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GAME-THEORETICAL SEMANTICS

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The present article discusses the basics of game-theoretical semantics.[1] This interesting theory has not yet gained much popularity, and it seems to be relatively unknown in Poland. The present publication is based primarily on the first two parts of the monograph by Hintikka and Kulas (1985: 1-76). The most essential information regarding this topic may be found in the first part of the mentioned work, as evidenced by the fact that Hintikka includes it (virtually unchanged) in most of his publications related to game-theoretical semantics. The present publication constitutes an overview of the ideas conveyed by Hintikka and Kulas, with the exception of some details which the author considers less important. The article is, so to speak, a condensate of Hintikka and Kulas' work, often quoted verbatim or nearly so. This lowers the probability of distorting their ideas. The comments of the author of the present publication are sometimes included in the main body of the text, but more often appear in the numerous footnotes.

Let us begin with a short overview of the history of the concept, followed by a presentation of the uses of game-theoretical semantics in first-order logic and in definite descriptions in English. References to the Polish language shall be very scarce, since e.g. it is debatable whether the concept of descriptions may be used to describe Polish. Secondly, the aim of

[1] In the Polish language the concept of game-theoretical semantics is denoted by the neologism *semantyka gierna*. It was probably first used at the seminar conducted by professor Franciszek Studnicki at the Institute of Computer Science of the Jagiellonian University. In the Polish version of the article, the participants of the games discussed below are called *Natura* (Nature) and *Jasam*, the latter being a neologism — a literal translation of the English word *Myself*.

the article is to present the original form of Hintikka and Kulas' analysis (1985).[2]

1. HISTORICAL BACKGROUND

Game-theoretical semantics (GTS) is a variant of truth-conditional semantics which uses certain elements of mathematical game theory. The term was introduced by Jaakko Hintikka in mid-1970s. In his publication on the matter, Hintikka (1976) stated that semantic games in his understanding are:

"designed as linguistic games in Wittgenstein's sense; they are games in the precise sense of mathematical game theory; they offer a handy tool for systematizing logical theory; they give rise (in my judgment) to an extremely promising approach to the semantics of natural language."

Hintikka was not the first logician to employ game theory. It was used earlier (in early 1960s) e.g. in the works of Ehrenfeucht, Henkin, Lorenz and Lorenzen.[3] The novelty of Hintikka's approach lies in the fact that he proposes to use it not only for formal languages, but also for natural ones.

Game theoretical semantics used to be studied mostly by Scandinavian researchers, although Jack Kulas, who has worked as Hintikka's closest associate, seems to have different roots. In 1985 the two authors published a monograph which may be considered the greatest achievement in the field of analysing natural languages using the formal means of game-theoretical semantics. This publication (Hintikka and Kulas, 1985) demonstrates how the mentioned theory can be used to formulate a uniform framework encompassing definite descriptions and anaphors — issues that have become the subject of research in many disciplines of science.[4]

2. THE BASIC CONCEPTS OF GAME-THEORETICAL SEMANTICS

The core ideas of game-theoretical semantics are easiest to explain by showing how they work in first-order logic.

[2]On the use of game-theoretic semantics in the Polish language (more specifically: to the cases of Polish pronouns) see: Fall (1988).

[3]See: Saarinen (1979, p. vii) and chapter VII A (written by Lorenz) of *Logika Formalna* edited by W. Marciszewski (1987). Other uses of games were analysed e.g. by Studnicki (1979).

[4]E.g. linguistics (including the transformational-generative school and the theory of text), logic, philosophy, computer science (or, more specifically, a branch of artificial intelligence studies called computational linguistics), psychology (Fall 1988).

2.1. THE DEFINITION OF TRUTH IN GAME-THEORETICAL SEMANTICS

Let us assume we use a given language L. The definition of truth also requires us to assume a specific model M composed of the domain do(M) and the function interpreting all simple predicates of language L. This interpretation specifies the truth conditions for all simple (atomic) sentences in any given language L(I) which constitutes an extension of L composed of a finite set of proper names for elements of the domain do(M).

In the case of compound sentences, game-theoretical semantics specifies the definition of truth 'outside in', and not 'inside out', as it is in the well-known definition by Tarski. The result is the analysis of the meaning of a given sentence. This analysis is provided by the association with any sentence S of the language L of a two-person zero-sum (semantic) game $G(S)$. The participants of this game are called Myself and Nature. Myself wins and Nature loses the game $G(S)$, if the game ends with a true atomic sentence in the language L(I). If $G(S)$ ends with a false sentence, then Nature is the winner and Myself loses.

The game may be regarded as an attempt to verify the sentence S undertaken by Myself, and Nature's attempt to falsify S. The sentence S is true, if Myself is able to verify it regardless of Nature's actions, i.e. if the game $G(S)$ includes a winning strategy for Myself. Similarly, the sentence S is false if the game $G(S)$ has a winning strategy for Nature.

2.2. THE BASIC RULES OF SEMANTIC GAMES

The participants of the game $G(S)$ use the following, and other rules:

(G. $\vee$) The game $G(S_1 \vee S_2)$ begins with Myself choosing one of the elements of the disjunction S_i ($i = 1$ or 2). The game goes on as in $G(S_i)$.

(G. $\wedge$) The game $G(S_1 \wedge S_2)$ begins with Nature choosing one of the elements of the conjunction S_i ($i = 1$ or 2). The game goes on as in $G(S_i)$.

(G. $\exists$) The game $G(\exists x\, \mathrm{S}[x])$ begins with Myself choosing an element of the domain do(M). The game goes on as in $G(S[b])$, where b is the name of the chosen element, while $S[b]$ is arrived at by substituting every free variable x in $S[x]$ with b.

(G. $\forall$) The game $G(\forall x\ \mathrm{S}[x])$ proceeds similarly to $G(\exists x\ \mathrm{S}[x])$, but it is Nature that chooses the element b.

(G. $\neg$) The game $G(\neg \mathrm{S})$ begins with both participants changing the roles that result from the above rules, which also involves a change in the conditions of winning and losing. The game then goes on as in $G(S)$.

There can be no doubt that each semantic game $G(S)$ must end after a number of moves not greater than the number of logical symbols in S. Thus, the rules for winning and losing may be applied in all cases.

It is also easy to prove that the above 'game-theoretical' definition of truth is, in fact, equivalent to 'ordinary' definitions such as the one proposed by Tarski,[5] which work 'inside out' — from simple to more and more complex sentences.

The most interesting of the above presented rules is the last one, since it results in a change of 'behaviour' of the participants of the semantic game. If the rule is applied, Myself changes their status to that of the falsifier, while Nature becomes the verifier. This means that after rule ($G.\ \neg$) is implemented (once), Myself wins if the game ends in a false sentence, and Nature wins if the game ends in a true sentence. The strategies used by both participants after ($G.\ \neg$) are also reversed. There is, however, another way of dealing with the sentence $\neg S$. It involves playing out a local duel of $G(S)$. When the duel is over, the result of $G(S)$ is reversed, which gives us the result of the game $G(\neg S)$.

2.3. SUB-GAMES

In some ways, game-theoretical semantics is a better tool for analysis than the ordinary first-order logic. One of the most useful concepts it offers is the notion of a sub-game (Hintikka, Kulas 1985: 9-11; Carlson 1983). Essentially, this means that a semantic game may be divided into a number of component games. In some of these sub-games the roles of the participants are reversed, which depends on which rule is applied to the given case. Such a rule may also determine which strategies employed by the participants in previous sub-games may be used by which party in later sub-games.

The above presented possibilities are employed e.g. in rules pertaining to implication. For the purpose of the present publication, it is sufficient to state that the basic form of the semantic game $G(S_1 \rightarrow S_2)$ ought to be as

[5]The proof is presented by Hintikka and Kulas (1985: 6-7).

follows: First, a sub-game related to the antecedent (S_1) is played, with the roles of the participants reversed. If Myself wins this sub-game, they win the entire game. If it is Nature that is the victor, the game is continued. The consequent (S_2) becomes the object of the second sub-game, in which the participants return to their initial roles. The significant part is that in this second sub-game Myself is allowed to use the strategies employed by Nature in the first part of the game.[6] An example of applying the above discussed semantic rule to expressions of a natural language shall be presented in a further section of the article dealing with anaphoric definite descriptions (see: 5.3).

3. THE USE OF GAME-THEORETICAL SEMANTICS IN ANALYSING NATURAL LANGUAGES

One of the possibilities of making the system of game-theoretical semantics applicable to natural languages may easily be implemented if one has done a preliminary translation of the expressions of the natural language into the notation of first-order logic.[7] All the rules discussed above in relation to formal languages may also be used in semantic games pertaining to sentences of a natural language.

The mentioned translations constitute an important aspect of the academic work of many linguists and philosophers, yet Hintikka suggests another method of expanding the system of game-theoretical semantics to include natural languages. It involves formulating separate rules of semantic games directly for any given fragment of the English language[8] (without making any preliminary translation of the expressions into logical notation).

This means that a semantic game $G(S)$ — based on the rules similar to the ones presented above (in section 2) — may be associated with any given sentence S of a given fragment of the English language. The principles of a truth-conditional definition of the sentence S are also similar to the ones relating to formal languages (e.g. there needs to be a given model in which the basic vocabulary was defined). In practice, certain rules of the natural language, such as (*G. and*), (*G. or*), (*G. not*) are almost identical to the corresponding rules of formal languages: ($G. \wedge$), ($G. \vee$) and ($G. \neg$).

[6]For more detailed information see e.g. Hintikka and Kulas (1985: 10 — 11).

[7]This possibility was mentioned by Hintikka and Kulas (1985: 11)

[8]It must be added that no text by Hintikka or his co-workers includes a full set of rules for semantic games. It is remarkable that the rules are usually presented only when the situation requires it.

According to Hintikka, the rules for quantifiers must, in turn, undergo major changes. The most important of the modifications involves substituting the names of the objects chosen by the participants with entire quantifying expressions (*some X who, every X which Y, an X where Y, each X whose Y, any X which Y,* etc.) and not just with the words X from the above phrases. Given the need for additional modifications, a special case[9] of the rule (*G. some*) ultimately takes the following form:

(*G some*) If the game resulted in the sentence with the following form:
X — *some* Y *who* Z – W[10]
Myself chooses a person from the domain of the model in which the game is played. If the name of the chosen object is *b*, then the game is continued as it would for
X — *b* – W, *b is a* Y, *and b* Z.

The rule (*G a(n)*) — related to the indefinite article — is very similar, but the place of *some* is taken by *a(n).*

The formula of the rule (*G. every*)[11], in turn, is distinctly different from (*G. some*):

(i) The initial and final sentences (respectively) take the following forms:
X — *every* Y *who* Z — W
and
X — *b* — W *if b is a* Y *and b* Z.
(ii) The choice of the element *b* is made by Nature.

For the sake of precision, Hintikka and Kulas (1985: 13) present the above rules with the following comments:

a) The elements should be chosen from appropriate subsets of the domain. Sometimes this subset is determined by the relative pronoun appearing in

[9]The 'special case' here means that the rule is not fully generalised. However, anyone trying to find an exhausting analysis of all exceptions from the rules discussed in various monographs on game-theoretical semantics will search in vain. Details seem to be the Achilles' heel of the framework, yet the same may be said of all contemporary semantic theories (see: Fall 1988, chapter 3).

[10]X,Y,Z denote any expressions which –when put together — form a correct utterance in English. The dashes (–) are used only to make the quantifying expression more visible. They do not appear in actual sentences.

[11]The same is true with regard to rules (*G. each*) and (*G. any*).

the quantifying expression (e.g. *who* suggests a subset of persons; *where* – a subset of spatial locations; *when* – a subset of temporal locations, etc.).

b) The rules are only applicable to the nominative case (in English). Other cases would require further modifications.

c) The rules only pertain to the singular.[12] The plural requires a separate analysis.

d) The order of the compound phrases in a conditional sentence is not fixed, i.e. may be chosen by Myself. This is a characteristic feature of the semantic rules discussed above, but not necessarily of all semantic rules of the English language.

Hintikka and Kulas (1985:15) suggest that the notion of sub-games (see: 2.3) makes it possible to conduct semantic games not only on isolated sentences, but also on some discourses. If e.g. a discourse consists only of a sequence of declarative sentences, it may be treated as a conjunction of these sentences. In such a case the succession of (sub)games based on these sentences could be considered parts of a single 'super-game'. In more complex cases, however, the semantics of discourse would have to be significantly modified. If we allow the dialogues to include questions and imperatives, then our semantic games will have to be governed by a different set of rules than the one we established for declarative sentences. Hintikka and Kulas (1985: 15) content themselves with pointing out the existence of this considerable problem.[13]

4. ORDERING PRINCIPLES APPLICABLE TO NATURAL LANGUAGES

Hintikka and Kulas (1985: 17) state that from the point of view of game-theoretical semantics natural and formal languages are very similar. There are, however, very important differences — the most significant one being the fact that in formal languages the order of applying rules is determined by the syntax, while natural languages lack such a mechanism. Thus, applying the conceptual framework of game-theoretical semantics to natural languages requires introducing additional ordering principles. These are divided into two categories: general and special principles. The former are dependent only on the syntax of the sentence under analysis; the latter

[12]This is a very common simplifying premise. One of the very few analyses of the interrelations between singular and plural concepts may be found in Strzałkowski's work (1986).

[13]See: e.g. Carlson (1983), who extends Hintikka's conceptual framework to be more useful in dialogues.

are also determined by the lexis. If it is possible to apply both these types, the general principles are overruled by the special ones.

The most important general ordering principles for the English language are as follows (Hintikka, Kulas 1985: 15):

(*O.* LR) In a simple sentence the rules are applied from left to right.
(*O.* comm) No rule may be applied to an element of a lower clause if it has been applied to an element of a higher clause.[14]

According to Hintikka and Kulas (1985: 17) the function of ordering principles is equivalent to determining the scopes of quantifying expressions in popular logical representations. Here are three examples of sentences and their corresponding 'logical forms' which comply with the ordering principles of game-theoretical semantics:

Some boy loves every girl.
$\exists x \{(x \text{ is a boy}) \wedge \forall y [(y \text{ is a girl}) \rightarrow (x \text{ loves } y)]\}$.

Every girl is loved by some boy.
$\forall y \{(y \text{ is a girl}) \rightarrow \exists x [(x \text{ is a boy}) \wedge (x \text{ loves } y)]\}$.

That someone will some day beat him never occurs to any real champion.
$\forall x \{(x \text{ is a real champion}) \rightarrow \neg\exists t$ [it occurs to x at time t that $\exists z \exists u ((u$ is a future day) $\wedge (z$ beats x on day $u))]\}$.

The last sentence uses cataphora, which may be interpreted correctly owing to rule (*O.* comm), which in this case means that the lower clauses may become the objects of a semantic game only after the higher clauses. Thus, the object to which the sentence refers (a specific real champion chosen by Nature) is already present in set I (see: 5.2) when the pronoun *him* from the subordinate clause is being interpreted.

Hintikka and Kulas (1985: 21-22) mention one more difference between formal and natural languages. The syntax of formal languages formally determines which of the sentences analysed by means of a semantic game are already atomic, i.e. which of them comply with the truth-conditions

[14]Hintikka and Kulas (1985: 15-16) present the following concept of a 'higher clause' – "in the spirit of Chomsky:" "for a sentence in a labelled-tree form a node N1 is said to be in a higher clause than N2, if the S-node most immediately dominating N1 also dominates N2, but not vice versa."

given in the definition of the model. In the case of natural languages, using game-theoretical semantics requires (apart from the numerous ordinary rules and ordering principles) an appropriate lexical model. It would determine the time when the game ends, i.e. when the sentence under analysis is simple (atomic). Hintikka and Kulas (1985: 22) consider the possibility that a game may be infinite, if the rules for winning and losing (and the conditions for a draw) are appropriately defined. They claim that such infinite games might be useful e.g. as means of dealing with certain paradoxes in semantics.

The mentioned lexical model is not necessary for the analysis of definite descriptions and anaphors, as it is not the aim, but only a by-product of semantic games. For this reason, the present publication confines the analysis of this issue to presenting intuitive notions regarding the conditions of finishing the games.[15] One thing is certain: no sentence containing an anaphora or a definite description may be treated as atomic.

5. DEFINITE DESCRIPTIONS

As regards the method of presenting Hintikka and Kulas' approach (1985, part II) to definite descriptions, let us repeat the explanation given at the beginning of the present article. The following section also contains verbatim or almost verbatim citations from those fragments of Hintikka and Kulas' work which the author deemed the most important.

The similarity between definite descriptions and anaphors has been pointed out in numerous publications. Let us now analyse this issue in more detail, presenting the forms of the adequate rules of semantic games.[16] We shall prove how these rules reveal the relation between game-theoretical semantics and several classic problems of reference theory. We shall also demonstrate how different types of definite descriptions (English *the*-phrases) may be derived from anaphoric descriptions. Within the framework of game-theoretical semantics, anaphoric descriptions constitute the basic type of definite descriptions.

5.1 RUSSEL'S VIEW ON DEFINITE DESCRIPTIONS

According to Hintikka and Kulas (1985: 35), despite the fierce criticism that welcomed Russell's view, it still is the natural starting point for

[15]Hintikka and Kulas (1985) also disregard this aspect of the subject, despite its vital importance to the entire concept of semantic games.

[16]See: e.g. Hintikka and Kulas (1985) or other publications on game-theoretical semantics included in the Bibliography.

any discussion regarding the logic and semantics of definite descriptions. Most probably Russell (1905) created the said term with the English *the*-phrases in mind. However, he only took into account those phrases which are independent of the context and whose existence and uniqueness is stated or at least assumed by the speaker (*the highest mountain in the world*, *the most beautiful woman in someone's own house*, *the most popular brand of vodka in the People's Republic of Poland in 1986*).

5.1.1. THE LIMITATIONS OF RUSSELL'S APPROACH

Hintikka and Kulas (1985: 35) present two examples of two different uses of English *the*-phrases for which Russell's approach proves insufficient:

Anaphoric use:

If Bill owns a donkey, he beats THE DONKEY (IT).
If you are accosted by a stranger, don't talk to THE MAN.
Some man is capable of falling into love with any woman, at least if THE WOMAN is blond.

Generic use:

THE TIGER is a dangerous animal.
In the United States THE PRESIDENT now has far greater powers than were enjoyed by THE PRESIDENT in the nineteenth century.

Hintikka and Kulas (1985: 35, 47)

As Hintikka and Kulas (1985: 36) rightly observe, Russell's approach is also inadequate in the case of the so-called Bach-Peters sentences (see: 5.1.2.) which cannot be translated into iota-notation, because they contain crossing references. Similar problems with such sentences appear in the theory of generative grammar. In contrast, game-theoretical semantics offers a general solution to Russells' definite descriptions, which is equally applicable e.g. to Bach-Peters sentences. The mentioned solution takes the form of the following rule (e.g. Hintikka, Kulas 1985: 37-38):

(*G.* Russellian *the*) If the game has reached a sentence of the form

X — *the* Y *who* Z — W,

then Myself chooses one element (e.g. *b*), while Nature chooses a different element (e.g. *d*). The game continues as it would for the sentence

X — *b* — W, *b is a* Y, *b* Z, *but d is not a* Y *who* Z.

The mentioned elements should be chosen from an appropriate subset; in the case of the pronoun *who* it is the subset of individuals.

5.1.2. THE SO-CALLED BACH-PETERS PARADOX[17]

In the case of Bach-Peters sentences, e.g.

(1) *The boy who was fooling her kissed the girl who loved him.*
Hintikka and Kulas (1985: 36)

applying the (*G.* Russellian *the*) rule results in a sentence of the following form:

(2) *Harry kissed the girl who loved him, Harry is a boy, Harry was fooling her, but Dick is not a boy who was fooling her.*

Another application of the same rule results in a sentence of the following type:

(3) *Harry kissed Harriet, Harry is a boy, Harry was fooling her, Dick is not a boy who was fooling her, Harriet is a girl, Harriet loved him, but Margaret is not a girl who loved him.*

Hintikka and Kulas (1985: 39) use this example to demonstrate that the limitations of Russell's notations are automatically overcome in game-theoretical semantics.[18] Thus, it is possible to take into account all contextual relations present in (1).[19]

[17]See: e.g. Bach (1970), Karttunen (1971), Bosch (1983: 23-25, 146-147).

[18]Certain problems with the meaning of sentence (3) — or, more specifically, with the pronouns therein — may be solved in the following way. The (*G.* Russellian *the*) rule needs to be supplemented with a natural requirement that the set I (cf. the (*G.* anaphoric *the*) rule below) may only include the element *b* chosen by Myself (but not *d* chosen by Nature). This addition is in accord with the proposal of 'possible depronominalisation' (in the expressions X and W from the (*G.* Russellian *the*) rule, directly following Myself's choice of *b*; cf. Hintikka and Saarinen (1975)).

[19]In the semantic analysis presented above both definite descriptions are treated identically (symmetrically). However, there are scholars, e.g Karttunen (1971) or Bosch (1983), who claim that there is a difference in the use of pronouns in each of the descriptions included in Bach-Peters sentences. In Bosch's terms, in the following sentence:

What remains to be discussed is whether the analysed phenomenon is equally significant in the Polish language, i.e. whether the Polish versions of sentences similar to (1) are correct. It seems that they are not entirely unacceptable, even though they appear less frequently than their English equivalents. This is due to the fact that cataphora is an infrequent stylistic device in Polish. The sentences presented below may seem a little forced, but still acceptable. The nature of Polish stylistics makes participle constructions more natural than subordinate clauses (which appear in the English originals):

(4) *Oszukujący JĄ chłopak pocałował zakochaną w NIM dziewczynę.*[20]
(5) *Każdy, kto na NIĄ zasłuży, dostanie nagrodę, jakiej∅ pragnie.*[21]
(6) *Strzeliwszy w JEGO kierunku, pilot trafił ścigającego GO Miga.*[22]

5.1.3. PRIMARY AND SECONDARY OCCURRENCES OF DEFINITE DESCRIPTIONS

The following example (Hintikka, Kulas 1895: 40):

(7) *George knows that the author of "Waverley" is Scott*,

may be interpreted in two different ways:

(8) ιx [x is the author of "Waverley" $\wedge$ George knows that (x = Scott)]

or

(i) *The pilot who shot at IT hit the Mig that chased HIM* (Karttunen 1971),
the word *HIM* is a syntactic use of a pronoun, whereas *IT* is a referential use (in this case: cataphoric). Such distinctions do not seem necessary in game-theoretical semantics. It must, however, be added that in the Polish language sentences including the prosentential pronoun *to* (it) appear more natural than sentences containing only personal pronouns (the subject of such sentences may be implied). For example, the sentence:
(ii) *Człowiek, który na TO zasługuje, zdobędzie nagrodę, jakiej ∅ pragnie*,
seems to be more correct than (5).

