Levinson, S. C. (1983). *Pragmatics*, Cambridge: Cambridge University Press.

Pelc, J. (1971). *O użyciu wyrażeń* [On Using Expressions]. Wrocław-Warszawa-Kraków-Gdańsk: Zakład Narodowy imienia Ossolińskich, Wydawnictwo Polskiej Akademii Nauk.

Sbisà, M. (2007). How to Read Austin. *Pragmatics*, *17*(3), 461–473.

Sbisà, M. (2009). Uptake and Conventionality in Illocution. *Lodz Papers in Pragmatics*, *5*(1), 33–52.

Sbisà, M. (2013). Locution, Illocution, Perlocution. In M. Sbisà, K. Turner (Eds.), *Pragmatics of Speech Actions* (pp. 25–76). Berlin and Boston: De Gruyter Mouton.

Searle, J. R. (1969). *Speech Acts. An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press.

Sperber, D. (1984). Verbal Irony: Pretence or Echoic Mention? *Journal of Experimental Psychology*, *113*(1), 130–136.

Szymura, J. (1982). *Język, mowa i prawda w perspektywie fenomenologii lingwistycznej J. L. Austina*. Wrocław-Warszawa-Kraków-Gdańsk-Łódź: Zakład Narodowy Imienia Ossolińskich, Wydawnictwo Polskiej Akademii Nauk.

Wharton, T. (2003). Natural Pragmatics and Natural Codes. *Mind & Language*, *18*(5), 447–477.

Wilson, D. (2006). The Pragmatics of Verbal Irony: Echo or Pretence? *Lingua*, *116*, 1722–1743.

Wilson, D., Sperber, D. (2012). *Meaning and Relevance*. Cambridge: Cambridge University Press.

Witek, M. (2011). *Spór o podstawy teorii czynności mowy*. Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego.

Witek, M. (2015a). An Interactional Account of Illocutionary Practice. *Language Sciences*, *47*, 43–55.

Witek, M. (2015b). Linguistic Underdeterminacy: A View from Speech Act Theory. *Journal of Pragmatics*, *76*, 15–29.

Witek, M. (2015c). Mechanisms of Illocutionary Games. *Language and Communication*, *42*, 11–22.

Witek, M. (2016). Accommodation and Convention. *Polish Journal of Philosophy*, *10*(1), 101–116.

Witek, M. (2019a). Illocution and Accommodation in the Functioning of Presumptions. *Synthese*. doi:10.1007/s11229-019-02459-4.

Witek, M. (2019b). The Expressive Dimension and Score-changing Function of Speech Acts from the Evolutionist Point of View. *Grazer Philosophische Studien*, *96*(3), 381–398.
Witek, M. (forthcoming). Self-Expression in Speech Acts. *Organon F.*
Witek, M. (in preparation). Irony as a Speech Action.

Originally published as "Echo i udawanie w ironii kominikacyjnej". *Studia Semiotyczne*, *33*(2), 369–394, DOI: 10.26333/sts.xxxiii2.13. Translated by Martin Hinton.

# ABOUT THE AUTHORS

Marcin Będkowski, University of Warsaw, Faculty of Philosophy. E-mail: mbedkowski@uw.edu.pl. ORCID: 0000-0002-2787-9487.

Elżbieta Magner, University of Wroclaw, Chair of Logic and Methodology of Sciences. E-mail: dr.em@wp.pl. ORCID: 0000-0002-9329-0136.

Janina Mękarska, University of Szczecin, Institute of Philosophy and Cognitive Science. E-mail: janka.mekarska@gmail.com. ORCID: 0000-0002-7390-5623.

Adam Olech, Jan Dlugosz University in Czestochowa, Department of Philosophy. E-mail: adamolech@wp.pl. ORCID: 0000-0003-1661-3015.

Maciej Tarnowski, University of Warsaw, Faculty of Philosophy. E-mail: m.tarnowski3@student.uw.edu.pl. ORCID: 0000-0003-3824-4134.

Maciej Witek, University of Szczecin, Institute of Philosophy and Cognitive Science. E-mail: maciej.witek@usz.edu.pl. ORCID: 0000-0002-0462-1678.

Jan Woleński, University of Information Technology and Management in Rzeszow, Department of Social Sciences. E-mail: jan.wolenski@uj.edu.pl. ORCID: 0000-0001-7676-7839.