[20] *The boy who was fooling her kissed the girl who loved him* (Hintikka, Kulas 1985: 36).

[21] *The man who shows he deserves IT will get the prize HE desires* (Bach 1970).

[22] *The pilot who shot at IT hit the Mig that chased HIM* (Karttunen 1971).

(9) George knows that [ιx (x is the author of "Waverley" $\wedge$ x = Scott)].

Russell suggests that these two possible interpretations are based on the so-called primary (in (8)) and secondary (in (9)) occurrences of definite descriptions. Game-theoretical semantics explains the origins of this difference (Hintikka, Kulas 1985: 40). What causes it is the different order of applying the (*G.* Russellian *the*) rule in relation to other rules. It also turns out that Russell's distinction does not apply to all examples, as it is possible to think of sentences in which the definite description is taken into account not first or second, but third, fourth, etc.

5.1.4. STRAWSON'S BALD KING OF FRANCE

In his analysis of the sentences of the same type as:

(10) *The present king of France is bald*,

Strawson (1950) criticised Russell's view of the 'existential force' of definite descriptions. He considered the presupposition of existence and uniqueness as sufficient conditions for using a definite description in a sentence. Hintikka and Kulas (1985: 43) do not consider his opinion to be entirely misguided, but argue that the concept of presupposition comes from the level of discourse, not the level of a sentence. Thus, they suggest that the rules — especially the ordering principles of the semantics of discourse — should guarantee that if the conditions of existence and uniqueness are not met, the semantic game (played on a fragment of discourse) is discontinued before the (*G.* Russellian *the*) rule is applied.

It seems, however, that allowing a defeat in the course of applying the above rule does not have any negative consequences. This would mean that a presupposition is a sufficient reason for introducing a definite description, but this description is only effective if the object in question actually exists (within an appropriate model). The mentioned defeat could be interpreted in two different ways, depending on the rules applied for winning and losing. On the one hand, a sentence with an inaccurately used definite description could be treated as false (since there is no winning strategy for Myself). On the other, such a sentence may be regarded as 'nonsense' (since there is no winning strategy for Nature either). This solution takes into account the debatable logical value of sentences such as (10).

5.1.5. REFERENTIAL AND ATTRIBUTIVE USE OF DEFINITE DESCRIPTIONS

All that has so far been said of definite description concerns their attributive aspect (in the meaning specified by Donnellan 1966, 1970). Here is an example of a referential use:

If a person at a party states

(11) *The man standing next to the hostess is a famous writer,*
Hintikka and Kulas (1985: 44)

whereas the man in question was in fact standing next to the twin sister of the hostess, sentence (11) still communicates a valid piece of information, even though Russell's approach dictates that (11) ought to refer to a different person altogether — namely to the man who was standing next to the actual hostess.

By taking into account (in the possible world) the perceived objects instead of the objects described attributively and assuming that the intention of a referential use is given in the sentence:

(12) *The man who — I believe — stands next to the hostess is a famous writer*,

game-theoretical semantics may assign the correct meaning to sentence (11) through a game associated with (12), in which the (*G.* Russellian *the*) rule is applied first.[23]

5.2. THE LOCALISATION OF RUSSELL'S FRAMEWORK. ANAPHORIC DEFINITE DESCRIPTIONS

Section 5.1.1. presents a number of examples of anaphoric and generic definite descriptions. Russell's theory provides a detailed specification of neither of these types. It is easy to find examples of "*the*-phrases" which are not generally associated with the necessity of existence or uniqueness:

(13) *Don't wait for THE CHANGE, tomorrow it may be harder to begin.*[24]

[23]This solution, proposed by Hintikka and Kulas (1985: 44-45) may be appropriate in the analysed example, but still appears to be invented *ad hoc*. A more interesting analysis of Donnellan's dichotomy may be found in: Kronfeld (1986).

[24]This is the English translation of a slogan taken from a Polish propaganda poster (November 1987). The English version clearly demonstrates that the sentence includes a generic definite description. In Polish the slogan was phrased as follows: (i) *Nie czekaj na zmiany — jutro będzie trudniej zacząć.*

The popularity of such slogans in various types of political propaganda is an interesting phenomenon in itself; nonetheless, the issue lies outside the scope of the present publication. Hintikka and Kulas (1985: 46) present a similar example:

(ii) *Don't wait for the change; vote for it.*
(14) *Dan will never pet a lion, for he knows that the beast will bite his hand off.*

Hintikka and Kulas (1985: 46)

In the above sentence one mention of a lion is enough to make it in a way definite. It is not, however, definiteness in Russell's understanding of the term. It should rather be associated with some possible world presented by the context (here: the first part of the utterance). This example demonstrates the semantic nature of the phenomenon under analysis — one and the same object may be identified in different ways.

Game-theoretical semantics offers a very dynamic method of introducing the abovementioned limitations. They are always associated with the state of the semantic game at the moment in which a given "*the*-phrase" is taken into consideration. These facts are incorporated in the following rule related to anaphoric occurrences of English definite descriptions:

(*G.* anaphoric *the*) If a semantic game has reached a sentence of the form:
X — *the* Y *who* Z — W,
Myself chooses an element from the set I (e.g. *b*), while Nature chooses another element (e.g. *d*) from the same set. The game is then continued as it would for the sentence
X — *b* – W, *b is a(n)* Y, *and b* Z, *but d is not a(n)* Y *who* Z.
The symbol 'I' stands for a set of elements chosen at an earlier stage of the game by any of the participants. If I = {*b*}, the game continues as it would for the sentence:
X — *b* — W, *b is a(n)* Y, *and b* Z.

The above rule requires commentary similar to the one presented in section 3. in relation to the (*G. some*) rule. Below are those of Hintikka and Kulas' (1985: 49) remarks that do not constitute an *in extenso* repetition of the comments from section 3:

(i) Rules such as (*G.* anaphoric *the*) require modifications which would ensure that the anaphoric relations included in the initial sentence are

preserved in the result clause.

(ii) The above rule is an accurate depiction of the course of a semantic game pertaining to a single sentence. However, in the case of analysing a longer discourse, it would have to be possible to 'forget' the elements[25] that had been introduced into set I long before the (*G.* anaphoric *the*) rule was applied. Hintikka and Kulas (1985) do not take these pragmatic regularities into account (they are called pragmatic as they result e.g. from the limitations of human short-term memory). They could be included in dialogue games which are a part of Carlson's (1983) discourse semantics, an extension of game-theoretical semantics.

(iii) The above definition of set I must be considered provisional. In practice, the set will have to be expanded or narrowed down, as demonstrated in section 5.5.

5.3. THE USE OF THE (*G.* ANAPHORIC *THE*) RULE

The functioning of the (*G.* anaphoric *the*) rule shall be presented with the help of an example which will enable us to demonstrate the use of the notion of a sub-game (see: section 2).

(15) *Nobody stole your diamonds, unless THE THIEF scaled a slippery 50-foot wall.*

Hintikka and Kulas (1985: 52)

The first sub-game is played on the sentence

(16) *Nobody stole your diamonds.*

In the course of the game, Nature chooses an element of the model. Let us call this element *Gregory*. Myself wins this sub-game, if the sentence:

(17) *Gregory didn't steal your diamonds*

is true. If it is false, the participants move to the next sub-game, played on the sentence

[25]Cf. Hajičova and Vrbova (1982) who analyse the issue of gradual 'forgetting' of certain elements of discourse. They base their work on Sgall's (1979-80) formal definition of 'focus'.

(18) *THE THIEF scaled a slippery 50-foot wall.*

According to the rules presented in section 2, both participants 'remember' the strategy used by Nature in the first sub-game, In other words, set I includes the mentioned *Gregory*. It is the only element in that set, if we assume that this analysis was not preceded by any other (sub)game. Thus, applying the (*G.* anaphoric *the*) rule results in the following sentence:

(19) *Gregory scaled a slippery 50-foot wall and Gregory is a thief.*

The sentence is true if and only if the state of affairs described in (19) is factual, which makes sentence (15) true.[26]

This method may be applied to all result clauses (also including Geach's famous 'donkey sentence').

5.4. ANAPHORIC DEFINITE DESCRIPTIONS AS A SEMANTIC PHENOMENON

A satisfactory analysis of anaphors may be reached only if they are treated as a semantic phenomenon. This is true with regard to pronouns but also — and to a greater degree — definite descriptions.

(i) In the case of very many definite descriptions it is impossible to specify (e.g. using only syntactic means) what the antecedent of the anaphor is. It may be identified (or sometimes reconstructed as a semantic entity on the basis of the context and so-called general knowledge:

(20) *When a plain virgin of forty-five falls in love for the first time and gets her first taste of sex, God help THE MAN.*[27]

(21) *Surely, there is night life in Tallahassee.*[28] *Unfortunately, this weekend THE LADY is in Tampa.*

[26]It may easily be proved that the semantic game described above (Hintikka, Kulas 1985: 52) is equivalent to the following formula:
$(\neg\exists x\ \mathrm{Z}(x)) \vee ((\exists x\ \mathrm{Z}(x)) \rightarrow\ \mathrm{M}(x))$,
where $\mathrm{Z}(x)$ signifies that x is a thief of (specific) diamonds and $\mathrm{M}(x)$ signifies that x scaled a tall wall.

[27]James, P. D. (1983) *The Skull Beneath the Skin*, New York: Warner Books, p. 179; example quoted after Hintikka and Kulas (1985: 55).

[28]The city of Tallahassee is the home of the Florida State University, where professor Hintikka used to work.

Hintikka and Kulas (1985: 55)

(ii) The last example (to which rule (i) may also be applied) shows how a definite description can introduce new information about the so-called antecedent. This sentence implies that there is only one lady involved in the night life of Tallahassee — otherwise the use of a definite description would not be justified.

It may be argued that epithetic phrases emphasising the speaker's emotional attitude towards the object specified by the given definite description constitute a special case of additional information:

(22) *Harry borrowed ten dollars from me, but THE BASTARD never paid me back.*

Hintikka and Kulas (1985: 53)

The opposite of this phenomenon is referred to by Hintikka and Kulas as 'counterepithetic phrases'. The following sentence may be used as an example:

(23) *An old fisherman walked towards the beach. THE FISHERMAN was thinking of the day ahead.*

Hintikka and Kulas (1985: 54)

(iii) In some cases the antecedent, even though intuitively identifiable, belongs to a completely different semantic category than the anaphoric expression:

(24) *A couple was sitting on a bench. THE MAN stood up and SHE followed his example.*[29]

(25) *In every group, THE UNIT ELEMENT commutes with any other element.*

Hintikka and Kulas (1985: 55)

(iv) The claim that the term 'antencedent' is, in fact, inaccurate, may be corroborated by the following example:

(26) *If Steward buys a car and a motorcycle, he will take care of THE VEHICLE.*

[29]This sentence provides yet more evidence of the deep affinity between definite descriptions and pronominal anaphors.

Hintikka and Kulas (1985: 57)

Hintikka and Kulas (1985: 57-58) consider the above sentence to contain several possible syntactic antecedents: '*a car*', '*a motorcycle*' or even '*a car or a motorcycle*'. The first two are mutually exclusive, since there is no information as to the actual object of purchase. The final candidate does not seem accurate either, as it is not possible to explain why an antecedent such as '*a car and a motorcycle*' is unacceptable in the following sentence:

(27) *If Steward buys a car and a motorcycle, he will take good care of THE VEHICLE.*[30]

Thus, any use of the term 'antecedent' in reference to a syntactic element (in the surface structure of a text) must be treated as nothing more than a convenient mental shortcut.

5.5 NARROWING OR EXPANDING SET I

The definition of set I (see 5.2.) was called provisional. Let us now present more specific information on the subject, according to Hintikka and Kulas' suggestion (1985: 59-62).

5.5.1. THE EXCLUSION PHENOMENON

When the (*G.* anaphoric *the*) rule is applied, it becomes necessary to exclude certain elements from set I, although, according to the definition used so far, these elements should be taken into account as possible referents of the definite description. Consider the following examples:

(28) *John saw THE BOY.*
(29) *John saw Mary. THE BOY was in heaven.*
(30) *Adalbert doubted THE SECRETARY.*
(31) *Adalbert doubted that THE SECRETARY could do that.*

[30]If this sentence became the subject of a semantic game, then set I would contain two elements that would be equally likely to be the point of reference for the anaphoric expression. Thus, it would be impossible to select the actual referent using the (*G.* anaphoric *the*) rule.

The general conclusion that may be drawn from these examples is described by Hintikka and Kulas (1985: 59-60) as the so-called exclusion phenomenon:

An anaphoric Me-phrase cannot refer to an individual introduced by a word or phrase occurring in the same clause as it.

This means that such elements cannot be included in the set I related to a given definite description.

In the English language, this phenomenon also occurs in relation to pronouns. In Polish, the situation is slightly different. Polish pronouns have an in-built exclusion mechanism — the obligatoriness of using either the reflexive or the personal form.

5.5.2. INDUCTIVE EXPANSIONS OF SET I

Hintikka and Kulas (1985: 63) notice that there are cases when set I needs to be expanded. They use the following examples:

(32) *Every marriage has its problems. Sometimes THE HUSBAND is the source of the problems, sometimes THE WIFE.*
(33) *The best advisor of every young mother is her own mother.*
(34) *If John gives each child a present for Christmas, some child will open THE PRESENT he or she was given today.*

Hintikka and Kulas (1985: 63 — 64)

These examples lead to an inductive definition of set I which allows us to take into account a larger number of possible referents of the anaphor than the definition presented in section 5.2:

Definition of I: I is the smallest set that contains J and is closed with respect to the totality of functions and functionals available to Myself at the time when the application of (*G.* anaphoric *the*) is made, where J is the set of individuals chosen by the players up to that point in the subgame in question plus the individuals introduced by the (*G.* name) in earlier subgames.

Hintikka and Kulas (1985: 63)

The inductive nature of the above definition is related to the use of the term 'functional', which is to be understood as a function of function-type arguments (a function of functions, a function of functions of functions etc.). Another justification is related to the (*G.* name) rule. Its application involves ascribing an appropriate reference to any proper name used in the

sentence that is the subject of a game. Set I only includes elements whose appropriateness has been confirmed when rule (*G.* name) was applied. This means that in game-theoretical semantics (unlike many other theories of logic) proper names do not receive any special treatment.

A semantic game played on sentence (34) would be composed of two sub-games, the first of which would pertain to the antecedent. The strategy used in this first sub-game would be remembered by Myself at the time when rule (*G.* anaphoric *the*) is applied in the second sub-game, related to the consequent. This strategy is the function (f), which ascribes a present to each of the children. Thus, set I includes not only the element chosen by Myself (e.g. c) to specify the phrase '*some child*', but also the present *f(c)* received by the appropriate child.[31]

These considerations pertain to a situation where the antecedent of sentence (34) is true, i.e. where the function (f) ascribes a present from *John* to every child. If the antecedent is false, i.e. if there is no such function (f), the game is automatically won by Myself (see: section 2.3. on sub-games).

6. A GENERAL APPROACH TO DEFINITE DESCRIPTIONS[32]

Game-theoretical semantics regards anaphoric *the*-phrases as the most basic use of English definite descriptions. In Hintikka and Kulas' framework, the remaining types of definite descriptions are treated as pragmatic variants of this primary use.

This approach is corroborated by statistics. Anaphoric descriptions are much more frequent than any other types. It also seems that if an anaphoric interpretation is possible, the definite description in question cannot be treated as Russellian. Hintikka and Kulas (1985: 65) present the following example:

[31]Such a solution (Hintikka, Kulas 1985: 64) clearly indicates that the contents of set I is influenced by very complex factors, which are usually referred to as 'general knowledge' (or sometimes 'linguistic knowledge'). Once again, it must be noted that Hintikka and Kulas do not provide any specific information on how all the 'functions and functionals' find their way to set I. It might be too much to expect such details in a semantic theory, yet we decided to emphasise this issue, as the solution to this problem is particularly significant for computer systems of understanding natural languages, which may be considered good practical means for verifying each semantic theory. Hintikka and Kulas' work focuses on the aspects that would be of interest to logicians, not theoreticians dealing with artificial intelligence.

[32]A much briefer version of this analysis was presented at the 33^{rd} International Conference on the History of Logic (Cracow, October 1987) — Fall (1987).

(35) *You want to see Mr. Lowell? Well, today THE PRESIDENT is in Washington, conferring with Mr. Roosevelt.*

This sentence is believed to have been used in the 1930s by a secretary to a person who wanted to speak to the vice-chancellor (president) of Harvard University. At the time the post was held by Lowell, while Roosevelt was the President of the United States.

We do not wish to question Hintikka and Kulas' view that anaphoric descriptions are used more frequently than Russellian ones, yet it must be noted that the phrase *the president* in sentence (35) has two possible interpretations. The expression may be regarded as anaphoric (such is the view of Hintikka and Kulas), but it is equally justified to suspect that for a secretary at Harvard it was much more natural (and common) to use the term *president* in relation to Lowell, not Roosevelt. This would mean that in the local discourse universe of the mentioned secretary the phrase *the president* from sentence (35) is an example of a Russellian use of (abbreviated) definite description.

The above line of argument must, however, be treated as mere speculation. A conclusive decision on the type of definite description used in (35) does not seem feasible. This question must remain unanswered; or rather both interpretations must be seen as equally plausible.

6.2. DEIXIS AND THE CHOICE OF A NEW SET I

Hintikka and Kulas (1985: 65) explain 'deixis', i.e. a case when the speaker points directly to an object perceived by both the sender and the recipient of the message, similarly to the referential uses of definite descriptions (see: 5.1.5.). The general framework of interpretation does not require any modifications; the approach presented for definite descriptions may easily be generalised to include deixis. The only addition that needs to be made is expanding set I to include the (situationally given) individual elements that are perceived by the participants of a semantic game.

A very clear example of deixis occurs in the following situation. A person seeing an animal trainer in distress shouts:

(36') *Look out for the tiger!*

or

(36") *Look out for him* (*her, it*)*!*

In our analysis of the so-called epithetic descriptions (see: 5.4.), example (21) in particular, we have noted that some *the*-phrases introduce new, previously unknown information regarding their 'antecedent'. In other words, they can determine the conditions that must be met for the sentence containing this antecedent to be true.[33] Thus, in some cases specific information on the content of set I is related to using an appropriate definite description, and not with the previous stages of the semantic game (Hintikka, Kulas 1985: 66).

Some definite descriptions (e.g. (36') have even more significant consequences. If (36') was preceded by some conversation, then the conversation was associated with a certain set I. However, the act of uttering sentence (36') results in the emergence of a new set I' which stems from a new communicative situation. This change may only be temporary. For example, if the animal trainer has come to no harm, the speaker and the recipient may come back to their original conversation (and the related set I). If they want to comment on what just happened, they will use the set I', which includes the trainer, the tiger and perhaps some other situational elements.

A similar case is discussed by Hintikka and Kulas (1985: 66). In their example situation a government minister replies to a remark by an MP addressing the said MP as *the right honourable member*. This does not mean that the minister regards all other MPs as less honourable, but that they focus (thus limiting the scope of set I) on the one particular person.

6.3. THE RUSSELLIAN USE OF DEFINITE DESCRIPTIONS

Game-theoretical semantics perceives Russellian definite descriptions as a special (pragmatic) case of applying the (*G.* anaphoric *the*) rule. This application becomes available if it is not possible to treat a given *the*-phrase as an anaphoric description.

Let us consider the interpretation of a sentence such as:

(37) *The author of "Waverley" is a Scott.*
Hintikka and Kulas (1985: 66)

It is clear that the above sentence may be used in the middle of an utterance or at the beginning of one. Let us focus on the latter case. In

[33] See note (ii) to example (21).

such a situation set I is, of course, empty. Hintikka and Kulas retrace the mechanism of ascribing meaning to phrases of this type in the following manner: since there is no possibility of choosing an element out of set I given in the (*G.* anaphoric *the*) rule — the set is empty! — the recipient intuitively uses the principle of charity formulated by Davidson (1973). In this case the principle involves making the assumption that the domain from which the choice is made is available to all language users at any given time. If the speaker wished to convey a sensible thought, they had to take into consideration the possibilities of its reception. Thus, the new set I is equivalent to the entire discourse universe and it is this domain that Myself chooses an element from, according to the (*G.* anaphoric *the*) rule.

However, Hintikka and Kulas (1985: 67) claim that this method results in exactly the same interpretation of definite descriptions as the one presented by Russell. This corroborates the thesis stated at the beginning of this section: that Russellian descriptions are a special case of applying the (*G.* anaphoric *the*) rule — similarly to deixis and generic uses (which will be discussed in a further section). In each of the mentioned cases the method of choosing an individual from set I is different and depends on factors of pragmatic nature.

6.4. THE GENERIC USE OF DEFINITE DESCRIPTIONS

The final type of definite descriptions analysed by Hintikka and Kulas (1985: 68) are the so-called generic uses, such as the one in the sentence:

(38) *The tiger is a dangerous animal.*

Let us assume once more that this sentence is uttered out of context. Thus, it may not contain an anaphoric definite description. If there is no tiger in sight, this sentence is not an example of deixis. The Russellian use is also excluded, as the condition of uniqueness is not met — the world is still home to more than one tiger. Thus, none of the previously discussed interpretations is applicable to this case.

According to Hintikka and Kulas (1985: 69) this suggests that the uniqueness related to the article *the* pertains not to the real world, but to the world of the speaker's imagination. In this imaginary world the set I must contain exactly one tiger, perhaps along with a single specimen of every other animal. Thus, what was applied here was some type of an 'axiom of choice'. How was the choice made? In this case at least, it seems to have been

related to representativeness. This is why sentence (38) conveys information which is true of any typical representative of a given biological species.

This line of thought has been dubbed 'transcendental deduction' (or 'pragmatic deduction').[34] It explains the standpoint of game-theoretical semantics — with its general principles for interpreting definite descriptions — on the generic uses of these descriptions. This time the (*G.* anaphoric *the*) rule involved choosing an element of set I which was 'transcendental' in nature.

7. IN LIEU OF A SUMMARY

We shall not present further comments on Hintikka and Kulas' (1985) framework, deeming the remarks made in the main body of text and in the footnotes sufficient. Instead let us briefly consider these issues with relation to the Polish language.

7.1. A COMPARISON OF POLISH AND ENGLISH DEFINITE DESCRIPTIONS

The present section clearly suggests that Hintikka and Kulas (1985) associate the term 'definite descriptions' with expressions preceded by the definite article (*the*). This view, although very convenient in the case of the English language, may raise some doubts — mostly related to the generic uses of *the*-phrases which are very close to being indefinite. The Polish language has no means of emphasising the difference between sentences (38) and (38'). In any case, it is debatable whether these sentences signify something different.

(38') *A tiger is a dangerous animal.*

Hintikka and Kulas (1985: 70)

Hintikka and Kulas (1985: 70) also present the following examples:

(39') *The mammoth lived in Siberia during the ice age.*

[34] "A 'transcendental deduction' (more accurately 'pragmatic deduction') of the force of generic *the*-phrases in ordinary discourse" (Hintikka, Kulas 1985: 69). The authors (Hintikka, Kulas 1985: 69-74) also present various conclusions that may be drawn from using pragmatic deduction (these have not been included in the present article).

(39") *A mammoth lived in Siberia during the ice age.*

According to Hintikka and Kulas (1985: 70), only one of these sentences, namely (39") may trigger a question such as: *Which mammoth are you talking about?* Thus, the difference between this pair of examples is less subtle than the previously discussed ones. It is possible to emphasise it in a Polish translation. These would be:

(40') *Mamut żył na Syberii w epoce lodowcowej.*
(40") *Na Syberii w epoce lodowcowej żył mamut.*[35]

There may still be some doubt, but it seems most natural to consider sentence (40') an example of the generic use, and (40") as an instance of indefinite use (introducing a new element of discourse; this issue shall be discussed in a further section). In traditional terms, (40') may be regarded as a general supposition, while (40") is a simple supposition. The similarities between Polish and ancient languages (e.g. the lack of articles, inflection) may justify revisiting old semantic theories, which could prove more useful for describing the Polish language than the new framework — that seems cut to the needs of English and other isolating languages.

7.2. HOW TO IDENTIFY DEFINITE DESCRIPTIONS IN POLISH

The basic problem with Polish definite descriptions or, more generally, with the applicability of this term to the analysis of the Polish language, lies in the possibility of identifying such elements in an utterance. This problem does not exist in English (at least not in the framework presented by Hintikka and Kulas, 1985): the start of each definite description (the word *the*) may be found using formal means only, while the end of the phrase is easy to identify with syntactic methods, due to the isolating nature of the English language.

The issue of identifying Polish definite descriptions may be analysed within the framework of the so-called functional sentence perspective, a theory favoured mostly by the Prague School of linguistics. Definiteness is associated with the theme of a sentence; the lack of definiteness — with the

[35]It should be noted that the difference is effected by changing the word order. This corroborates Szwedek's (1981) views on the role of word order as the Polish equivalent of the definite article in languages with a fixed word order.

rheme.[36] It is, however, baffling that the many years of research have not resulted in specifying the scope of terms as basic as 'theme'. Marciszewski's (1977: 222) words give evidence to this claim:

[. . .] The criterion of reference which is particularly useful[37] does not always divide the sentence into a theme and a rheme. In the case of more complex phrases sometimes only single words are identified as the theme. In such a situation one must either refrain from accepting the thesis that sentences are entirely divisible into a theme and a rheme or assume that the theme is composed of the entire argument which includes the element that is the theme according to the criterion of reference.[38]

From our point of view it is more convenient to include all definite elements of a given sentence into the theme, yet Marciszewski (1977) – due to his research needs — preferred to isolate specific phrases which could be called principal themes of sentences.

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[36]Detailed information may be found in many works by Sgall, Hajićova, Mathesius and others.

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SEMIOTICS AND ONTOLOGY

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Introduction

This text[1] discusses the issue of the application of semiotics by formulation and solving ontological problems. This issue may actually be contained in two questions:

1. should one apply semiotic theories and/or methods in ontology at all?
2. what are the types of proper application of semiotics in ontology?

For these questions to be sufficiently clear, one needs to provide a relevant definition of semiotics (cf. II) and a relevant definition of ontology (cf. III). Since question (2) presumes a positive answer to question (1), it is necessary to present arguments supporting such an answer (cf. IV). Then it will be possible to plainly answer question (2) (cf. V), as well as — in order to present a perspective of semiotic-ontological research — present an exemplary semiotic approach to traditional ontological issues (cf. VI).

Definition of Semiotics

It is assumed that semiotics is a (general) study of signs (the English word *sign* is an equivalent of one of the following Greek words: *sema, semeion,*

[1] Its first version was delivered on 3 April 1998 at the seminar "Znak — Język — Rzeczywistość" ("Sign — Language — Reality") hosted by Prof. Jerzy Pelc. The author wishes to thank the participants of the seminar for the remarks, which made it possible to correct and extend the text. Moreover, I need to thank Prof. Antoni B. Stępień for his assistance in improvement of the text.

semainon). It may be practiced above all (but not only) in the context of linguistics ("semiology"), or in the context of logic ("logical semiotics") (cf. Pelc: 1982: 11-31 and Weinsberg 1983: 9-12 and 25-30). In the second instance, discussed in greater detail below, those aspects of the sign are accentuated, which are described as "cognitive functions" or "cognitive capability" (Stępień 1995: 60). In view of the commonness and importance of linguistic signs, semiotics focuses mainly (but not only) on linguistic expressions.

After J. Pelc (1982: 223-227; 1998: 256-257) it is possible to distinguish 5 meanings of the term *semiotics*, i.e. 5 (interconnected) concepts of semiotics:

1. "syntactic, semantic and pragmatic properties of the sign" — semiotics as an object of studies (2), semiosics, the process of semiosis;

2. theory of the properties listed under (1) — semiotics as a study of (1); theoretical semiotics;

3. meta-theory of theory (2) – semiotics as a meta-science investigating (2), meta-semiotics (in particular the methodology of semiotics);

4. "any and all semiotic methods" — semiotics as a collection of methods listed in (2) by (3); methods of semiotics;

5. investigation of some field with the use of semiotic methods (i.e. methods (4)) or theory of semiotic (semiosic) properties of objects from such a field (indicated in point (1)), i.e. treated as signs — semiotics as applied semiotics, e.g. semiotics of culture, semiotics of film.

Hereinafter we will mainly focus on concepts from points (2) and (4) above. Ontology is after all a certain theory (science), and therefore application of semiotics to it can only consist in application of semiotics as a theory — (2) (secondarily as a meta-theory — (3)) or as a set of methods — (4). If it turned out that the object of ontology is a sign and may be analysed as a sign or that it may be recognized as a sign, then it would be reasonable to speak of the semiotics of being or of ontosemiotics. A possibility, although rather doubtful, of such a situation has been indicated in V, 5.

At a later stage of this paper, by examination of the announced issues, it will be determined i.a. which of the semiotic theories (parts of theories) and methods may be beneficially applied to ontology. For now it is enough to assume that *semiotic methods* mean in this case various types of analyses of language(s), its components and contexts, done mainly with the use of logical tools.

Definition of Ontology

Ontology is, according to the etymology of the name of this field (Greek: *to on* — being, *ontos on* — actually being, *logos* — science, theory), the study or science of being. This general formulation is probably the only one that all ontologists will accept. Any further definitions, e.g. "study of the being as a being" arise discussions.

Similarly as in the case of semiotics, one may distinguish relevant concepts of ontology:

1. being, properties of something as being, properties of being — ontology as an object of research of (2), better: ontics, ontic properties (structures) (since the term *ontology* — unlike *semiotics* — may mean only a science (within one of the meanings of the term) but not the object thereof);

2. theory of the properties mentioned in (1) — ontology as a study of (1), theoretical (general) ontology;

3. meta-theory of theory (2) — ontology as a meta-science investigating (2), meta-ontology (especially methodology of ontology); the set of ontological methods — ontology as a set of methods distinguished in (2) by (3), methods of ontology; examination of a given domain with the use of ontological methods (i.e. methods (4)) or theory of ontic properties (i.e. (1)) of the items from this domain (treated as beings) — ontology as specific ontologies, e.g. ontology of a human being, ontology of culture.

We will still be most interested in ontology as a general study[2] (less as a meta-study) (concept (2), less concept (3)) and its methods (concept (4)). Results of specific ontologies (concept (5)) depend on the results of general ontology, therefore the former may be omitted in this work. An exception may at most be here (in parallel to semiotics of being or ontosemiotics) the ontology of the sign (i.e. semioontology) — and the issue of its relation to general ontology and semiotics.

[2] I presented more particular information, including historical information, in another publication (Wojtysiak 1997). For more details and disscussions (esp. in analytic tradition) see Berto F., Plebani M. (2015). In this article the terms *ontology* and *metaphysics* are treated for simplification's sake as interchangeable, although different approaches have often been presented as well (Wojtysiak 1993: 102-118). By discussion of views of the given authors, we will apply the terms used by them.

Determination of the relation between semiotics and ontology as two studies (theories) requires more detailed specification of the object of their examination, i.e. answers to the following questions: "what is a sign?" "what is being?" This, however, is a most complicated issue, since we dispose of many different concepts of the sign (e.g. Kotarbińska 1957/1990: 152-205; Pelc 1982: 36-135) and of the being (e.g. Wojtysiak 1993: 125-131); apart from the above, the definitions of the sign and (even to a greater extent) the definitions of being are entangled in a number of difficulties. It sees that a common feature of various definitions of a sign is that the sign refers to something else that is different from the sign itself[3] *representamen* is something which stands to somebody for something in some respect or capacity. [...] The sign can only represent the Object and tell about it." (disputes usually refer to this "something" — is it, for example, a thing (what thing?), is it a feature or function (use), is it an event, or maybe a relation?). Further, being — as we will all probably agree — is something that is or exists (whereby some understand this "something" as anything possible or factual,[4] and others only as something factual). By such definitions it is rather undisputable that the sign is a kind of being, i.e. that the scope of the concept of the sign is contained in the extension of the concept of being. Therefore, ontology, as the most general of sciences, is a study more general than semiotics.

Relations between the scopes of the objects of the discussed disciplines do not need to directly determine the relations between the methods which are used in these disciplines. In order to determine these methodological relations, we need to specify the methods used in ontology (semiotic methods have been initially specified in II). T. Czeżowski (1948: 40-66), using the term *metaphysics*, in the methodological aspects of metaphysics distinguishes inductive, intuitive and axiomatic (to be more precise: formal) ontologies. The method of the first ontology consists of a generalisation (or explanation with the help of the used hypotheses) of the results of empirical sciences (and in analysis of the assumptions of the latter), the method of the second ontology consists of some "insight" into the essence of the reality or fragments thereof, and the method of the third ontology consists of substantive interpretation (of the found or especially constructed) formal or logical calculi.

Not going into details, we will only note that the concept of inductive

[3] Peirce (1933, 2.228, 2.231) *de facto* refers to this scholastic definition of a sign in the following manner: "A sign, or

[4] In this case one more often uses the term *object*, which will also sometimes be done in this paper.

ontology (metaphysics) negates the autonomy of ontology, making it a derivative discipline of empirical sciences, inheriting their methodological difficulties. As far as the "insight" method is concerned, which is propagated by the supporters of intuitionistic ontology, one may have doubts whether it meets the condition of intersubjective controllability (i.e. whether it is at all a reliable method). As to the third one, it is one of the types of semiotic methods, besides without it, it is difficult to critically generalize and explain (as proposed by the inductive ontologists) the results of empirical sciences.

The above review constitutes an initial argument in support of the thesis that ontology, provided it is not limited to free speculation, does not dispose of its own, reliable and autonomic method.[5] In such a situation, in this paper, it shall be considered whether certain semiotic methods may be considered to be methods of ontology. However, the history of philosophy also knows methods of ontology other than semiotic methods. Should it turn out that the semiotic versions of these methods provide them with better epistemic qualities, a program of methodological semiotism in ontology will be more justified.

Arguments in Support of the Application of Semiotics in Ontology

The unclear methodological status of ontology is a starting point for only one of many arguments in support of the application of semiotic theories and methods in ontology. We will present these arguments in the following order: ontology's object specificity argument (avoidance of doubtful assumptions), ontology's methodological difficulties argument (finding relevant methods), ontology's language ambiguity argument (enabling it possible to make the terminology more precise and revealing the consequences thereof), ontology's problems' specificity argument (discovery of the conceptual problems).

Ontology's Object Specifitciy Argument

As we have already noted, the object of ontology's examination is being, i.e. what is or exists. However, the nature of being or existence, as is often the case with the objects of philosophers' ponderings, is difficult to specify. Yet, undertaking research of any object is conductive for adoption of the following assumptions (Stanosz 1991: 7):

[5] A similar thesis extended to the entire philosophy and justified by the analyses of particular examples of alleged philosophical methods has been presented by S. Judycki (1993). Of course, the veracity of this thesis depends i.a. on the adopted concept of method; being either more or less restrictive. It is also material to distinguish micromethods from greater sets thereof (macromethods).

1. this object exists;

2. this object exists in such a manner that it is possible to examine it as the (relatively) independently existing beings (above all individual beings).

Assumption (a) applied to the being results in a trivial (cognitively barren) assertion that "the being exists." Assumption (b), with the same application, may result in a quite risky statement: "the being exists independently" (this a priori excludes the existence of dependent beings, and therefore at the starting point of ontology one resolves, without any argumentation, a certain ontological problem). As it shows, the analysed assumptions prove, with respect to being, doubtful, either due to their cognitive barrenness or due to the arbitrariness by further clarification of the concept of being.

In order to reinforce the argument, we will apply the discussed assumptions to existence, which is necessarily connected to being (since being exists!). Assumption (a) understood literally and applied to existence as an object of examination, results in a paradox assertion that "existence exists"; assumption (b) results in a similarly paradox assertion that "Existence exists in such a manner as (relatively) independent beings (e.g. individual beings)." As to the first assertion, some will negate it flat "existence does not exist, what always exists is something" (Stępień 1995: 186) other will manifest intellectual helplessness when confronted therewith ("all intuitions fail me here" (Jadacki 1996: 66)).[6] The second assertion is severely criticized for example by R. Ingarden (1987: 76 et seq.) and M. A. Krąpiec. In their opinion existence is one — although particularly important! — of the "elements" ("factors," "parts," "components") of being, and "the distinguished elements are not beings, despite the fact that due to the necessity to know them and name them, we reify them" (Krąpiec 1984: 239f)

Would it not therefore be advisable, in light of the above, to precede or replace the ontological speculations concerning the being and/or existence with a relevant analysis of expressions used by ontologists? Analysis of these expressions — e.g. *being, existence, being is equivalent to itself* — could be a means of making it possible to avoid doubtful assumptions and their paradoxical consequences and other "language traps." After all, these expressions undoubtedly exist and (at least as inscriptions) exist

[6] This intellectual helplessness is justified by D.E. Bradford (1980: 9): if existence exists then it possesses itself (it is exemplified by itself); if it does not exist, then nothing possesses it (it is not exemplified at all), and therefore it does not exist. Both situations are difficult to think.

independently (and as words they are, as W. V. O. Quine (1960/1992: 169) claims, "tangible objects").[7] Apart from that they are characterised by meanings and/or functions (syntactic, semantic and pragmatic), which may be determined irrespective of the adopted theory of meaning or function (what is important is not WHAT meaning actually is, but WHAT particular expressions mean). What is more, these expressions refer to SOMETHING (they have non-linguistic ontic counterpart) or are parts of expressions referring to something or contain as their components expressions referring to something.

Ontology's Methodological Difficulties Argument

Many ontological assertions are either very difficult to subject to an intersubjective verification procedure, or this procedure (and its results) are complicated and lack common acceptance amongst the philosophers. R. M. Rorty (1967/1992: 4), still as an expert in and supporter of linguistic philosophy, observed that "a method which does not lead to a consensus cannot be a good method"). Although (in various philosophical streams) there has already been formulated a framework of ontological methodology,[8] yet methodology of semiotics (and other related disciplines) seems to provide simpler, more commonly accepted tools, characterised more clearly by the feature of intersubjectivity, and sometimes capable of algorithmisation. With the help of the latter it is possible (although not in a totally clear and final manner), after correct paraphrasing and by a potential assumption of equivalence of the substantive and linguistic sphere (cf. V. 1.), to solve (the reformulated) problems of ontology as (properly interpreted) problems concerning linguistic expressions.

[7] Quine, referring to Carnap's distinction between the "material" (*inhaltliche*) and "formal" mode of speech, suggests "the shift from talking in certain terms to talking about them." Characteristic here is the example of the mile: instead of debating generally about the existence of miles, it would be better — in order to avoid misunderstandings — to consider the usefulness of the word *mile* in relevant contexts and purposes. The problem of the mile to a certain extent resembles the problem of existence.

[8] S. Kamiński, probably the most mature methodologist of thomistic metaphysics (ontology) stated outright (1969/1989: 96-101) that a supporter thereof "finds it difficult to communicate with representatives of other fields of philosophy," since he uses peculiar terms of hardly graspable semiotic status, "what seems more complicated is the issue of empiricism of [those] concepts [terms]" and "the complexity of operations [...] of forming" a language of the theory of being, as well as the intersubjective rules of its reasonableness.

As an example let us use the abovementioned phrase that "Existence is a part of being." In the justification of this assertion it is possible to refer to some kind of (intellectual) intuition and/or some discourse operations. It is difficult to indicate (in particular in the first case) their intersubjective legitimacy, by formulation of results thereof an important role is played by arrangements in the field of concepts and terminology. It seems that the above difficulties may be mitigated if the assertion under discussion is reformulated into the following assertion "The expression *existence* (in its initial and basic form *to exist*) is a syntactically (and semantically) dependent expression, i.e. it plays its syntactic role (and means something) first as a segment of other expressions." The veracity of this proposition may be verified by reference to the etymology of the discussed expression and to the elementary categorical grammar of the natural language, indicating that in many ethnic languages the verb *to exist* (and its equivalents) plays the role of a logical operator or an auxiliary verb. (A similar thing was done by logicians, who, omitting the linguistic studies, interpreted certain signs of formal logic, in particular the existential quantifier, with the use of this verb (Quine 1992)). It cannot be expected that application of this verification procedure will for sure be free of any difficulties. However, this procedure has an advantage over many ontological operations, namely, unlike the latter, it is clearly defined and is characterised by intersubjectivity.

Ontology's Language Ambiguity Argument

All problems and assertions, including ontological problems and assertions, are formulated in some language. A necessary condition of solving problems in the right way and justifying these assertions aptly is to formulate them in a correct and clear language. Equivocations and other semiotic mistakes, resulting mainly from the failure to precisely determine the meaning of words by lack of relevant definitions and distinctions, may be the cause of serious cognitive distortions. Philosophers examining subtle problems, without having at their disposal relevant language apparatus, are exposed to such mistakes.

The topic of being belongs to these subtle problems. By formulating and solving it, a Polish or English language user may use the verbs *być* (or *to be*) and *istnieć* (or *to exist*) and other related expressions. (We meet an analogous situation in many other Indo-European languages). However, if such user is not aware of, for example, the meanings and/or shades (nuances) of meaning and the functions of these expressions, then accidentally (without relevant argumentation), the user is entangled in certain ontological concepts. For

example, the use of the verbs *to be* or *to exist* only in the locative meaning may a priori prefer the materialistic orientation by solving ontological problems.

Differentiation of various meanings of *to be*, (at least) as the initial phase of formulation and solving of ontological problems, is all the more important, if Ch. H. Kahn (1973 a: 1) is right that "without the verb *to be* we would have difficulties by formulation of the concept of Being or by comprehending what it is." Probably, the choice of the concept of being depends (at least partially) on the (conscious or not) separation of a given meaning of *to be.* Although the language structures of pre-philosophical language do not clearly determine any particular philosophical system, nonetheless, as Kahn observed (1973b: 3) "The truth is that the structure of any given language exhibits various conceptual tendencies, many of them in conflict with one another, and that different philosophers develop these tendencies in different ways. In this sense, a large number of alternative ontologies are "latent" in the language."

As it shows, certain semiotic operations are necessary not only to make the language of ontology more precise but, thanks to these operations, it is also possible to gain something more: to reveal the possibilities of solving ontological problems, which are admissible in the semiotic and semantic layer of language.

Ontology's Problem's Specificity Argument

What is the character of the problems of ontology, i.e. the problems of being? It seems that these are not empirical problems; their purpose is not to enumerate everything that exists. These are neither foremost axiological problems: before one establishes the value of being it is necessary to specify WHAT being is. What is therefore left?

If the problems of ontology are not to be liquidated, then — since other possibilities have been excluded — we need to determine them as CONCEPTUAL PROBLEMS. By formulation of ontological issues we do not ask questions about their facts or values; by solving them we refer neither to experience nor to moral intuitions. We rather ask questions about the content of certain concepts (and judgements), to which we have the best insight only through analysis of relevant language expressions. As P. F. Strawson (1959; cf. also 1992) observed, the task of an ontologist (a metaphysicist) is either "to describe the actual structure of our thinking of the world" (the so-called descriptive metaphysics) or to design it (revision metaphysics). Furthermore, K. Ajdukiewicz[9] (1983: 105; cf. Rorty 1967/1992: 5, 11-13)

[9] This author clearly separates ontology from metaphysics.

states directly that: "WE WILL BE ABLE TO DETERMINE THE TASKS OF ONTOLOGY AS STRIVING AT SUBSTANTIVE DEFINITIONS OF CERTAIN TERMS BASED ON PENETRATION OF THEIR MEANING IN THE LANGUAGE FROM WHICH WE ARE TAKING THEM."

The two abovementioned authors include i.a. the following concepts into the group of concepts analysed by ontology: being (actual, possible or conceivable), existence, identity, object, property. The following words correspond to the abovementioned concepts: *to be, to exist, the same, something, some (kind of)*. Let us note that these words are characterised by their ambiguity and wide extension and are hardly perceptible in their subtle content, yet at the same time they seem indispensible (at least *implicite*) in the dictionary of every discourse (be it scientific or any other discourse); other words are defined exactly with their use. If the ontologists throughout the centuries have been asking about the nature of being, then *de facto* they have been attempting to penetrate the meanings, functions and mutual relations of these words — they have been striving at "explanation of [the basis of] the conceptual apparatus used in [science], philosophy and everyday life" (Ajdukiewicz 1983: 106). Therefore they have been engaging in a conceptual-linguistic analysis, which, in different ways, is closer to logicians, semiotitians and linguists.

As it follows from the above the field of ontology for many philosophers covers a set of metalinguistic operations, clearing up or postulating the conceptual structure, expressed in the philosophical or paraphilosophical language. One can hardly be surprised at this, if one assumes after R. Carnap (1956: 206-215) that ontological problems concern not the existence of single beings of a certain kind (these problems are solved empirically or logically on the basis of the rules of a given language system), but "the existence or reality of a system of beings [of specific kinds] as a whole" (e.g. things, numbers, classes, properties). The problems of ontology are therefore antecedent with respect to the theory of empirical problems. It is simply (as postulated by Carnap) a practical problem of selection of a relevant (for certain purposes) system of language forms. It is even possible to say (exceeding Carnap's proposal) that these problems are connected not with discovering something new in the universe, but with the determination of what may be discovered at all. In other words: determination of WHAT (as such) may be or exist and WHAT IT MEANS that something is or exists. Of course this WHAT and WHAT IT MEANS are here relativised to a given language.

Irrespective of the fact of whether we accept the above arguments in their rather moderate or more radical version, this acceptance results in

the need to embrace the use of relevant semiotic (and similar) analyses in ontological research (or to perform before or after them). If it has been manifested that one needs to apply semiotics in ontology, then one needs to ask: how to do it?

Types of Application of Semiotics in Ontology

Various attempts at applying semiotic methods to solving ontological problems are connected with a program which is the basis of the so-called LINGUISTIC (semiotic) PHILOSOPHY (ONTOLOGY). Several dozen years ago, Rorty (1967/1992: 3) specified it as "the view that philosophical problems are problems which may be solved (or dissolved) either by reforming language, or by understanding more about the language we presently use. This view is considered by many of its proponents to be the most important philosophical discovery of our time [...]" In practice it turned out that both the linguistic program itself, as well as its realisation meet various difficulties (dividing its proponents). The quoted author 25 years later wrote: "[...] linguistic philosophy is now behind us [it belongs to the past] [...] most of those who call themselves "analytic philosophers" would now reject the epithet "linguistic philosophers" and would not describe themselves as "applying linguistic methods"" (Rorty 1992: 374).

If it is indeed so, then "death of philosophy as a discipline with a method of its own" (Rorty 1992: 374) occurred. However, instead of passing dramatic judgements, we should consider what possibilities are at the disposal of an ontologist applying semantic methods (a semiotic ontologist). It seems that initially (not exhaustively) it is possible to distinguish the following types of application of semiotics in ontology: penetration of the language structure in the aspect of it reflecting the structure of the universe, determination of the ontological obligations of the language, definitional analysis of ontological expressions, unmasking of the functions of the ontological expressions, treatment of the world (being) as a sign. These types (with the exception of the last one, which, as has already been mentioned, raises the most doubts) have been ordered in such a manner that in the first application mentioned the decisive role is played by the syntactic aspect, in the following ones — the semantic aspect, and in the (one but) last one — the pragmatic aspect.

Penetration of the Language Structure in the Aspect of Reflecting the Structure of the Universe

This method generally consists of two operations:

(1) determination of the structure of the natural language or construction of an artificial language of a clearly defined structure; "language structure" is understood here as an ordered set of (kinds of) expressions of the language;

(2) finding of structural similarity between the set of (kinds of) expressions and the set of (kinds of) beings.

If we are dealing with the mapping of the set of (kinds of) language expressions ONTO a set of (kinds of) beings, then the ontology, being the result of such an operation, concerns all (types of) beings contained in the universe. In case of the mapping of the first of these sets IN the other, the ontology pertains only to the kinds of beings ascribed to the types of language expressions — the remaining types of beings are beyond the reach of the examination, whose starting point is the analysis of language. Let us add that it would be ideal to find isomorphism or homomorphism between the set of expressions and the set of beings, i.e. a function isomorphicly or homomorphicly mapping the first set (or its order relation) to the second set (or its order relation). Then one would be able to speak of perfect similarity between the language and the world (the universe of beings): a given relation would obtain between any types of language expressions, if and only if a relevant relation would obtain between their equivalents (images) in the world, i.e. between beings. Certainly, it would be easier to find a function projection only homomorphicly, then however, there would exist such types of expressions, which would have one and the same equivalent in the ontic layer.

Penetration of the language structure in the aspect of reflecting the structure of the universe has been effected by ontologists since Antiquity, although with varying degrees of self-consciousness and advancement. The first clear example here was in the form of Aristotle's *Categories* (1995 1a-11b), which assumed correspondence between the language sphere and the sphere of being. In the 20th century the most famous attempts were those of B. Russel (the so-called logical atomism) and of Wittgenstein (from the period of the *Tractatus Logico-Philosophicus*).[10] Further, a Polish philosopher, I. M. Bocheński (1949: 258) formulated the slogan that "syntax mirrors ontology," which could be realised thanks to the so-called categorical

[10] Here are a few famous Wittgenstein's thoughts (1922, 4.01., 4.016, 2.15): "the proposition is a picture of reality," "in order to understand the essence of the proposition, consider hieroglyphic writing, which pictures the facts it describes," "that the elements of the picture are combined with one another in a definite way, represents that the things are so combined with one another."

grammar, initiated by Ajdukiewicz. Depending on the adopted division of the language expressions into syntactic categories, there appears to be corresponding possibilities of division of the universe into the categories of being: the categories of being must reflect the categories of the (syntax) language.[11] (As in the epistemological aspect, although in the ontological aspect it is rather the other way round!). Let us add that determination of categories of beings is one of the most important elements of the discussed interpretation of formal calculi — (re)construction of their models.

By pursuing semiotic (syntactic) ontology, understood in the manner described above, there would appear numerous problems. At first, it is necessary to determine, which language(s) will be subject to penetration. Various ethnical languages come into play. Even if the choice between them is replaced by construction or reconstruction of some artificial language (being potentially an idealisation of the former), then it is possible to (re)construct languages of various structures. In the light of the above, there exist as many (possible) ontologies, as there are (possible) languages of various structures. Anyhow, even if we selected one language of a clearly specified structure,[12] further disputes would still not be excluded, this time concerning the issue of onitic correlatives ascribed to types of expressions. For example, what should correspond to sentences: truth values, states of affairs, facts or events?; what should correspond to names: individuals or universals?; finally what should correspond to operators — relations and/or functions (as special sets) or special properties? (Ajdukiewicz 1960/1985: 350-352).[13]

An ontologist reaching the structure of being through language structure

[11] Although he emphasized the semantic aspect, the issue was presented in a similar manner by Strawson (1992: 61): ontological issues are connected here with the "fundamental logical concepts, " which is demonstrated by the following questions: "What are the most general categories of things which we *in fact* treat as objects of reference or — what comes to the same thing — as subjects of prediction and what are the most general types of predicates or concepts which we employ *in fact* in speaking of them," i.e. "What are the fundamental types of individuals, properties, and relations which characterise the structure of our thought and what relations can be established between them."

[12] L. Koj (cf. 1999: in particular 20-21), referring to K. Twardowski, proposes the creation of a new language of philosophy (ontology) by enrichment of the starting sentences of the natural language by variables and constants from new syntactic categories. In the new language it would always be possible to "express the old contents," without encountering contradictions (present in the old language). Therefore, let us add, the new language reflects the structure of the world rather than the old one.

[13] See J. Westerhoff (2005: 12-18) who gives a survey of seven systems of ontological categories.

penetration, apart from the abovementioned problems, is also faced with a difficulty of a more fundamental nature. Namely, if it is possible to question the possibility of finding a function which maps from a set (of kinds) of language expressions to a set (of kinds) of beings. All one can do at most is to present a projecting specification of the applied (metalinguistic) names of language expressions with the (first-order-language) names of extralinguistic things (Essler 1972: 174-177). This, however, is not a projection of language in reality, but a projection of a set of certain expressions of the metalanguage into/onto a set of language expressions. On one side of the specification we have such expressions as: *sentence, name*, and on the other such expressions as: *state of affairs, individual*, and not states of affairs and individuals themselves. In order to achieve the intended purpose, it also needs to be demonstrated that between the expressions like: *state of affairs, individual* and relevant objects of the world there is a relation of mapping. For this purpose linguistic analyses are insufficient, but other actions, e.g. deictic actions, are necessary. Then the question is raised whether, as claimed by semantic ontologists, we first order the language expressions and then we look for their extralinguistic equivalents, or, as postulated by traditional ontologists, we first non-verbally order the beings of the universe, and then by naming them, we determine their linguistic correlates. And perhaps both of these operations are interrelated?

We will not get an answer to this question, if we do not first determine what the relation is between the sphere of the language and the sphere of being. *Ipso facto*, the legitimacy of the method proposed by semiotic (syntactic) ontology, consisting in penetration of the language structure in the aspect of reflection of the structure of the universe, depends on resolving one of the most difficult ontological problems. This method, as well as the reverse method, is therefore burdened with a serious assumption, and an ontological assumption for that matter!

Determination of the Ontological Commitments of Language

This method, similarly to the previous one, also in fact boils down to two operations:

1. reformulation of all sentences of the analysed language to the following form: "There are objects of a given domain which are such and such" (i.e. in the notation of logical quantifiers: $(E\ x)$ $(F\ x)$ for x belonging to D); e.g. "There are girls (items belonging to the domain of girls) who are joyful;"

2. selection of those sentences which are true or deemed (to be true); true sentences in the form presented above presume existence of F-items of a given domain (x-s belonging to D); e.g. the sentence presented in (1) presumes the existence of joyful girls, i.e., drawing more general ontological consequences, existence of (a certain kind of) individuals.

Quine (1948/1949), under the influence of Russell, is commonly recognized as the author of this method. Strawson (1992: 58) summed it up for his own purposes in the following manner: "we are committed to belief in the existence of just those things which we absolutely must treat as objects of reference if we are to be able to express our beliefs" and those, as Quine wants "for logical clarity," "will be [...] the items over which our variables of quantification range." (Strawson, according to his presupposition theory, claims that the items which we recognize as existing, condition even not the veracity but the sense of the sentence: both it being true and false). In Polish literature Quine's criterion of ontological obligation was made more precise by T. Bigaj (1996: 37): "Theory [language] T is committed to acknowledge the existence of K-items always and only if the theory [language] T contains an assertion in the following form: 'there are K-items which are L-items'" or 'some K-items are L-items."

The above method has an advantage over the previous one that it avoids the problem of the plurality of language of various structures. Ontological commitments are here obligations (of true sentences) of the language and of the structure of a language through the classical logic of quantifiers. In such a case the starting point for the analyses may be any language that is translatable into sentences corresponding to the formulas of the logic of quantifiers. The only difficulty may thus be the troubles with finding an adequate paraphrase of the starting-point language in the language of the required structure.[14]

Since more than one sentence may be a candidate for such a paraphrase, the issue becomes slightly complicated. Let us for example take two (true)

[14] The matter is not that simple, which is demonstrated by the analyses carried out in a broader context by Ajdukiewicz (e.g. 1934/1985: 211-214), Kotarbińska (1964/1900: 313-320) and J. Woleński (1985: 61-65). Adjukiewicz's paraphrase method could be treated as a basic component of the discussed method 2 (and even method 1) , it may however also be presented as a separate method (set of methods), containing certain operations described in 1 and 2. Please note that according to Ajdukiewicz the starting-point sentence must be paraphrased not only into a sentence corresponding correctly to the constructed formula of a given logical calculus, but also into a sentence corresponding to the thesis (true formula) of this calculus.

sentences, which constructed in the postulated language seem to mean the same, although they have different ontological engagements:

(a) There are girls that are joyful.

(b) There are joyfulnesses that are appurtenant to girls.

If anyone doubts whether there are kinds of joyfulness, then it is possible to say only:

(b') There are moods, namely joyfulness, that are appurtenant to girls.

Sentence (a) presupposes the existence of individuals and sentence (b) or (b') — the existence of something which may be called states or properties (not going deeper into more precise distinction of types of non-individuals). Which of these sentences should be chosen, referring only to language analyses, and not to purely ontological assumptions?

Certainly, the majority would reject sentences (b) and (b') due to their artificial wording in the Polish and English language. However, agreeing to the postulate of paraphrasing the starting-point sentence in the language of specific structure, one allows artificially sounding sentences, since expressions, after having been paraphrased, are not the expressions of the everyday language or literary Polish and Enlish, but are expressions of that language adopted to the requirements of paraphrasing. The criterion of artificiality is therefore not a relevant criterion here. Its postulation manifests the need to supplement the enumerated two steps of the discussed method by one more step. Without it we could be dealing with cases when determination of the ontological commitment of a sentence would be impossible.

In case of a problem with the selection between the competing paraphrases (more broadly: conceptual apparatuses), Quine (1948/1949: 36) suggests investigating them with respect to their simplicity. He himself believes, however, that "simplicity [...] is not a clear and unambiguous idea." Apart from that Quine does not state whether he means simplicity of the language or simplicity of ontology. Anyhow, if the ontology is first to be determined, then we have a vicious circle: the choice of ontology is decided by the selection of the paraphrase by the choice of ontology.

In view of the above, "the question what ontology actually to adopt still stands open, and the obvious counsel is tolerance and an experimental spirit" (Quine 1948/1949: 38). We need to note, however, that such a situation will take place only when for a given paraphrase we are unable to exclude competitive paraphrases — paraphrases of different ontological commitments. In the remaining cases the problem of what ontology actually to adopt does not stand open, since the ontological commitments are unambiguously determined. The best method therefore for determination of these obligations

would be to search for such true sentences, which are paraphrasable in the adopted language in one manner only, i.e. that other paraphrases in this language — paraphrases with different ontological commitments — are impossible.

This method was introduced by R. M. Chisholm (1996: 19-21) and applied to resolve the dispute over whether properties exist. His answer to this question is yes, since there are sentences on properties, which are not paraphrasable in the manner not referring to their properties.[15] Chisholm presents four such sentences. Here is one of them:

(c) There are virtues that are not exemplified.

The remaining sentences have the same construction, and in the place of the subject Chisholm puts the following noun phrases: *faults, types of cars, shapes.* Sentences of this kind are true, provided any of their substitutions are true, e.g.:

(c') Honesty is not exemplified.

Let us add that sentences also exist on individuals, which cannot be paraphrased in a manner not forcing us to assume the existence of the individuals. Here is an example of such sentence:

(d) Anna Maria Kowalska (born on 22 May 1976 at 15:30 on bed no. 5 in room no. 2 in hospital no. 1 in Lublin) exists.

In the postulated language, this sentence will have the following artificial form:

(d') There are girls that are Anna Maria Kowalska (born on 22 May 1976 at 15:30 on bed no. 5 in room no. 2 in hospital no. 1 in Lublin), and there are not various girls that are Anna Maria Kowalska (born on 22 May 1976 at 15:30 on bed no. 5 in room no. 2 in hospital no. 1 in Lublin).

Using the definition of an individual quantifier, it is possible to transform sentence (d') into the following sentence

(d'') There is exactly one girl that is (identical to) Anna Maria Kowalska (born on 22 May 1976 at 15:30 on bed no. 5 in room no. 2 in hospital no. 1 in Lublin).

It may be stated that in the above manner we have demonstrated that the Polish and English language has ontological engagement for the existence of individuals and properties, and to be more precise, that certain sentences thereof (directly) presuppose the existence of individuals, and others the existence of properties. We need to note, however that this is so, as long as the starting-point sentences are true. Yet language analysis is not sufficient

[15] Chisholm uses different terminology here when writing about the paraphrasing of truths and expressing beliefs or claims.

to demonstrate the truth of these sentences. The analysis may help us determine, without getting entangled into Meinong's traps of objectless references, what we are talking about (what we assume to exist primarily), when we say what we say. Yet this analysis is insufficient to determine what to say and what part of what has been said is true. As Quine observed (1948/1949: 35) that "translatability of a question into semantical terms is no indication that the question is linguistic."

As it is shown, the discussed method may be useful for the precise formulation of ontology. However, the data which constitute the basis for ontological research cannot be obtained with the use of this method. This is most evident when we create a language of any cognitive discipline. The structure of this language may be described with the use of the classical calculus of quantifiers. For this description to be full, we also need to list the non-logical terms of a given theory and to specify its domain (e.g. "variable x ranges over a set of..."). The latter issue, which exceeds the competencies of the logical analysis of language, is the most important matter for the specificity of a given discipline. It is also the most important for the ontologist, who asks what (finally) exists.

Definitional Analysis of Ontological Expressions

This method may also be limited to two operations:

(1) provision of a definitions of relevant expressions material for ontology;

(2) formulation on the basis of these definitions of analytically true sentences as ontological theses.

It is best when the introduced definitions are nominal, normal and analytic ones. It is known, however, that it is not always possible, therefore one should also allow other types of definitions. Certainly, these must be nominal definitions, since in order to formulate real definitions, one needs relevant extralinguistic knowledge exceeding the semiotic competencies (knowledge of the world, and not only of the language).

The program of basing ontology on the above method is contained in the quotation from a book by Ajdukiewicz, presented in IV, 4. Ajdukiewicz (1983: 70) claims additionally that phenomenological ontology, using "the insight into the essence" (of things), is indeed "a careful emergence into the meaning of words. [...]. Sentences constructed on such basis present only the meaning of the terms contained therein and as such, are analytical sentences."

An example of application of the abovementioned method are the following definitions of a substance and of a property, as well as the theorems derived therefrom (Ajdukiewicz 1983: 106; Jadacki 1998: §3-4, 10).[16]

Definitions:

(a) Substance is something of which something other can be predicated (or attributed to), but which cannot be predicated of or attributed to anything else.

(b) A property is something that can be predicated of or attributed to something else.

Assertions:

(c) For each substance there is a property predicated of or attributed to it.

(d) There is no substance without any property.

(e) There is no substance which is predicated of or attributed to any property.

(f) There is no substance which is predicated of or attributed to any substance.

(g) Each property is predicated of or attributed to some substance or some other property.

(h) There is no property which is predicated of or attributed to neither some substance nor some other property.

Similarly, from the definition of being:

(i) Being is something that exists,

one may derive the following assertions (as its "analytical explications") (Stępień 1995: 175):

(j) Each being is something that exists.

(k) There is no being, which is not something that exists.

(l) Each being is something that exists or something other that exists.

(m) Each being is not something that does not exist.

In the tradition of Thomistic metaphysics (ontology), assertions (j) — (m) are the so-called first principles of being: the principle of identity, the principle of non-contradiction, the principle of excluded middle (determination), and the principle of double negation.

If the above definitions are to be analytic definitions and not meaning postulates, there arises the question, on what basis such definitions are

[16] These definitions only partially disclose the contents of Aristotle's notion of substance.

formulated.[17] Linguists are the most competent by determination of meanings of expressions, the way they actually function in natural language(s). In such a situation the semiotic ontology would depend on the results of lexicology and linguistic semantics research results. It needs to be noted, however, that expressions material for ontology (perhaps with the exception of *to be*) are either rare in everyday or literary language, or have different meanings than they have in philosophical language. In such a case, the most appropriate researcher, who will provide the definitions of ontological terms, should be a philosophy historian, and to be more precise — a philosophical language historian, sensitive to the semantic nuances present in the language.

Unfortunately, it is difficult to find ontological texts, whose (definitional) establishments are based on research in linguistics or history of philosophy. Most often, the authors of these texts *de facto* provide their own terminological and meaning proposals. What are these proposals based on?

Similar questions could be asked by a historian of philosophy to his "respondents" — authors of philosophical works which are subject to analysis, as well as by a linguist to the language users, who share these and no other language habits. Why do they use the examined words in these and not any other meanings?, why do they agree to the found ways of use thereof or introduce new ways? The problem is even better visible, when a semiotic ontologist, in view of the ambiguity or variety of the modes of use of analysed expressions present in a given linguistic or historical-philosophical material, disposes of various definitional possibilities.[18] On what basis are we to select one of them? Or maybe one should limit oneself to listing them and introducing various competitive ontologies (sets of ontological assertions)?

The above questions raise doubts, whether a purely semiotic ontology is possible, which would be legitimate without a reference to the extralinguistic knowledge. Probably, by the formulation or selection of the definitions discussed here do ontological beliefs play an important role. The (re)definitional operations make it easier to express these beliefs, but not to justify them. Simply: I formulate or select this and no other definition of some expression, since I am convinced that its designations (equivalents) are necessarily connected with such and no other properties. Yet, the veracity of this conviction should be investigated by means other than linguistic.

The above deliberations may result in undermining the initial thesis

[17] We omit here the problem of the way of derivation of assertions from definitions; it seems that it will be sufficient to base it on the substitution principle.

[18] E.g. Stępień (1993: 31, 33ff.) provides several definitions of *being* and *object* and six definitions of *fact*.

postulating that ontological theses are nominal definitions and not *de facto* real definitions. In such situations the role of the semiotitian in ontology would be limited to assistance by careful selection of words, with the use whereof one formulates the ontological knowledge of the world (and by determination of the rules of drawing conclusions from this knowledge). If this is not so, i.e. if the ontological definitions are only nominal definitions, then it is not known, what is the final criterion of formulation thereof or choice among them. Even if we formulate such criteria (e.g. simplicity, possibility to generate a large number of theorems), but they will not refer to our knowledge of the world, then the ontology will turn out to be merely a manifestation of our linguistic self-awareness. Therefore, we must either assume that ontology contains real definitions and synthetic proposistions (then semiotics will be here only of auxiliary character) or — if ontology is to provide the knowledge of the world, and not only of the language — we need to demonstrate that the only access to ontological knowledge of the world is provided by analysis of the language, whose resources would reflect the structure and the material contents of the world (universe).[19] textrm The second segment of the above alternative, however, results in similar difficulties as those presented in V, 1. Thus, one is certain: the idea of purely semiotic ontology — of an ontology without the factual component — is not free from serious troubles.

Unmasking the Functions of Ontological Expressions

In this case we are dealing not with some uniform method, but with a set of various operations, sets which have one objective: to demonstrate that a given expression material from the point of view of ontology does not serve the function it has been ascribed.

Unmasking may go in two directions: either to demonstrate the covert (subconscious) function of ontological expressions (and the entire ontology as composed of such expressions), or to perfect them (by means of modification thereof or replacing them with others), so that they could reliably perform the function ascribed to them consciously. We will call the first type of unmasking - negative (destructive) unmasking, and the second — positive (constructive) unmasking.

[19] Perhaps a solution to this dilemma is Czeżowski's theory of analytical description, which is at the same time provides an nominal analytical as well as a real definition. (Its consequences would therefore be in a way *a posteriori* analytical assertions). However, as Woleński (1985: 71) observes, this theory is not clear enough ("the apodictic character of the analytical description demands a more precise explanation").

The concept of negative unmasking had its origin mainly in the "therapeutic" late endeavours of L. Wittgenstein: ontology is composed of notorious language illusions, which need to be revealed. M. Lazerowitz (1964: 253-256), as probably its most radical continuator, indicated — combining the linguistic (conceptual) analysis with Freud's psychoanalysis — the alleged subconscious motivations of these illusions created by ontologists. And so, for example, B. Spinoza's theory of being, existence, God and causality expresses — as the exposer attempts to reveal — the philosopher's subconscious childhood problems, concerning his birth and the procreative role of his father. Similarly, the linguistic-psychological analysis of the so-called ontological proof may demonstrate that the conviction of existence as a property (guaranteeing perfection to a thing) finally expresses — through language illusions — the subconscious "primitive belief" that "flesh and blood god, a superhuman but not supersensible being, is alive [...] has an attribute he could conceivably lack" (1964: 70).

Another (much more moderate) example of this tendency is the presentation of not psychological and emotional, but valuating functions of ontology. For example, M. Przełęcki (1996: 63) (influenced by L. Kołakowski) wrote: "[...] the principal [...] function [of philosophy (ontology)] is to seek the sense of the world and human life. This task is performed by the philosopher by creating a certain valuating vision of being, wherein the valuation of reality is conveyed through an abstract image. This image plays an ancillary role with respect to the "sense-creating" valuation." The author suggests, therefore, that general positive sentences, contained in ontology, claiming pretences to express "the vision of the world," are *de facto* valuating sentences: not as much describing, but valuating the world — determining the sense thereof.

Negative unmasking analysis is most often performed in pragmatic terminology. It is difficult, however — as demonstrated by the above examples — to provide rules, which govern the performance thereof. It seems therefore that we are dealing here not with an analysis, but with an interpretation of philosophical statements, governed by an *a priori* adopted thesis that ontological expressions have in fact non-ontological functions. This is however not the only possible interpretation: what is more — as we may see — it is inspired by an unjustified prejudice towards ontology. Yet, justification of this prejudice by the interpretation discussed here is simply a vicious circle.[20]

[20] Probably the most substantial unmasking of ontology was presented in the classical article by Carnap (1932/1959). Carnap, before demonstrating (mainly with the

An example of the second type of the abovementioned tendencies — constructive unmasking — is K. Twardowski's (1894/1965: 18-19) analysis of the word *nic* (*nothing*). Twardowski, specifying the conditions of correctness of infinitation, demonstrates that it is impossible to infinite the name of *something* or *being.* Therefore expressions like *nic* (*nothing*) or *nie-byt* (*non-being*) are not categorematic expressions (names) but syncategorematic expressions. Their proper form in the Polish and English language should be as follows: *nie ma...* (*there is no*) or *nie istnieje* (*there exists no*) (as we know today, the sign of negation of the existential quantifier corresponds to these expressions).

We need to emphasize that contrary to the examples of negative unmasking, Twardowski does not reveal some hidden function of ontological expressions. The founder of the Lvov-Warsaw school, showing an erroneous use of an ontological expression, does not resign from pursuing ontology, but improves its language: the analysed expressions get a form which may be useful in future considerations. This way the language of ontology is fixed, and thanks to that it may serve cognitive purposes, for which it was constructed in the first place.

One needs to note, however, two limitations of positive unmasking. Firstly, it is not as such a method of pursuing ontology, but it rather makes it possible to improve the language of ontology. Therefore, it may have only auxiliary functions in ontology, and primarily when its theses are initially formulated. Secondly, each unmasking analysis, directly or indirectly, presupposes some model language, with the forms whereof the ontological expressions are to be compared and in comparison with which ontological

use of syntactic and semantic measures) that ontology (metaphysics) is composed of non-sense expressions (and apparent sentences), clearly formulates the criteria of the sense of expressions (and reliable sentences). Carnap attempts to explain the assertion of "meaninglessness of all metaphysics" with a (hypo)thesis of its valuating function: "The (pseudo)statements of metaphysics do not serve for the description of state of affairs, neither the existing ones [...] nor non-existing ones [...]. They serve for the [inadequate] expression of the general attitude of a person to life, [...] his emotional and volitional reaction to environment" (1932/1959: 78-79). Carnap's criticism of ontology is apt if its assumptions are true (especially the narrow concept of experience, the dichotomy of analytical and synthetic sentences, the possibility to transform theoretical sentences into observatory ones, verificationist concept of meaning, the possibility to adequately make the natural language more precise in the extensionalistic language of the quantifiers calculus, assumption that logical tautologies say nothing of the world). However, these, as we know, were later weakened or undermined. Further, the rather loosely introduced hypothesis on the proper function of ontology is only one of many possible theories.

expressions may prove erroneous. (In case of the analysis carried out by Twardowski this was, directly, the language of the traditional calculus of names and, indirectly, the language of the quantifiers calculus). In such a case the problems of selecting the model language (cf. V, 1.) and of paraphrasing in this language of the expressions of the starting-point language (cf. V, 2.) return.

Treatment of the World (Being) As a Sign

An inspiration for distinguishing this method was the following quotation from the already cited book by Przełęcki (1996: 13). Analysing "a couple of concepts of the sense of the world," Przełęcki distinguishes such concepts which "ascribes [...] sense to the world since it treats the world as a manifestation or a symbol of other, more perfect or higher reality, as the "veil of Maya" obscuring the internal essence of being which shines through the visible reality, revealing itself to us in its acts of illumination. [...] The world makes sense, since it is a symbol of some "better" reality."

Przełęcki realises the "overwhelming ambiguity of this concept," let us therefore, to the extent possible, make it more precise.

(1) The world may be treated as a so-called natural sign (manifestation or effect) of this supernatural reality. The analysis of the world would therefore need to demonstrate what this supernatural reality, of which the world is a manifestation, indeed is. The most benevolent interpretation of such an approach would consist in the assumption that the abovementioned analysis of the world would be limited to the demonstration that there is a transcendent cause of the world (the reason for its existence or structure) and to the specification (on the basis of the properties of the world as an effect) of this cause. In other words this analysis would be an explanatory analysis: an attempt at explanation why the world exists and why it is the way it is.

Such a procedure has appeared more than once throughout the history of philosophy, in particular the considerations of certain metaphysicians (such as Thomas Aquinas or contemporarily — R. Swinburne), who in this manner formulated and justified the (hypo)thesis on the existence of God. It is clear, however, that this procedure has nothing to do with semiotics, and potential application therein of semiotic terminology (e.g. "the world is a sign of God") is of purely metaphorical character and may result in unnecessary complications and misunderstandings.

(2) The world may be treated as a so-called iconic sign of the abovementioned extraterrestrial reality. In accordance with this approach the world

or parts thereof were to be in some way similar to the supernatural reality. We meet this idea in the Bible (*Holy Bible* 1989): "So God created man in his own image" (Genesis 1, 27), "or from the greatness and beauty of created things comes a corresponding perception of their Creator" (Wisdom 13, 5). The above quotes (of which there are more in the Bible) were for some theologians and philosophers (e.g. St. Augustine or St. Bonaventure) an inspiration to treat the world and/or the human being as *imago Dei*.

Most certainly the concept of *imago Dei*, similarly to other concepts of this kind, may be a valid theological concept on the ground of particular religions. It is doubtful, however, whether it could have proper use in philosophy. The principal obstacle is that it is difficult to specify exactly what this similarity between the world (or the human being) should consist of. However, even if one succeeded in establishing this (Augustine seemed to suggest some kind of structural similarity; threefold nature of particular elements of the world — threefold nature of God), it is impossible to prove philosophically that such a similarity actually takes place; to do this one would need to dispose of sufficient natural knowledge of the compared beings.

(3) Is it possible to treat the world as a so-called conventional sign? It is, however, on the condition that it is justified to speak of the world (or a part thereof or events taking place therein) as a means of communication between an supernatural being capable of communicating and the worldly beings capable of receiving such communication. An example of this approach to the world is through interpreting worldly events as carriers of messages from God. Due to an overwhelming disproportion between the partners to this communication (God — human being), understanding of the messages may be extremely difficult, and therefore, as K. Jaspers observed, we may at most "listen out to them as ciphers," "ciphers of Transcendence"[21].

The above theory, similarly to the previous one, also meets difficulties which make it impossible to use in ontology. For speaking to be justified around the world (and therefore of what takes place there) as a means of communications, it needs to be demonstrated that it has the nature of a conventional sign (signs). In order to do this one would have to dispose of non-semiotic knowledge of the transcendent subject of communication (of its intention to communicate through the world), or to know the means to (at least partially) determine the code of ascribing the worldly events (as signs) their meanings. Unfortunately, the first option exceeds the competencies of semiotics (and perhaps of the entire philosophy), and the second option

[21] „Wir [...] können sie als Chiffern hören, sehen, lesen, um dadurch Berűhrung zur Transzendenz zu gewinnen [...]" (K. Jaspers 1977: 44).

simply does not exist (unless we are satisfied with various assumptions and subjective intuitions).

I do not claim here that the described situation is excluded. I only claim that demonstration of it taking place requires additional, non-semiotic (and maybe non-philosophical or even supernatural) means. Therefore, making the discussed concept the basis of a method applied in ontology would be too risky; all the more that it assumes very serious ontological theses.

(4) The issue will not be subject to material change, if the world (or some components thereof) is treated as a specific (conventional) sign — a symbol (understood as a multilayer sign relating to something in itself inexpressible). This is suggested by P. Ricoeur (1976: 57-63) who – considering "the non-semantic moment of a symbol" — claims that a symbol is connected with the universe thanks to the universe's capability to mean. The issue has been similarly put by W. Stróżewski (1994: 446-447): "The strongest symbolic structure appears where the relation between the symbolizing to the symbolized is based on participation. Participation means being partially something or being a part of something." For example "water in the sacrament — symbol of baptism — does not cease to be ordinary water, but thanks to the participation in supernatural reality of one of its functions — washing away of dirt is turned into the function of "washing away" the sins."

We need to note, however, that the statements of both authors are actually either a description of the modes of how people understand certain phenomena or ontological theses concerning relations between those phenomena and the supernatural reality. These theses need justification, which, as already noted, do not fall within the limits of the competence of semiotics. On the other hand, inferring those theses from descriptions of someone's religious or cultural experiences seems to be, irrespective of the cognitive value of those experiences, somewhat hasty.

Final Remarks and Proposals

The above analyses of a couple of types of the application of semiotics in ontology (cf. V) have shown the limitations of various types of programmes of linguistic (semiotic) ontology. The analysed approaches either make certain material ontological assumptions without the means to justify them, or may only have auxiliary functions in ontology (in particular by formulation of problems and possible ontological theses, examination of their linguistic correctness and drawing consequences from these), leaving a series of vital questions unanswered. Thus, it has turned out that with the use of semiotic methods (contrary to the suggestions connected with the arguments presented

in IV) it is impossible to finally overcome the difficulties of traditional ontology (metaphysics).

Indications of the limitations of semiotic methods (and theories) in ontology is not an argument in support of resigning from the use thereof by formulation or solving ontological problems. This indication is merely the basis of a warning not to use the abovementioned methods mechanically (without being aware of their assumptions and the scope of their competence) and not to treat them as a universal means of solving any and all ontological problems. Certainly, application of semiotics in ontology, even if only of auxiliary character, made it possible for the latter to develop, as compared to its traditional form (in particular the aspect of making its results and assumptions more precise and elimination of certain kinds of recurring errors). Yet, the character of ontology makes it still an open discipline: it includes more questions and alternative answers than final conclusions. Yet, this state is not so much different from many other kinds of human cognition.

In view of the above, the answer to the question presented in I, the question concerning the types of proper application of semiotic in ontology, is as follows: at least the first four types (in the positively commented variations) out of five types discussed in V, constitute the types of proper — although limited! — application of semiotics in ontology. In such a situation it is difficult to agree with the abovementioned Rorty's thesis that "death of philosophy as a discipline with a method of its own" has taken place. Analysis (in a broad sense) has been and will continue to be the philosophical method, which may either be expressed in the form of free speculation or in the form of strict conceptual, logical or linguistic analysis. All of them may be a tool for the consideration of data from non-scientific intuitions or the results of particular sciences. In order to conclude with a positive proposal, here is an example how to present the results of pre-scientific intuitions and speculation in a more exact (which does not mean final and problem-free!) terminology of semiotic analysis.

The most famous Polish ontologist, R. Ingarden wrote in his fundamental work (1987: 45)[22] that "ONTOLOGICAL CONSIDERATION CONSISTS IN AN A PRIORI ANALYSIS OF THE CONTENTS OF AN IDEA." Ingarden (1987: 68-72) established a separate branch of ontology for the purpose of the examination of existence, i.e. existential ontology. Its object was to be above all, most generally speaking, "an idea of existence of something (one way or the other)" and the contents of the "IDEAS OF PARTICULAR

[22] The first edition is from 1947.

MODES OF EXISTING" contained therein. According to Ingarden, the contents of these ideas include material, formal and existential components (corresponding to three branches of ontology).

Let us reformulate Ingarden's ontological project in order to eliminate disputable theses on the ideas and contents thereof. Let the object of semiotic existential ontology be the following expression divided in the manner indicated by the brackets: *(some existence) of something* (whereby the word *some* needs to be understood as an adverb and not as an adjective). The pronouns contained in the expression correspond to the main variables of the contents of the most general idea of existence, and the noun corresponds to the constant (whereby the second variable — through its properties — characterises the constant as already defined by some value of the first variable).

In this context, the basic tasks of existential ontology may be carried out thanks to applicable semiotic analyses. In order to determine the position of existence in the structure of being (formal-ontological approach), one needs to carry out a syntactical analysis of the discussed expression (lack of independence of the expressions *existence* and *some existence* points to the fact that existence is not an object, but an aspect of the object). In order to present the "nature" or "quality" of existence (material-ontological approach), one needs to carry out a semantic analysis: specify the meaning(s) of the expression *existence* (and related expressions, in particular those which are etymologically and transformationally initial with respect to the latter) and distinguish the components thereof (these would correspond to Ingarden's "existential moments"). Further, provision of a list of types of possible modes or ways of existence (existential-ontological approach) and the types of existing objects (categorical approach) requires enumeration of all possible types of expressions, which may replace the pronouns *some* and *something* in the expression under discussion.

Performance and assessment (of the results) of this project — entangles most of the methods discussed in V — exceeds the framework of this paper.

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ON THE MEANING OF LINGUISTIC EXPRESSIONS

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INTRODUCTION

Questions concerning meaning's properties and its manner of existence are essential not only to the philosophy of language, but also to the theory of cognition, logic, linguistics and semiotics. Posed early on at the dawn of philosophy, these questions persist to this day and remain largely unanswered. One may even gain the impression that the surge in popularity that language has enjoyed in philosophy and science throughout the twentieth century — resulting in new problems and insights — has left reflections on the nature of meaning severely neglected. There are currently many fragmentary theories of meaning designed to fit into the specific context of logical, linguistic or even philosophical considerations. Contrary to ancient or medieval theories, however, they present no coherent or comprehensive account of the problem in question.

"Until now there has been no attempt to synthesize research regarding the nature of meaning because in principle it is not known on what basis and by what specific conceptual means could this be achieved" (Petrov 1979: 23).[1]

Finding common conceptual basis to round up this piecemeal knowledge would lay foundations for philosophical explanation of the fact that linguistic

[1]Classical philosophical theories of meaning were designed not only as a part of general conception of language, but as a broader philosophical system that provided conceptual basis for consistent explanation of fundamental phenomena related to linguistic cognition and being in general.

expressions have meanings that enable them to carry information regarding the extra-linguistic world. This conceptual framework should be as broad and open as possible, with the ambition not only to arrive at some common ground reconciling results of the research on meaning carried out to date, but also to proceed with further analysis that would lead to explanation of some other elusive problems. Such foundations would therefore constitute a conceptual system robust enough to develop a unified theory of meaning, embracing core ideas of the already available conceptions, while opening the possibility to improve them through new facts and interpretations.

The aim of this paper is to explore the viability of conceptual basis — capable of unlocking new perspectives for the theory of language — that would not only take into consideration basic properties of meaning, but also explain its nature and functions on the philosophical *niveau*.[2]

Meaning is experienced universally and transcends all intellectual activities of men. This lack of cognitive distance somehow stands in the way of establishing meaning as a proper subject of inquiry. Meaning does not exist in the void — it is always a structural element of a linguistic sign that may be isolated more formally than materially, and is accessible not so much directly but rather through cognitive and communicative function of language. Meaning surfaces along with external material form of the expression, but essentially exists independently. There are expressions which have the same meanings, but differ with regard to external form, and *vice versa* — some words sound exactly the same although vary in meaning. And so the question appears: do meanings exist on their own, beyond the structure of signs, and independently merge with sounds or writing into words and sentences, or are merely internal and modestly autonomous structural elements of expressions (or, more generally, signs), beyond which they have no existence of their own? This question seeks to clarify meaning's manner of existence, as well as the domain or category of being to which it belongs (real objects, mental content or elements of objective structure of language).

If we assume that meaning is what occurs in linguistic expression alongside sound or writing, we are immediately confronted with its complex and multi-aspectual nature. Meaning, assisted by sound or writing, appears in the form of content, either expressed or evoked in the receiver's mind. This leads to the conclusion that meaning is nothing else but content itself. Consequently, the origin and nature of such content and its relationship with the expression emerge as key problems that need to be addressed.

[2]The need for such a theory has been recognised for example by Mieczysław Krąpiec (Krąpiec 1985, chap. 1).

On the other hand, by their very nature, linguistic expressions convey information about things and events occurring in the real world. Thanks to meaning, expressions point to something else through cognition or communication. For this reason, meaning of the word often happens to be identified with what words represent, what they refer to. It is particularly in the case of names where reference is the dominant aspect of meaning, since understanding what the name means is to know to which object it can be applied. It seems that each of those briefly listed relationships that meaning exhibits — be it with the real world, or mental content, or structure of signs — reveals a separate, significant and non-reducible aspect of its nature.

Contemporary theories of meaning are built around meaning's relationship with either linguistic expressions (connotative theories) or objects or external events to which those expressions refer (denotative theories). What they all have in common is juxtaposing and confronting content-related and object-related aspects of meaning. Contemporary discussions revolving around language leave no doubt that the great diversity of approaches and insights emerging in the course of those debates must be attributed to the complexity and multiaspectuality of language itself. It seems that theories that seek to reduce this rich relational nature of meaning to only one of its aspects are far from satisfactory. Therefore, to shed light on the nature of meaning one must first examine foundations and structural features of a complex relationship linking language with the world of things and conceptual thought. Discussion of some theories of meaning will help establish crucial properties of this relationship, it will be followed by an effort to develop a conceptual framework for their further clarification.

MEANING AND OBJECT OF EXPRESSION

Language is fulfilling its cognitive function through its capacity to represent objects and events occurring in the extra-linguistic world. This capacity would never emerge if meaning was not attached to linguistic signs (without any prior assumptions we shall treat meaning as something that comes with expression and is not considered to be its external form). Knowing what the expression means, we can identify both its content and referent. This would indicate that there is a close relationship between meaning and the world of objects as they are represented in language, however complex or unyielding to reductionism and oversimplification this relation may be.

Gottlob Frege pictures the relationship of meaning and object as a

simple identity of those two elements.[3] His semantics is to a great extent designed to advance his mathematical and logical project.[4] After rejecting psychologism, Frege's efforts in logic centered on anchoring meaning in the sphere of objectivity. Not surprisingly, he is keen on stressing the relationship that occurs between meaning and reality represented in language. He goes on to suggest that meaning of the word is nothing else but an object to which it points. Meaning of "$2 \cdot 2^3 + 2$" and meaning of "18" is therefore one and the same, same goes for the "Morning Star" and the "Evening Star." In the first case, meaning is tantamount to number 18 understood as a certain mathematical object (not as a concept or a relation), while in the second — the planet Venus (Frege 1960: 21-25).

This clear-cut relation governing proper names is further projected by Frege on all linguistic expressions. This includes propositions in which meaning takes the form of a logical object, that being truth or falsehood. His approach, therefore, stretches the notion of object as it is commonly understood, as objects existing in the real world fall into the same category as logical objects, like truth or falsehood, or such mathematical objects as numbers. A key feature of an object is its cognitive independence and completeness, a certain fixed identity preceding any linguistic representation. "An object is something that is not a function, so that an expression for it does not contain any empty place" (Frege 1960: 32). Object and function occupy a central place in Frege's semantics. A function is something incomplete that needs to be complemented with an object acting as its argument. An object, in turn, is an independent entity that stands on its own. Linguistic expressions, but also concepts, are similar to functions in that they must be complemented with an object in order to possess any cognitive, communicative or logical value. (Scope of a concept is compared to behaviour of a function, and both are conceived here as sets of objects.) Therefore, not only external linguistic form, but also thought represented in concepts needs to be complemented with some objective or real-world element before it can posses any representative value.[5]

[3]Frege's works largely shaped the debate on meaning as it unfolded in contemporary philosophy (Dummet 1996: 168-170).

[4]Frege's position was developed also along the lines of logical semiotics (Carnap 1956) and philosophy of language (Wittgenstein 1922).

[5]One major difference between the object and concept pointed out by Frege is the predicative character of concepts: " ... in the sentence 'there is at least one square root of 4' the predicative nature of the concept is not belied; we could say "there is something that has the property of giving the result 4 when multiplied by itself" (Frege 1960: 50).

This conception of meaning, although pointing to a cognitively important relationship between language and the world of things, never really does justice to its nature. The function of meaning is much more versatile and cannot be reduced to designation. However important meaning's relationship with objects may be, one cannot be mistaken for the other. Such expressions as the "Morning Star" and the "Evening Star" obviously have the same denotation but they differ not only in terms of external form. Frege stresses this point by distinguishing the notions of sense (*Sinn*) and reference (*Bedeutung*). Since in Frege's example reference remains the same, what ultimately sets them apart is sense.[6]

Expressions may have sense, but lack reference in Fregian sense. This, for example, can be said of an expression "slowest convergent series" or "Odysseus was set ashore at Ithaca while sound asleep." The sentences and names that do not denote real-world objects have no reference at all, but they have sense, conceived as a certain linguistic content. Sense, therefore, eclipses reference as the more universal and basic property of expressions. It is also non-reducible, since it determines cognitive nature of the expression. How an object is presented or what is predicated about it is crucial for its cognitive aspect.[7] Reference, it appears, heavily depends on sense. Determining the truth-value, and consequently the reference, of an expression, requires prior knowledge of its sense. Even sentences with names that refer to real-world things express their cognitive content through sense. Sense is what is asserted in the proposition about objects and what determines its truth-value.

For Frege, sign, reference and sense are intertwined in the following relationship. Sign corresponds with sense, which has a reference. Sense comes as a fundamental and constitutive element of the linguistic sign, whereas reference exhibits the relation between the sign and the object. The relationship between sense and reference is that of content and object, cognitive function of expressions hinges in equal measure on both of those

[6]"It is natural, now, to think of there being connected with a sign (name, combination of words, letter), besides that to which the sign refers, which may be called the reference of the sign, also what I should like to call the *sense* of the sign, wherein the mode of presentation is contained." (Frege 1960: 57).

[7]Frege is exploring the difference between "a=a" and "a=b". The first is of explicitly analytical character, whereas the second produces additional knowledge. What sets them apart are their respective senses. The former relation can be exemplified by "Morning Star is a Morning Star," while the latter is illustrated by "Morning Star is the Evening Star." If cognitive value rested exclusively on Fregian reference (object), both propositions would have equal cognitive purchase. This is not so, as the cognitive aspect of an expression by necessity relies on its sense. See Frege (1960: 58-58).

elements.

It seems that the idea of identity of reference and object, postulated in logic, is driven by its bid to bridge the gap between the sphere of thought and language and the sphere of real-world objects. Trying to grasp meaning is nothing else but a pursuit of objective truth grounded in reality. Frege insisted on viewing cognition as object- and reality-based process. To have any cognitive value, expressions must refer to real-world objects that constitute their reference. Other expressions have no cognitive value, as they do not refer to anything that exists, they have no reference at all. Take note, however, that the mere reference to the object has as little cognitive value as it would have if there was no reference at all. When it comes to linguistic cognition, an object presents itself not as an independent entity perceived directly, but rather emerges through sense or content. We get to know the object only as far as it is unveiled by the sense of the expression. Before determining the truth-value of a particular sentence, that is, establishing its meaning, one must first discover its sense. In case of sentences, meaning of an expression hinges on its sense.

The notion of sense introduces a complementary aspect to the cognitive feature of language. Frege suggests that the expression has sense, which expresses object in certain aspectual quality. Linguistic expressions act as sources of sense, which carry meanings and mediate between the expression and the object.

In order to gain further philosophical insight into the relationship occurring between meaning and an object, one would need to examine whether (and if so, how) the object is able to determine the linguistic content (or sense, in Fregian terms). Successful demonstration that the world of things is a primary (although maybe not exclusive) source of linguistic content would, at least to a certain degree, justify Frege's realism as regards linguistic cognition. However, to do this one would have to concede that between the content, or sense, and referent, embodied by the object, there is a close relationship which Frege never took into account.

Frege's position evolved over time, inviting also critiques of his followers. Unlike Frege, Bertrand Russell identifies meaning with sense of the expression, making a point of showing that the difference between sense and object is elusive (Russell 1905: 488). Take for example such an expression as "the center of mass of the solar system" — how can one draw a line between its meaning and its object? When compared with the approach presented by Frege, Russell's discussion of the topic brings one major shift in understanding of the concept of meaning. Russell conceives meaning as a

linguistic sense of the expression — and it is precisely such sense and not the real object that he identifies as denotation. Thus, sentences denote only their sense, or content, not the external object. Consequently, the cognitive relationship between language and the real world needs to be investigated further.

Also Peter Strawson hints at the lack of direct relationship between meaning (sense) and denotation. One crucial feature of linguistic expressions is that they can contain assertions regarding various objects. The same sentence may be uttered with different objects or individuals in mind. For Strawson, it is meaning that does or does not permit the use of specific expression in connection with certain object. Meaning is therefore independent from both the use and the object, it resides in the sentence as its function. To give meaning to the expression is to provide general directions (rules and conventions) for its use. The expression has sense insofar as there are rules and linguistic practice that authorise it to speak of something particular. Whether a sentence has denotation or not is determined by its usage. The sentence "the present king of France is wise" is meaningful (has sense) because there are rules and linguistic practice that regulate its use; however, the sentence is false because the use is improper.[8] By telling apart the sentence from its use, Strawson underscored certain general characters of meaning that makes it possible for expression to be used in many similar situations. However, his argument that meaning is independent from an object and functions as an internal component of a sentence, leaves one issue unanswered, namely how is it possible that certain sentences have denotation in the first place.

The distinction introduced by Strawson paves the way for recognising sense in sentences containing the names of non-existent objects, as it happens for example in literary fiction. Questions like "Did Mr. Pickwick run a bookstore?" (Linsky 1963) make sense if asked in a specific context. Other groups of expressions with no denotation consists in the likes of "the present king of France" or "round square." They too have meaning that makes it possible to assert that they are short of denotation.

The above discussion tries to grasp the connection between language and extra-linguistic reality. This connection is manifested in the actual cognitive function that language fulfils by picturing reality, further reflected

[8]Similar distinctions between meaning and an object of expression was made by Wittgenstein: "It is important to note that the word "meaning" is being used illicitly if it is used to signify the thing that 'corresponds' to the word. This is to confound the meaning of a name with the *bearer* of the name" (Wittgenstein 1958: 20).

in meaning of expressions. By turning down the possibility that denotation-free expressions can have meaning, Frege sought to underline that meaning is constituted through the relationship with the world of objects. Those exposing limitations of such conception show that language is not merely a tool for picturing reality, but has also a creative capacity of its own: it allows us to speak of existing objects on equal terms with those of theoretical or fictional nature.

Sense, or content, is an essential and non-reducible element of an expression; if examined in isolation from the referent and detached from the specific external situation, it becomes a sort of a general thought-template of the represented situation. Sense is often identified with the meaning of an expression. However, if the theory of meaning is based entirely on the notion of sense (understood as an internal element of an expression), it disregards the cognitive relationship linking language with the world of things and fails to deliver an explanation of how linguistic contents refer to specific objects. This theme is increasingly important for some of Frege's later adherents who, by opting to abandon denotative theory of meaning, widely eschew the topic of cognitive capacities of language.

The above considerations reveal a peculiar presence of object within meaning. It is given not directly, but through sense that constitutes the content of an expression and an object's manner of representation. Meaning manifests in cognition in two ways: first, through connection with the referent, and second, through connection with sense or the mental content it generates. It seems fitting to seek a description and account of meaning that would take into account each of those aspects. The most intuitive understanding of meaning links it with the expression's ability to convey certain content when speaking of objects or events (Strawson 1950: 335-336). If we are knowledgeable of the expression's meaning, we know what is asserted (the content) and about what one makes an assertion (the referent). For this reason, both content and reference are the two key features of meaning.

In the wake of rejection of psychologism, when meaning ceased to be identified with psychological content, representation or image, thinkers came to associate it either with linguistic content contained in the objective structure of signs, or with the object to which an expression refers. This idea is related with a certain picture of language containing the tacit assumption that language is a closed structure of signs, secluded and isolated both from the mental world and the world of objects. Linguistic expressions function exclusively as internal elements of the structure, and their basic features can be satisfactorily explained by exploring intra-linguistic relationships. Any

relationship that linguistic elements can have with the world of objects is painted as a relationship between two distinct spheres of reality. This point of view makes it possible to position meaning either within the linguistic structure, or beyond it, in the world of objects. On whatever proposal one tends to settle on, each generates its own problems and limitations. Failures experienced in constructing viable theories of meaning seem to suggest that a satisfying account of meaning must explore a relationship occurring between contentual and referential aspects of meaning that European philosophy of the late nineteenth and twentieth century puts in stark contrast.

MEANING AND CONTENT

Attempts to merge meaning and the referent highlight sense as a vital component of meaning. Sense understood as cognitive content shedding light on certain aspects of an object (e.g. the Morning Star, the Evening Star) should be included either within the structure of meaning itself or in the structure of linguistic sign. When analysing the notion of meaning from the perspective of content one first needs to establish what this linguistic content actually stands for, and how does it relate to the referent and the expression. One may define content as what is asserted about objects, which serves to establish the truth-value of sentences. It shows how an object is represented within a sentence. Therefore, it seems crucial to our inquiry to grasp the notion of content properly, and develop understanding of how it relates to other semiotic notions. The notion of content is often regarded as self-explanatory. Consequently, the vague notion of meaning is explained through the equally obscure idea of content. However, this confusion prevailing today in contemporary philosophy of language is increasingly noticed.

"As long as we take the notion of content for granted, we are open to accusation of simply refusing to feel the perplexity that the question aims to express: a perplexity about how mere objects can have content at all" (McDowell 1998: 44).

By identifying meaning with sense or content one is saying something about the relationship between thought and word. Sense of an expression — understood as its cognitive content — is something which is conditioned by the mind (to the extent that the mind is able to condition cognition itself). But, if meaning is the same as sense, what is the relationship between, first, sense and a referent, and second, between sense and a word? The relationship between a word and meaning is constitutive of the linguistic sign, therefore exploring the character and origin of this relationship would be central to our

inquiry into the nature of language. This is because it often brings together two entirely different dimensions. The first is physical (manifesting in sound or writing), the other unphysical and immaterial (manifesting in meaning). Étienne Gilson puts this as follows: a sound without meaning is not a word, but a noise. Sense has a different nature than noise and cannot be derived from the nature of a sound. "It is in the hearer, not in the sound, that the metamorphosis of meaning from noise, or sign from sound, is made" (Gilson 1988: 30). But sound and sense are not two separate things linked by a mysterious relationship. Sense is a not a thing, this can be said only about sound or writing. Sense, however, bounds the word with content sourced from the object itself. To ask what is the nature of meaning is to pose the question concerning the nature of this content.

Anti-psychologism, founded by Frege's philosophy of language, seeks to express meaning in objective, physicalist categories, which include words (physically distinguishable sounds) or external objects (referents of expressions). Simultaneously, structure of meaning is purged of such a psychical element as mental content. Cartesian differentiation between the psychic and the material works to such effect that words, senses and objects become radically disassociated, with relationships between them now seeming arbitrary and mystifying. But in order to grasp the cognitive and communicative function of language one must explore relationships linking linguistic signs, represented objects, and cognitive representation embodied by sense or content (Gilson 1988: 35-37). To this end, one must overcome Cartesian dualism and examine relationships between objects, senses and words that appear in linguistic communication.

In his version of Thomistic philosophy, Gilson offers a subtle and precise account of complex relationships linking words, senses and things,[9] demonstrating that classic concepts of language may inspire contemporary discussions revolving around meaning.

Gilson argues that the relationship between words and objects is mediated by sense contained in those concepts, whereas the connection between sense (concept) and object is constituted by a relationship of cognitive nature. The relationship between senses and objects, crucial to efforts focused on grasping the nature of meaning, is a complex one, as the real object manifests itself in cognition governed by two aspects: one is existential, the other contentual. These two aspects are non-reducible and only when combined can create a concept of something that exists. The content

[9]In Poland, this particular approach is advanced by Mieczysław Krąpiec (1985).

and existence of the real object are perceived in sensory cognition almost simultaneously. Sensory cognition is always a cognition of something by virtue of filling it with content. Now, cognition of the content of the real object is always accompanied (or even preceded) by independent existential judgments recognizing its existence. It appears that this particular element of Gilson's theory is highly important when negotiating difficulties encountered in attempts to explain how linguistic content can carry reference to a particular object. McDowell explicitly asks:

"How can a sentence, which is after all a mere complex of lifeless sounds or marks, represent reality as constituted a certain way?" (McDowell 1998: 44).

An object is cognized only through aspects, therefore it can be attributed various content. But it is always relating to the same real thing which is a source of both various contents and the identity of the referent. The content of an object is expressed through concept-words, and its existence, as indicated earlier, is stated in content-independent existential judgments that recognize something as already determinate.

This aspect-driven approach towards an object opens the possibility of distinguishing, or abstracting, its specific features which are present in content in the form of concepts. One can distinguish whole sets of features that, when assembled together, create concepts representing general objects such as a "man" or a "dog." One important cognitive property of such features is their immateriality and additive nature of sorts. Specific features can be singled out from the content and rearranged into new configurations. This possible detachment of features from things is something that enables creative capacities of language. One can create notions of non-existing objects, such as "golden mountain," or even self-contradictory objects, like "round square." They are meaningful because their individual components contain content that is already known. Expressions derive their sense from the content of those components. Since there exists a difference between contentual and existential aspects, content may be processed creatively — it is an important quality of linguistic cognition, but it is also a cause of misconceptions occurring in this very process (Krąpiec 1985: 62-64).

If notions can be conceived as natural signs of objects or processes perceived in cognition, this would imply that cognitive content can represent the reality. Never its identical copy, representation can be understood as an aspectual take on reality. This notwithstanding, object remains the primary source of cognitive content.

The second component of meaning consists of a relationship between sense and words. Examination of this relationship should clarify not only how but also why those two elements interact. The relationship between sense and concept is that of language and thought. There is no complete correspondence of words and concepts. Words do not represent pre-organized and structured concepts. In their mutual interaction, the word brings creativity and precision to the concept. To quote Krąpiec, words play a causative-superior role in the formation of concepts (Krąpiec 1985: 88). Thought, however, has a different nature than language and cannot be naturally divided into components. Mediated through concepts, it only surfaces when used in language. Crystal clear thought, understood as some kind of internal speech, is not possible when there is no language at work.

"But language is possible only on the condition of proceeding by means of a sort of parcelling out of thought, and it is not certain that the operation can be completely successful, for insofar as it is physical reality, speech [*parole*], is in fact divisible (. . .) But the thought that speech expresses, the very meaning of speech, does not lend itself to any division" (Gilson 1988: 67).

The contemporary philosophy of language examines links between language and thought by asking whether language is an instrument for thought or merely functions as its code (Dummett 1996). If language is to be perceived as a code of thought, it means that there are fully shaped "naked thoughts," an inner language of sorts, with external language serving the unique purpose of communicating them. The relationship between thought and language resembles one between sounds and letters. Yet, Dummett provides examples where thought seems to appear as something different than words, and it is not only a difference in medium, but also in character. He imagines a policeman who, upon showing an individual a photo, asks him if he ever saw the man on the picture. The person examines the photo, searches his memory, and finally answers "no." In this context, "no" means "I have never seen him" (Dummet 1996: 167). It is not important whether this thought originated prior to the answer, or whether the answer was its first embodiment. What really deserves attention is the fact that the speaker could not have thought "no," but rather "I have never seen him." It is so, argues Dummett, because the thought is far more determined by the context than the content of the expression could ever be. Before we could accept that language is a code for thought, one would have to concede that thoughts are similar to sentences and consist of components that bear analogy to words. This, however, cannot be successfully demonstrated. A study of the

relationship between words and concepts must face the problem of how, if not by simple encoding processes, language is capable of expressing thoughts.

The opposing view holds that language is the instrument for thought. Without language, thought is devoid of shape, imprecise and inaccessible. This language-instrument is capable not only of expressing existing thoughts but also grasping and creating new ones. Drawing from Aquinas, Gilson sketches out three stages followed by language in expression of thought:

There is the word conceived by the intellect, which, in turn, is signified by an exterior vocal word. The former is called *the word of the heart*, uttered but not vocalized. Then there is that upon which the exterior word is modelled; and this is called *the interior word*, which has an image of the vocal word. Finally, there is the word expressed exteriorly, and this is called *the vocal word*. (Gilson 1988: 74).

The first notion, *the word of the heart*, is similar to concepts as they are conceived today. At this stage, one grasps the object intellectually to constitute its content, which is not yet formed into word-terms. The verbal component is at this stage not necessarily present. Many authors argue for the existence and role of inner speech, i.e. speaking to oneself without uttering words out loud (Dummet 1996: 183-184). Inner speech is structurally similar to linguistic utterance in that it is expressed through words and sentences. But the content of the utterance is determined by something that originates prior to the inner speech. This happens quite frequently when, struggling to give precise shape to our thoughts, we discard successive phrasings that do not fittingly represent the entirely determinate but yet unclear content. At the next stage comes grasping thought by inner speech. By identifying these stages one is able to conceive concepts as initial capturing of the cognized reality, with terms of inner speech connecting those concepts with the thought-picture of the word. The content expressed through words is rooted in the pre-linguistic intellectual contact with the real object, which is given shape in the concept and determines cognitive content of the concept and, further along, the word.

The notion of concept is understood as a natural and completely transparent sign of the thing that guides the cognizing individual straight to the object. The sign itself, however, can not only be recognised but also objectivized, so, formally, the concept of the object is cognizable on par with the object itself.

Generality associated with concepts allows for a different approach to the relationship between speech and language, or generality and singularity of meanings. Generality and universality of concepts is contrasted with

singularity and concreteness of each sensory experience. This transition from sensory perception of experience to the concept representing some sort of general idea persists as one of the most obscure problems faced by philosophy of language and philosophy of cognition. Classical philosophy recognises the difficulty but leaves no hope for its scientific unravelling. That said, it still managed to provide a precise account of linguistic experience. Concept is a sort of immaterial entity that may only take material shape of words, and which by its generality differs from expressions, which draw directly from sense data to present a singular shape of objects. Being general and immaterial, concepts cannot be subject to representation, but may be cognized intellectually. By virtue of its generality, concept, but also word, solidifies into a template accommodating its various particular manifestations. The relationship between the generality and individuality of meaning, as well as that of speech and language, is one of template and the particular specimen.

We have so far discussed relationships between objects and concepts, and concepts and words, where concept is a natural sign of an object, and a word functions as a conventional sign of the concept. In daily communication we use words to convey information, not about concepts but things. Concepts only mediate in this process. Its immaterial and transparent, with regard to the object, nature makes it possible for the word to refer directly to the object, by-passing the mediating concept. The concept projects cognition straight at the object while never arresting attention for itself.

"If I ask for a pound of bread, I could do so in a study on linguistics, in which case *bread* is a noun which signifies the idea of bread. But if I pose the same question to a grocer, *bread* does not signify the idea of bread; it signifies bread, and it does not signify through the idea of bread. This is its meaning directly and immediately" (Gilson 1988: 78).

In its primary role, speech is not signifying thoughts but things. But it would not be able to do this if not for specific cognitive capacities possessed by men. Mediating the role of concepts makes it available for words to correspond with objects as they present themselves in the aspect conveyed by sense. To a certain degree, this justifies the role of language as a representation of reality.

Words represent things through concepts, but this does not mean that linguistic expressions simply boil down to words and senses, or words and objects. Meaning should rather be conceived as a triad including a

word-sign, a concept (one through which one cognizes) and an object (what one cognizes).

It seems that traditional conception of meaning supports the conclusion that reality is represented in language, it also identifies properties of representation that enable linguistic creativity. Philosophical examination, however, cannot be satisfied by mere listing of internal elements of a linguistic sign or their mutual relations, it needs to explore its very foundation and cause. Sign is constituted as soon as meaning and word come together. This may take place for example as a result of communicative intent (McDowell 1998: 39-45). Unfortunately, this does not touch on the crux of the issue. Communicative intent may be understood as an element that matches the word with the already constituted and existing sense, in such a case it does not create meanings, nor does it participate in shaping cognitive content of the expression. One thus feels compelled to accept the idea of language as a code of thought, which however leads us back to complications signalled before.

Communicative intent is sometimes considered as a constitutive element of meaning. Those adhering to this view argue that communicative intent, when embedded in the appropriate context, lends sense to the expression, as in a cry of warning or a groan. By this, one succeeds in fending off difficulties that emerge when we take under consideration the first conception explaining how communicative intent contributes to constituting meaning of signs. But one cannot rely on intent alone when trying to explain how linguistic expressions have general meanings that transcend particular acts of communication.

In Thomistic conception of sign, the relationship between meaning and sound is one of form and matter (Gilson 1988: 34-36). Matter and form are basic concepts used in the description of objects and events of the material world. Linguistic expression reflects a universal structure of each material being. As for the word, composed of meaning and sounds, the relationship between matter and form serves as a basis for philosophical explanation of the sign's structure and its internal unity.

However, contemporary philosophy, and modern science, are not satisfied with such explanations, as they dismiss metaphysical or immaterial arguments in accounts of material phenomena (of natural, social or linguistic character, for example). For this reason, philosophy of language no longer accepts explanations grounded in psychology or metaphysics. The assumption currently followed is that the properties of language can be grasped by studying external linguistic behaviour of the speaker or listener and later

comparing it with the external environment in which the expression originates (Quine 1960: 25-29). This is the guiding principle for establishing meanings and features of language. There is no doubt that this is the proper way to learn how to use language, but all attempts of such a theory to answer fundamental philosophical questions regarding the nature of language has so far failed to deliver on this promise. Giving credit where credit is due, however, inherent reductionism of the philosophy of language has brought many significant insights into the syntactic structure of language, its logical properties or rules and conditions for correct use of expressions. This notwithstanding, fundamental questions regarding the nature of language remain unanswered.

The analysis of linguistic meaning focusing on its contentual aspect reveals a rich structure of relationships occurring between an object, a thought and a word. Meaning emerges as an intricate element of this structure. Hylomorphic explanation of phenomena does not draw directly from the experience of modern science and its descriptive procedures, nor does it follow interpretations of everyday experience that are highly influenced by recent developments in science. One should, therefore, look for some other conceptual basis for successful explanation of relationships occurring between language, thought and the world that underpin cognition and communication. Such efforts should preserve insightfulness, coherence and precision of the theory we have just discussed. It seems that this request can be satisfied by information theory and systems theory.

In light of those theories is seems legitimate to resort to immaterial elements in explaining natural or social phenomena. Contemporary science and technology increasingly employ the notion of information, conceived as an essential, if immaterial, component of any structure or process, and one of crucial importance in consideration of complex systems functioning in nature. The notion of information is primarily philosophical (Lubański 1975, Stonier 1990, Weizsäcker 1980). Carl Friedrich von Weizsäcker has likened it to the Aristotelian notion of form, thus offering a new philosophical perspective on problems of natural and social nature. The idea of language as a system that collects and processes information creates new possibilities for the interpretation of philosophical problems of language, encouraging the use of concepts and methods developed by information theory. I shall explore this topic in the last chapter of this paper.

MEANING AND SYSTEM OF SIGNS

Charles Sanders Peirce presents the relationship between language, thought and reality as a universal relation of representation. Both language

and thought employ meaning to refer to reality. Language, thought, cognition, communication, and any other intellectual and cognitive activity of men is a sign relation, with meaning as its constitutive element. One characteristic feature of Peirce's theory is that his account of meaning incorporates it into the general theory of signs. Meaning is understood not as an independent element capable of existing beyond the system of signs, but as an internal component of sign relation. On the other hand, meaning is another sign or chain of signs that determine objective content of the expression. One sign evokes the existence of another sign - called the interpretant — which then functions as the meaning of the former. Sign and meaning are bound by relation of representation, with interpretation being one of its internal functions, and one of essential importance. The inquiry into the nature of meaning would thus need to focus on the nature of a broadly conceived sign, with special emphasis on its representative function.

For Peirce, sign is a relation of three elements: medium, or a sign in a narrow sense, an object, represented by the sign, and meaning, or interpretant, which takes the form of another sign. In its representational role, this triad reflects the structure of all signification processes, including cognition and communication. Every component of the structure has different a nature and function. Each belongs to one of three basic categories specified by Peirce, and those categories determine its nature.

Medium, or a sign in a narrow sense, is the first element of the relation. It possesses a physical shape of its own existing independently from sign relation. It can take the shape of any given object, physical phenomenon or quality perceived through senses, for example smoke rising from the fire, a white cane, or a word, spoken or written, in its external form. Medium becomes a sign only in interaction with other elements of the triad. As an element of the relation, medium represents, or replaces, in a certain aspect, something different than itself in the face of some third being that receives and interprets it as a sign. It follows that meaning is what transforms a random physical event into a sign of something. Interpretation is therefore essential for something to become a sign. For example, a red glow over the night sky may signify a distant fire not only because it is in causative relation with it, but primarily as a result of somebody's knowledge, the very fact that one can interpret it as such sign. If its interpretation is missing, it is only an interesting optical phenomenon.

Sign as a medium belongs to the category of Firstness that "is the mode of being of that which is such as it is, positively and without reference to anything else [. . .] The typical ideas of Firstness are qualities

of feeling, or mere appearances" (Peirce 1958, 8.328). In the first phase of sensory cognition, Firstness manifests itself through perception as something uninterpreted and unclear.

The second element of the sign triad is an object of the sign. In Peirce's theory, sign has two objects. The first one is the dynamic object, i.e. an object that exists beyond the sign, the other the immediate object, i.e. an internal object of the sign and a component of the relation. It is what the sign presents, an aspectual apprehension of the thing serving the purpose of representation. An object belongs to Secondness that "is the mode of being of that which is such as it is, with respect to a second but regardless of any third" (Peirce 1958, 8.328).

Secondness is any physical action of causative nature which does not take into account its purpose, or a reaction to such action. Peirce rejects the notion of sign as a dyadic relation of a sign and its object. Object is not the exclusive source of content accessible to the cognizing mind. The content in its entirety can only be provided by the complete sign belonging to the category of Thirdness. But without the notion of an object, or the Secondness, it is impossible to comprehend the sign, and particularly its ability to represent the extra-sign world. Peirce also rejects the connotative theory of meaning which emphasises the relationship occurring between a sign and the content of the expression while disregarding the object. He does so because it is the latter, with its causative and physical effect that represents the mode of existence of something concrete and specific, that lends realness to the representation. Peirce's cognitive realism is reflected in his conception of reality, which proposes to treat reality as a phenomenon composed of signs. As an element of the relation, the object links the sign with the real world through further objects: one of immediate and the other of dynamic character. However, the nature of this relation is never discussed by Peirce, although this would provide substantial arguments backing his realism's claims to legitimacy. The external (dynamic) object, as a source of information communicated in the sign, is ultimately positioned outside the relation of representation.

The third element of representation, meaning, or the interpretant, is the most important, because it is a constitutive, component of the sign. Meaning refers the sign to the represented object, and by doing so carries also certain content.

The interpretant of the sign may itself be a sign, and may further require an interpretant for itself. In this fashion, a chain of subsequent interpretations is established, revealing the objective content of the sign. The content of an

expression or a concept is preserved in a system of signs, given in the interpretive chain as a set of relations occurring between signs. Interpretation is a multi-stage but not infinite process. It is not necessarily so that it is a sign that is a meaning of another sign, it may as well be an action, experience or quality of feeling. Peirce introduces also a notion of final interpretant where interpretation reaches its end. It is defined by the following pragmatic maxim:

"Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object" (Peirce 1958, 5.402).

The complete content of an expression is contained in the final interpretant and undergoes a test in circumstances of practical life. Also cognition, itself a sign, gains its complete meaning only when considered in terms of human activity in the world of things.

For Peirce, complete content of an expression is intertwined with cognitive function of a sign and embedded in the sphere of practice. It surfaces only as a practical consequence of cognition. It is not given in a single act, but rather unfolds gradually through subsequent interpretations, and its reference to the object is governed by the internal relation between the object and the interpretant.

This link between knowledge and action is used by Peirce as an argument that external world is, in fact, represented in language. Cognition is never finalized with formulation of concepts or mental content — its purpose is to produce and solidify convictions that underlie practical activity, since it is only there where validity of those, along with adequacy of representation, can be verified.[10]

Meaning transcends a singular linguistic sign and introduces it to the system of signs comprising signs representing various classes, such as sensations, concepts, linguistic expressions, etc. Meaning, much like a sign, is categorised as Thirdness, which

"is the mode of being of that which is such as it is, in bringing a second and third into relation to each other [...] In its genuine form, Thirdness is the triadic relation existing between a sign, its object, and the interpreting thought, itself a sign, considered as constituting the mode of being of a sign." (Peirce 1958, 8.328 and 8.331-332).

[10]This connection between language and action is also stressed by Dummett (1996: 187).

There is a fundamental difference between Secondness and Thirdness. While Secondness is a physical effect of the action, Thirdness consists of a certain intellectual element. With this, Peirce effectively incorporates mental activity into the world of signs. Dismissing psychologism, he proposes to treat thought as composed of signs. As such, thought is the interpretation of sensory cognition while objectively manifesting in its own external effects. Thought-sign is constituted in the wake of sense stimuli coming from the external world, with language as its most elaborate form. Despite the fact that language is a distinct class of signs, i.e. symbols, in which the relation between meaning and object is conventional, it is genetically connected with the sensory and qualitative perception of things. Peirce's realism is based on the assumption that it is

> impossible (. . .) that we should have an idea in our minds which relates to anything but conceived sensible effects of things. Our idea of anything is our idea of its sensible effects (Peirce 1992: 132).

Cognition always begins with sensible experience of the quality. Sensible quality is the first sign that mediates the external object and represents it in a sensible experience. It possesses a dynamic object presented in a qualitative aspect, its meaning being a thought that refers the sensible impression to its cause. For Peirce, cognition is a dynamic process, in which the interpretation of signs proceeds towards growing generality, from sensible impressions to concepts, which are intellectual signs. In the pragmatic maxim, the meaning of concepts is envisaged as an effect that cognition has for practical activity, which reveals a new aspect of the relation linking language and the extra-sign world. Thanks to meaning, the system of signs is open to practice, where each sign and thought is a general rule or directive. "The elements of every concept enter into logical thought at the gate of perception and make their exit at the gate of purposive action" (Peirce 1998: 241). Language and cognition have here double reference to reality both in terms of origin and effect. On this account, language can be used as a tool not only for intellectual cognition, but also for any purposive action. Peirce strongly suggests that in itself language is a purposive system, with its core function being the acquisition and transfer of information (Peirce 1958, 5.473).

By incorporating meaning as a vital part of semiotic theory, Peirce introduces a number of important elements his research into meaning. His theory combines the notion of meaning with efforts to explain the universal

relation of representation reflecting the semiotic structure. The analysis of meaning within the general structure of signs shows that language can be studied as an element of a broader and diverse system of signs that encompasses, apart from linguistic expressions, sensible impressions of perceptive qualities, objects constituted in cognition or mental content. Linguistic signs, or symbols, refer to their objects and meanings through unconventional signs, such as icons and indexes. Sign mediates between the real world and cognizing thought. There is no direct cognition. Each sensible perception of things, even one that proceeds directly, is ultimately semiotic.

Basic semiotic structure is a three-element relation that reflects representation. It is shared by cognitive and communicative processes, which are semiotic in nature, much like language itself. Meaning is a triadic relation too, constitutive of the sign by linking it with the objective content. As a purposive structure, language is not a purely cognitive endeavour and predominantly serves the needs of practical activity. Linguistic cognition acquires final content and value only in connection with this activity.

In his writings, Peirce repeatedly stresses the ultimate goal of his inquiries, which is to create a realistic theory of cognition. Cognitive realism must be factored in as another aspect of his thought, although it is not patently manifested in his vision of semiotic structure. Should this assumption be lacking, however, Peirce's theory of signs may lead to different conclusions as regards cognition. Apart from the medium, internal elements of representation include an internal object of the sign and an interpretant, also in the form of a sign. Links between the dynamic object and the internal object are not part of the relation of representation. Similarly, identifying meaning with a final interpretant would require a broader theory, able to explain relations linking thought and action. By the same token, signs may be understood as mutually self-interpreting elements of a closed system, never really connecting with the external world, since in the representation structure it is the sign, not the object, which is the first and direct component of cognition. Peirce draws attention to the actual similarity occurring between semiotic content and the object itself, but he provides no explanation regarding the nature and extent of this similarity. It is not of physical nature because thought, which interprets the sign, has no physical shape. To become a theory of representation of the real world, his theory must be furnished with an element that would explain how a semiotic system relates to the extra-sign world. With this modification, representational structure proposed by Peirce would now be able to accommodate fundamental relations of meaning, which includes the sign's reference to something external,

as well as to enable the furnishing of it with objective content cognitively corresponding with the object itself.

MEANING AND INFORMATION

One conclusion that can be drawn from the above discussion is that serious analysis of meaning must embrace the whole range of topics related to linguistic signs and their essential functions. A satisfying account of meaning must take into consideration its relationships with both linguistic expressions that represent the external world and the content of consciousness preserved within concepts. This fundamental relation is recognised by all theories discussed in this paper, but none of them addresses the nature of such relation. In order to find the conception of language that would give a proper account of its ability to present the external world, explain the source of such ability and substantiate the relation between speech and purposive action, we will need to adopt a creative approach to the subject. It is essential to break away from the idea of language as an isolated system of signs. Language, as a tool for cognition, thought, and communication, can be viewed as an element of a broader system designed to acquire external-world information that drives purposive action. The transfer of knowledge or information about the world has often been considered to be its core function. Meaning of expressions is closely related with linguistic ability to carry information. It may be said that expression has meaning if it is a carrier of linguistic information (Evans 1996), be it of objective or structural nature.

The notion of language as an innate structure, a part of a broader system designed to acquire, process and store information necessary for survival, was first proposed by Konrad Lorentz (1977). Acquisition of language, in a sense of it being a specific system of signs, is conditioned by specific innate linguistic structures in cognitive apparatus developed by humans.[11] These structures, enabling conceptual thinking and verbal communication, were formed gradually, with their specific elements emerging throughout the earlier stages of evolution (Lorenz 1977: 187). Lorenz describes the biological process of accommodation as a process of acquisition of knowledge, understood generally as useful information. It is a process following two paths: accumulation of information in a permanent innate structure and collection of momentary information, which is how these structures work. Organism's structures that secure acquisition of momentary information

[11] A similar, if not more ambitious, argument is formulated by Chomsky (1992: 393-394).

should not be modified when confronted with a change that may occur within the surrounding environment. This feature is secured by the innate linguistic structure responsible for the acquisition of the specific language. It conditions the reception of sensible impulses and interprets them as information about external objects.

Taking Lorenz's idea further, learned language can be interpreted as an acquired information structure, a specific system for organisation of sense data and the processing of momentary information derived from that source. It is an intermediate structure between the permanent, universal cognitive apparatus and changeable momentary information. The acquired language is prone to greater changeability than the genetically conditioned structures, but it accumulates long-term results of cognition and is accessible each time cognitive activity occurs. Core qualities and functions of language are here conditioned by the innate structures, for this reason it cannot be isolated and independent. A fundamental feature of sign relation, where the conveyed content refers to some external entity, is, according to Lorenz, a factor that precedes and conditions language. Similarly, innate and speech-conditioning is the capacity to provide sounds with meaning for communicative purposes.[12]

Language, conceived as a system of signs, although purposively conditioned by the innate structures, possesses relations and properties that are not determined by it. These are explored and described by studying specific languages. But fundamental and universal properties of language, both structural (internal structure of linguistic signs) and functional (cognitive, communicative, representative properties, etc.) can be explained only by referring to cognitive structures in general.

Traditional topics explored by philosophy of language, like sign representation, meaning or reference, are not primary subjects of Lorenz's considerations. Instead, he treats language as a process defined as acquisition of information by way of processing and collection. But by doing so, he succeeds in shedding new light on those perennial issues of philosophy. This also invites a new perspective on traditional problems of language (meaning included) that can now be revisited by applying entirely new conceptual systems and phenomenological models borrowed from such rapidly growing fields of science like systems theory and information theory. The notions of "information" and "information system" play crucial role in those theories. This shift in approach is also an invitation to rethink the general understand-

[12]Language was preceded, argues Lorenz, by the development of such cognitive skills as central representation of space, symbolic representation of the world and conceptual thinking (Lorenz 1977).

ing of language as well as its critical relations and processes. Systems theory and information theory are not just technical disciplines, they are offering a new view on reality by emphasising its systemic, relational character.

Rapidly developing information theory highlights the quantitative aspect of information as well as its relevance in controlling technical processes and systems. This is also an opportunity for exploring the nature of information itself. Information is sometimes counted alongside mass and energy as one of the basic elements of the natural world, and is regarded as a major component of knowledge and cognition (Weizsäcker 1980, Stonier 1990).

There is no general consent as to what information actually is, but it is considered to be a common and universal component of all sorts of structures and processes, material or psychical. By itself, however, information has no material or psychical character, it is rather associated with formal aspects of organization and arrangement of structures, brought to the fore anytime one sets out to explore their complexity. Weizsäcker compares its properties with certain features of the Aristotelian form (Weizsäcker 1980: 38-39). Information is considered to be a separate, dynamic, structure-generating component of reality manifesting in the organization of structures and processes. Along with mass and energy, it is considered to be an element of physical processes. Conveyed in physical interaction, information supports or purposively alters the organization of the way complex systems operate. Information preserves a certain type of similarity of organization when transferred to subsequent information-carrying structures. Since this similarity is associated with the organization itself, it is of a structural, not material, nature. Its dynamic character manifests in that information becomes a source of information, and produces information, effectively manifesting in creation or the altering of specific organizations. The notion of information reveals a universal tendency of the matter to organize into complex structures.

Information, inherent in both material structures and consciousness, may serve as a link between the real world, cognitive consciousness and language.

The assumption that structures and functions of language are underpinned by transfers of information implies that the relation occurring between the spheres of things, thoughts and language is one of specific similarity in the organization of these structures. It is an information-similarity that serves as a basis for linguistic representation of the external world.

Viewing language as a system for the acquisition and processing of information opens new perspectives for fundamental questions regarding

the nature and properties of language. As a system of signs, language is a multilevel structure, with its core elements and relations shaped by the flow of information between the external world, consciousness manifesting in the conceptual system, and the language of words as external representation of concepts. Between those three domains exists a string of links that constitute the relation of representation. Its structure, as described by Peirce, is organized by the processes guiding the flow of information, occurring both between various levels of representation and within each level internally.[13]

Information on the surrounding environment acquired through sensory perception, is further transformed into structures of impressions, concepts, words, etc. On each stage, the primary information is interpreted based on the innate cognitive structures or conceptual structure of the acquired language. The interpretation includes adding object-related information to structural information determining internal relations of representation. Linguistic cognition is interpreted properly if it is compatible with survival-oriented activity. Compatibility is confirmed in a multi-dimensional process, based on a selection of the most fitting information-processing forms available in the innate structures (responsible for structuring representation and its basic elements of which the acquired linguistic system is composed), as well as interpretation of momentary information within linguistic structures, both acquired and innate.

With this approach, the analysis of language is now open to conceptual distinctions used in the description of information systems. This makes it possible to distinguish language understood as an external, objective sign structure, used in interpersonal communication, from "internal language," consisting of individualized conceptual content that emerges through immediate sensory perception of the external world. The relation of both those structures, which is one of thought and language, seems to be rooted in their mutual information exchange, leading to a certain similarity of organization (although they are different as regards their material aspect).

Language understood more broadly, as a concept-word structure, differs from an innate ability to acquire language. The latter depends on specific properties of cognitive apparatus developed over the course of evolution, and functions as a general prerequisite for acquisition of language. It includes initial selection of external information by processing sense data to create images of external objects, further processing such data into abstract cognitive content, and referring this content to something external. Linguistic

[13]On the idea of representation as information flow, I have written extensively in Buczkowska 1994.

representation is also conditioned by the innate and fundamental ability to connect external sound or writing with cognitive content and external object (Lorenz 1977: 187). It would be therefore possible to conclude that for language to emerge one does not merely need cognitive perception of the world coupled with communicative intent. One would still be lacking pre-existing information structures enabling linguistic reception and interpretation of external information.

Both innate linguistic structures and the system of acquired language are permanent, external and objective when compared to singular experience and singular speech acts through which one collects momentary information from the environment. This perspective can be used to explore both the difference between, and mutual dependence of, language as objective and the general structure and speech as a singular use of this structure. The difference between structure and function of the information system is one of language (conceived as a supra-individual, socially embedded system of signs) and the use of words in a singular act of cognition or communication. A singular speech act is always enriched by its extra-linguistic context that modifies its meaning.

One also needs to distinguish between a permanent structure of the system, a specific program, a data-processing algorithm applied by such a program, and a processed data itself. These distinctions determine how one interprets relations occurring between language and the external world as well as the system of concepts functioning in the individual consciousness.

Fundamental and universal cognitive structures, enabling acquisition of specific languages, are, according to Lorenz, innate. They condition the sensory perception of objects (conceived as permanent sources of impulses) as well as recording changes or differences occurring in the surrounding environment. Also, they secure mental representation of such data, and their functioning in the external world by allocating them in a spatiotemporal setting. Sensory content, together with its connection with the external data source, is subject to further linguistic representation. It is the first stage where linguistic information is collected and used as a substance for constituting an object of sensory cognition. Linguistic information comes from two sources: external impulses and other innate structures that enable the processing of external information to produce individual images of external objects. Such data is accumulated in the sense-experience memory and is used as the primary substance used in the forming of concepts. Since external impulses are represented as sense data, one is free to make use of representants themselves, which makes it possible to think of content as

detached from its specific individual referent. This further enables developing concepts of general objects, associated with classification of individual data based on specific properties. Throughout this process, external information is transformed by innate structures, which function as a source of information required to interpret external impulses as classes of objects or their properties.

In the next stage, processed sense data is transformed into the external structure of sounds, letters or other conventional signs. It is the most important stage of linguistic representation, where a special program is applied to further process the acquired information. This is precisely the role of acquired language, which provides additional structures and information needed to receive and process sense data[14] into the next level of representation.

A mechanism where external impulses play a central role in language acquisition is described by Willard Van Orman Quine. Emphasising the objectivisation of individual sense data in learning processes, Quine suggests that object-related information acquired from the external world is transformed into a structure of sounds, or, more precisely, mental representation of this structure. Apart from registering external impulses representing the object, this mechanism is also responsible for recording signals that represent linguistic signs. Basic association of sounds and objects is possible because innate structures are in place. This is how the relation between sound and object-related content is established. Information coming from the external object in the form of impulses and sensory content is further accumulated in the conceptual structure and external structure of language. However, as important as it is in the initial stages of language acquisition, sensory content is only an intermediate stage in processing information and does not manifest directly in word representation (although it can be additionally invoked while referring to consciousness). It is analysed and processed in conceptual and word structures, becoming a source of the creative powers of language, manifested in the ability to represent content that lacks reference to real things. Therefore, language combines individual sense impression with its universal, supra-individual interpretation. The process of language acquisition supplies additional information for interpretation of sense data and derived concepts of general objects that are used in developing a system of representation of the object-reality which is more sophisticated than the sensory image of the world. Between separate levels of representation (external impulses, sense data, linguistic concepts and expressions) there

[14]See the three-stage process in which concepts emerge, described by Gilson 1988.

occurs a mutual exchange of information, effecting through a feedback loop that modifies the lower level of representation through information provided by the upper level of representation. This process can be illustrated by the notion of language functioning as a tool for thought, or even sense data (Krąpiec 1985: 88).

As an element of the representational system, a singular linguistic sign, its external form aside, has a reference to the object and its content. Those relations are determined by information flow from the external world to the linguistic structure. They are constitutive of both representation in general and specific components, and preserve their relational character. The structure of representation, as pictured by Peirce, is organized by the process of information flow occurring between the external world, thought represented by concepts, and external structure of language. Such understanding of representation makes it possible to indicate causation between its internal elements, that is, an object of a sign, medium and meaning, with each functioning on a different level of representation. Note that apart from information flow between various levels, on each level there is specific information that governs the internal organization of its own elements. That information can be processed by means of the elements of one particular level and then proceed to representation on another level, is what constitutes creative capacities of language.

The above discussion is indicative of the reasoning that seeks to explain the source of the representative function of language as a certain kind of information-collecting structure. Linguistic expressions associated with the given information function as its carriers — both within the internal information-processing structure and in external communication. The goal of our present discussion is to find the source of processes that enable representative function of language as well as relations linking language with the external world and the content of consciousness.

Meaning, in its general sense conceived as what expression carries in cognition or communication apart from its external form, is closely linked with the information conveyed by that expression. Such information is made up of three components: external information fed as sense content, information deposited in innate structures, and information supplied by the acquired linguistic structure which functions as a system of representation. Those three components can have different functions. Information contained in the external linguistic structure constitutes objective meaning of the expression, one found in dictionaries. It is accessible through relations that occur between expressions and can be learned by studying other utterances.

It is free from individual interpretation and is not conditioned by the context. Information present in the sense-data structure carries an individual element of meaning: it is a combination of cognitive content (an interpretation of external information) with information stored in innate structures that enables a referring of those contents to the external source of impulses. It constitutes an object of cognition, which is simultaneously an object of representation, and depends on both subjective reception and interpretation of external impulses as well as the objective external source of information. As information constitutive of external structure of representation is shaped by the relevant structures and programs, immediate perception of the world affects both individual and objective meaning.

Meaning is always a meaning of something. One can speak of the meaning of linguistic expressions, or concepts or, more generally, signs. Meaning of the linguistic sign is a piece of information related to the expression and describes the represented object or state of things. Since content of consciousness, formed into concepts, is represented by words, this relation is often taken to be constitutive of meaning. Such information additionally contains a component that relates to the origin of representational process and its subsequent stages. For example, the word "Pegasus" represents content correlated with a fictional object. Meaning, i.e. information about this word, is revealed in communication gradually, returning, as it were, to the origins of representation. Verbal information is the first to appear, possibly together with sense impression functioning as a preceding element of representation. Such a word represents merely the content of consciousness and this is revealed in its meaning. For this reason such meaning includes the content of the word and its related concept or impression, rather than some objectively existing external object. This is not the case with words representing real objects, as one deals here with reference to the external source of information, which is an additional and object-related component of meaning. By using the word, one communicates the relevant information in its entirety. In order to receive and interpret it, the receiver needs a linguistic structure of representation containing all the above-described relations that define relationships between words or sentences, the content of consciousness, and reference. In communication, interpretation of information runs, as it were, in the opposite direction to direction followed in the structuring of linguistic representation. More precise inquiry into the nature of meaning would require a theory envisaging language as an information system, something which this paper cannot provide.

It appears that the proposed approach makes it possible to rethink

relations occurring between language, thought and world, and in doing so recreates relationships discussed by Gilson. It also manages to justify objectivisation of individual content in linguistic structures and its reference to external objects, a point made by Frege and Quine, while explaining those relations on the grounds of universal and increasingly clear processes governing information systems.

This approach outlines the general idea of language and does not specify is particular properties; to the contrary, it leaves room for different approaches, reconciling them under a single and coherent conceptual system. It is an invitation to develop a theory of language that would expose language as an information system, with the theory of meaning as its integral part.

It also charts a new field of linguistic research by interpreting elements and functions of language as components and processes of information systems. In doing so, one can analyse language with methods developed in information systems and information theories, thus opening yet another and so far unknown perspective for research into language. It also provides basis for a theory explaining the nature and fundamental properties of language, including also meaning. Further analysis would have to develop a model for the information system capable of recreating linguistic structure and explaining its basic cognitive and communicative functions. This, however, is beyond the ambition of this paper, which goal was to suggest a conceptual basis and general model for inquiry into the nature of language, with meaning as its core component. An effort to establish such a comprehensive theoretical model, which in light of discussions offered in this paper seems both purposeful and desired, may provide a new perspective on other problems persisting to this day in the philosophy of language. Information systems and information theories can be viewed as a general conceptual framework for coherent analysis of the problems of language, cognition and communication. It is also an opportunity to accommodate research that treats the brain as an information structure while specifically emphasizing its linguistic structures (Searle 1980). It seems that studies focusing on brain structures responsible for language (Jakobson 1971) and theory of language exploring its inherent functions and structures can both benefit from this exchange, provided there is a uniform conceptual basis for the description of linguistic phenomena studied by those disciplines. The conceptual framework and the idea of language offered in this paper both seem to invite such possibilities.

SUMMARY

The above discussion clearly shows that the problem of meaning is

both vast and many-sided, and it is not possible to touch on each important aspect of the subject in a single paper. The goal of my analysis was to highlight the main problems recurring in the recent discussion on the notion of meaning and to offer a conceptual basis for uniform treatment of various piecemeal insights into the subject.

As demonstrated, one fundamental task confronted in an effort to provide philosophical explanation of meaning is to find a foundation underpinning cognitive relation between the world of objects, thought projecting the world into concepts, and objective structure of language. Theories of language now circulating in the philosophy of language provide no comprehensive explanation of the problem, although they do offer abundant material descriptively exploring structures and functions of language.

The notion of language as a survival-oriented system designed to acquire information on the surrounding environment, offered by Lorenz, contributes to linguistic studies by providing results of biological research into cognitive structures shaped over the course of evolution. With this knowledge, one is able to look for the origins of cognitive structures of language in the innate cognitive apparatus, uniquely designed to acquire and process information sourced from the environment.

From this point of view, it is possible to apply concepts and methods of information theory and information systems theory to describe and explain the nature of fundamental elements belonging to the structure of linguistic sign, including meaning. This also offers better insight into the principles governing cognitive and communicative functions of language. Information, conceived as a universal and necessary component of all structures and organized processes — either material, or cognitive or communicative — may serve as a link between language and cognitive content of consciousness referring to the world of objects. Basic cognitive relations, including representation, are shaped in the processes of information flow. The approach proposed in this paper brings new opportunities for interpretation and understanding of functions fulfilled by language (meaning included), encouraging further research and more detailed analyses of the subject.

The notion of information is philosophical by its very nature, on the other hand, information theory finds its application in many disciplines of modern science. With this comes hope that the proposed method will be capable of reconciling philosophical investigations with in-depth research into language. It further seems that the conceptual framework used by information theory and information systems theory may be a fruitful addition to the conceptual basis designed to explore problems related to meaning, language,

cognition and communication. Concepts used in the discussed theories of language are flexible enough to be easily incorporated into the extended conceptual framework, and elements of various conceptions can contribute to an effort to establish a general theory of language, lack of which was indicated in the opening paragraph of this paper.

My discussion focused exclusively on fundamental ideas and ways of understanding meaning, considered in a broader context of structure and functions of language. It is therefore very general (at times barely touching on the subject) and never pauses to consider important details. Its purpose was to offer a conceptual basis and general direction of thought that may bring new light to the study of meaning, nurturing better understanding of the nature and functions of language. Development of the general idea and analysis of issues indicated in this paper would require further research which this paper cannot offer.

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THE PHILOLOGICAL TREND IN LOGIC

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I. Logic in the age of crisis

1. 'The question about logic' and the grammatico-logical argument

In the wake of the great logico-grammatico-psychological debate on logic which has lasted since the mid-nineteenth century, Friedrich A. Trendelenburg wrote:

> Logic became aware of language and in many respects it is nothing else but a more thorough grammar. In formal logic, we recognize traces of this origin at every step. *After all, we are justified in requiring that the grammatical form of a sentence have its justification in the theory of judgement. For if there are any grammatically relevant sentence forms which are impossible to frame by means of a logical form, then this grammatical fact shows inadequacy and incompleteness of logic.* Just as all other sciences pay attention to facts so as to deal with them and account for them, so logic cannot avoid this general goal of all sciences. (Trendelenburg 1840, ch. I, §8; my emphasis)

The passage envisages logic's commitment to adequacy with respect to all linguistic expressions of thought, which is the cornerstone of the project of logic as science, as opposed to the 'art of thinking'; of logic as a theoretical discipline — in contrast to a practical one. It constitutes one of the chief components of the epistemological cut that was the starting-point of a new era in logic, which lasts to this day: Trendelenburg's demand to "pay attention to facts" — of course, above all to theoretical and grammatical facts

— was neither isolated nor unjustified, nor without continuation. In 1843 a similar requirement was put forward by John Stuart Mill in *A System of Logic Ratiocinative and Inductive*, where he was equally critical of the formal logic or 'the professional logic of Hamilton and De Morgan' as Trendelenburg was of the formal logic of Drobisch and Twesten. Mill also failed to see any solution to the problem of inadequacy of the logical account of name and sentence other than to start constructing a system of logic from scratch. This time it was supposed to be the science of thought — more than mere 'art of thinking'. And in order to make it a *universally applicable* instrument for analysis of any kind of inference, it was necessary:

> to inquire what are those which offer themselves; what questions are conceivable; what inquiries are there, to whichmen have either obtained, or been able to imagine it possible that they should obtain, an answer. (Mill 1843, vol. 1: 21)

Given that after the fall of transcendental philosophy and the dialectical method it was impossible to prepare a *catalogue raisonné* either speculatively or by examining transcendental 'I', Mill believed that "this point is best ascertained by a survey and analysis of propositions" (Mill 1974: 20), because:

> The answer to every question which it is possible to frame, must be contained in a Proposition, or Assertion. Whatever can be an object of belief, or even of disbelief, must, when put into words, assume the form of a proposition. What, by a convenient misapplication of an abstract term, we call a Truth, means simply a True Proposition; and errors are false propositions. To know the import of all possible propositions, would be to know all questions which can be raised, all matters which are susceptible of being either believed or disbelieved. How many kinds of inquiries can be propounded; how many kinds of judgments can be made; and how many kinds of propositions it is possible to frame with a meaning; are but different forms of one and the same question. (Mill 1843: 21)

Thus language and its analysis replaces the absolute spirit, which was developing its phenomena in Hegel's phenomenology, and the transcendental 'I', whose self-insight or peculiarly understood experiences were supposed to give access to all 'cognitive contents' and secure the universal applicability of logical forms. Hence, due to Mill, logic in England made a linguistic and dialectical turn long before the rise of linguistic philosophy, or even before modern descriptivist linguistics.

In Germany, the grammatico-logical objections had already been given

the status of a question in three articles by Trendelenburg: "Zur Geschichte von Hegel's Logik und dialektischer Methode" (1842a), "Die logische Frage in Hegel's Systeme" (1842b), and "Eine Aufforderung zu ihrer wissenschaftlichen Erledigung" (1842c). Of course, the significance of the grammatico-logical argument and of the corresponding 'question about logic' stemmed, like in Mill's case, from three important critiques: of formal logic, mathematical method, and the dialectical method and logic. For, according to Trendelenburg, the latter's basic categories of concept, judgement (proposition), and inference are equally inadequate — albeit admittedly more original than in the first two cases — with respect to languages and practice of sciences, and, of course, to ethnic languages. Not only do the dialectical methods of justification strikingly diverge from methods employed in mathematics and natural sciences, but — more importantly — the Hegelian scheme of concept creation by dialectical negation of descriptions and dialectical removal of differences turned out to be: (1) a formal scheme, not a set of operations that would allow us to effectively reconstruct the basic notions of natural sciences, (2) a scheme which strikingly differs from procedures of defining and abstracting actually applied in sciences and ethnic languages. This is what Trendelenburg showed in the second chapter of *Logische Untersuchungen*, thereby becoming known to his contemporaries chiefly as a critic of Hegelianism.

It should come as no surprise, therefore, that the question raised by Trendelenburg and Mill — the question about logic as science and the demand to consider the question in scientific terms — quickly gained the status of the main task of philosophy and logic, and the underlying arguments against existing logic were widely discussed. Its popularization was greatly aided by Carl von Prantl's dissertation, *Die Bedeutung der Logik für den jetzigen Standpunkt der Philosophie* (1849), written after a scholarship under Trendelenburg's supervision, which was almost entirely dedicated to showing inadequacy of formal and dialectical logic with respect to the forms of concepts, judgements (propositions), and inferences present in sciences and ethnic languages. Prantl's particular merit in destroying existing forms of logic and philosophical grammar consists in his thorough analysis of disadvantages of the subject-predicate conception of judgement (proposition) and in showing that also the transcendental logic, propounded in *Critique of Pure Reason*, and then in *Immanuel Kants Logik*, shares all disadvantages of the mathematical method and the 'attribute logic'. In 1880 Georg Leonhard Rabus (1880: 1) was already certain that Trendelenburg's "<<question about logic>> was brought about by doubts concerning the justification

of formal logic" and became a starting-point for a new stage in its history. After all, his volume dedicated to "recent German endeavours in logic" encompasses the discussion of 248 authors, including — and rightly so[1] — Frege's *Begriffsschrift*.

The main followers of Mill's project of logic as science were Alexander Bain and W. Stanley Jevons. It is also impossible not to mention Jevon's influence on August de Morgan and George Boole (both criticised by Mill): Boole, who in *The Mathematical Analysis of Logic* (1847) took a stance on the English controversy about logic, explicitly remarked in the preface that the presented system of logic is (1) fully scientific, and (2) invulnerable to Mill's objections raised in 1843 against the symbolism of 'the professional logic of Hamilton and de Morgan'.[2]

2. The commitment to generality and the problem of general logical forms

Establishing the status of logic as a scientific discipline radically modified its practice. Its main task was no longer to store and popularize *canonical* forms of thought, so as to judge and direct, from this perspective, the cognitive practice of sciences. The main purpose was now to reflect this heterogeneous practice. Once logic ceased to be the 'ethics of the intellect' and became a scientific epistemology, it fell upon it to provide an adequate logical reconstruction of cognition. This required not the canonical forms, and not only the valid ones, but above all the universally employed forms, sufficiently diverse as to enable an adequate reconstruction of any concepts, judgements (propositions), and types of inference that occur in sciences and ethnic languages. The traditional normative issue of validity of logical forms and theories was now eclipsed by descriptive questions — about

[1] Already in the preface to *Begriffsschrift*, Frege emphasized that "any effort to create an artificial similarity by regarding a concept as the sum of its marks [*Merkmale*] was entirely alien to my thought" (Frege 1970: 6). As shown by Thiel (1982), the source for this declaration is in *Logische Untersuchungen*.

[2] The preface to *The Mathematical Analysis of Logic* ends as follows: "If the utility of the application of Mathematical forms to the science of Logic were solely a question of Notation, I should be content to rest the defence of this attempt upon a principle which has been stated by an able living writer: <<Whenever the nature of the subject permits the reasoning process to be without danger carried on mechanically, the language should be constructed on as mechanical principles as possible; while in the contrary case it should be so constructed that there shall be the greatest possible obstacle to a mere mechanical use of it>>" (Boole 1847). The passage Boole quotes is from the first 1843 edition of Mill's *System* (1843: vol. 2, 292).

universal applicability of logical notions of concept, judgement (proposition), and inference. The immediate, albeit not the most important, result of these revaluations was a growing interest in inductive inferences, reasoning by analogy, 'typically mathematical' reasoning, the process of formulating hypotheses, and probabilistic inferences. It is enough to recall Boole's logical theory of probability, to quantitatively quantify De Morgan's syllogisms, or Peirce's account of inferences by induction, abduction, in order to ascertain that these revaluations did not omit the formal logic either, reborn in a scientific guise. What turned out to be much more important was the adaptation of a suitable system of symbols to pre-existing notions of concept, judgement (proposition), and inference. The need to test and prove their universal applicability in any scientific discourse and with respect to ethnic languages determined the main internal problem of logic in the second half of the nineteenth century, and the development of logic depended on three main debates: on the general form of concept, judgement (proposition), and inference.

3. Critique of attribute logic

A particular role was played by the critique of the traditional Aristotelian account of concept — the so called 'attribute logic' (*Merkmalslogik*). It consists of the canonical form of definition in terms of a genus and a differentia in mathematical logic (Boole's logic included!),captured by the formula $A = B + C$, and on the account of abstraction as setting aside what is particular and preserving what is shared by the compared cases, which was supposed to correspond to the formula $A = B - C$. It is the attribute logic that — together with the 'question about logic' prompted by it — caused the prolonged crisis of the 'old' logic together with the Enlightenment or rationalist grammars based on it.

Trendelenburg raised three objections against the attribute logic:

1. First, the notion of concept as a sum of attributes fails to explain whether these attributes are features of the concept itself or of the objects of which we predicate them. Thus the attribute logic fails to clearly differentiate the content of a concept from its extension. In fact, this is what Mill refers to in his polemic with William Hamilton, by showing that both the principle *dictum de omni et nullo* and the classical nominalism, which endorses this principle, are 'cardinal errors' of 'the professional logic of Hamilton and De Morgan'. Such a logic is actually devoid of general or abstract concepts, and what remains are just names or their extensions (classes). In the conceptual realism based on the same account of concept, which is exemplified, according

to Mill, by Descartes' philosophy, there are only general and concrete ideas, which are predicated of each other in propositions, but not of objects to which they would refer. In the former case concepts lack contents, in the latter they lack extensions. All these mistakes are particularly evident, for Mill, in the traditional account of proposition as a juxtaposition of two extensions of names and in the fundamental principle of the 'professional logic' — *dictum de omni et nullo*.

2. The second argument refers to the traditional account of abstraction, according to which the transition from particular things — or from "completely particular and singular concepts"[3] to general concepts — consists in disregarding what is particular and preserving and what is common. This procedure – according to Frege — raises the inattention and absent-mindedness of scholars to the status of 'a most effective logical power'.[4] Trendelenburg indicates, in reference to Berkeley and Hume, that this approach can only lead to concepts with 'empty generality', which cannot be applied to particular things or even to more specific concepts: a general triangle would be neither an isosceles triangle nor a non-isosceles one; neither equilateral nor non-equilateral, neither... etc. Presumably, it is precisely this objection that took centre stage in the debate about the general form of concepts and the crisis of logic. By using the example of the general concept of animal, Prantl, Lotze, and other logicians of the second half of the nineteenth century made a parody out of this foundation of traditional logic: the animal in general would be a creature that neither runs nor walks, nor flies, nor is even capable of moving — after all, none of these properties can be contained in the general notion of animal. Also Frege refers to this issue in his review of Husserl's *Philosophie der Arithmetik* (Frege 1984a). He shows that "the general concept of something" (*Allgemeinbegriff von etwas*) achieved in this way — devoid of any differentiating attributes — fails to allow for the plurality of things and thereby for the possibility of counting them, and as such is utterly useless in mathematics. Furthermore, this procedure, in which the central role is played by the "inattention and absent-mindedness of scholars" turns out to be useless not only with respect to something as abstract as numbers but also with respect to something as concrete as cats: it allows Frege to construct a general concept of a colourless,

[3]Even Rudolf Hermann Lotze must have inherited — albeit "not without scruples" — the "notion of something particular and singular" from the old logic.

[4]"Inattention is a most effective logical power; this is presumably why professors are absent-minded" (Frege 1984a: 197).

and even space-less, cat.[5]

3. The notion of definition which treats it as a sum, or a result of subtraction, of properties,[6] fails to explain how the elements of a concept determine each other and how they refer — in this specific configuration — to one and the same object. This shortcoming is shared, of course, by the extensional interpretation of the traditional account of definition, which was popular in English logic and accepted by Boole as well – the notions of intersection and set-theoretic difference of extensions also fail to account for the connection between properties in a singular concept and in an individual (e.g. between animality and rationality or non-rationality).

Thus, the above objections also apply to the tradition of mathematical logic, going back to Leibniz, together with Boolean 'mathematical analysis of logic' discussed in Germany. Accordingly, it comes as no surprise that — not only in the eyes of 'philosophizing logicians' such as Hermann Ulrici, Rudolf Hermann Lotze, Franz Brentano, Carl Prantl, but also for Gottlob Frege — Boole's logic with its three defining operations ($+$, $-$, $\cdot$) introduced, in this crucial regard, nothing new to the traditional logic, and amounted to providing 'a mathematical guise for the old logic' together with its 'errors'.[7]

[5]"Suppose, e.g., that there are two black and a white cats sitting side by side in front of us. We do not attend to their colour, and they become colourless — but they still sit side by side. We do not attend to their posture, and they cease to sit without, however, assuming a different posture — but each of them is still in its place. We no longer attend to the place, and they cease to occupy one — but they continue presumably to be separate. We have thus perhaps obtained from each of them a general concept of a cat. By continued application of this procedure, each object is transformed into a more and more bloodless phantom. As the end result, we obtain from each object a something emptied of all content; but the something obtained from one object differs nevertheless from the something obtained from another object, even though it is not easy to say how. But wait a minute!" (Frege 1984a: 197–198).

[6]Such an account was propounded e.g. by Herbart, for whom: "The content of a concept is the sum of its properties; its range — the set of other concepts in which it appears as a property; thus, when the content grows, the range shrinks, and vice versa. If we *add* a property to a genus, i.e. to a higher concept, then we obtain — by way of determination — the proximate species; by abstraction — conversely — we get the proximate genus. Concepts from the same level are subordinated to the higher concept in the same way" (1850: §40). Its extended exposition together with a suitable symbolism was given by Drobisch, for whom possible forms of a definition of A in terms of other concepts can be reduced to the following formulas: $A = B + C$, $A = B - C$, $A = B - C + D$.

[7]Cf. Ulrici's first and second review of the algebra of logic in (Peckhaus 1995: 87–104, 105–107). In his second, short (2 pages) review of the algebra of logic, Ulrici summarizes his objections from 23 years back in the following: "this new logic offers nothing new and, in fact, is just a translation of the old (so called Aristotelian) formal

4. The situation of philosophical grammar in the age of crisis

No one could have any illusions anymore that the attribute logic would provide a universally applicable calculus for determining truth and falsity, or that combining genera and species will exhaust the range of items with respect to which we can ask about truth or falsity, which, in turn, could be expressed in the canonical form $x = y$. By being deprived of these delusions, the attribute logic and the philosophical grammars associated with it lost their significance for science and philosophy. It was the discussed criticisms that brought about the epistemological separation of classical *episteme* from the classical notion of order in logic. The difficulties brought to light by the debate made it impossible to return to Leibniz's logic, to Port-Royal logic, or to the ideas of Leibnizian *characteristica universalis* or the Port-Royal grammar based on them.

The same fate was met by Condillac's grammar and Herbart's philosophical grammar originating in Kantianism, and even by the philosophical grammar of Bernard Bolzano, which was praised by Heinrich Scholz. Of course, its fault did not lie in being a grammar of 'representations' or of sentences 'in themselves' (i.e. entirely objective ones), or in being rationalist, that is, in reducing all "representations and sentences in themselves to their logical form". Its principal drawback, pointed out by Kazimierz Twardowski, was that its project of rationalization of language was based on a fundamentally flawed account of 'representation in itself' (i.e. concept) and an equally wrong conception of 'sentence in itself' (i.e. proposition). Yet these grammars became unacceptable for one further reason — for which they also failed to be adopted in linguistics. Namely, all of them, Bolzano's grammar included, were as normative as the logic serving as their foundation. This is why also de Saussure rejected them as fundamentally unscientific — despite his admiration for the 'synchronic viewpoint' espoused in them. For him, in the Port-Royal Logic:

> the horizontal axis is followed faithfully, without digression. The method was then correct, but this does not mean that its application was perfect. Traditional

logic into mathematical formulas. I found nothing in it that would better justify laws and logical norms, that would present their meaning and soundness in a more precise way, or would provide a more satisfying account of the origin, construction (*Bildung*), justification, and validity (*Geldung*) of our concepts, judgements (propositions), and inferences than the one provided by the old logic." The same opinion about Boole's logic was expressed by Frege in his paper "Booles rechnende Logik und meine Begriffsschrift" (Frege 1969: 104–105), where the definitions of basic terms and assumptions of Boole's calculus are accompanied by the remark: "So far, everything, with merely external modifications, can also be found in Leibniz."

grammar neglects whole parts of language, such as word formation; it is normative and assumes the role of prescribing rules, not of recording facts. (de Saussure 1959: 82)

Also in the new, scientific logic the normative approach became unacceptable.

Thus there are two key assumptions that underlie the new philosophical grammar, which — in contrast to linguistics established at the beginning of the nineteenth century — renounces neither the universality that would encompass all languages and forms of expression (including, in particular, the scientific languages set aside by linguistics) nor the project of discovering rational structures of meaning, nor the idea of *characteristica universalis*:

(1) philosophical grammar should be regarded and adopted as a scientific and descriptive — as opposed to normative — discipline, that is, as a kind of logical theory of language or just a universal semantics,

(2) philosophical grammar should be regarded and adopted as a science with a suitable commitment to adequacy. The point is that the categories of concept, judgement (proposition), and inference should be universally applicable to all kinds of discourse — both ordinary and scientific.

These assumptions differentiate the new philosophical grammar from the rationalist grammars of the age of Classicism and from empirical linguistics, and they remain the conditions of its possibility up to this day. In the context of a crisis that lasted for half a century, they were responsible for the fact that the grammatico-philosophical reflection took a double course. On the one hand, it involved a logical interpretation of grammatical forms of natural and scientific languages, which produced new *systems of rational grammar*, and on the other — it took the form of attempts to elaborate on the notions of concept, judgement (proposition), and inference, so that they would allow a logical interpretation of any forms of discourse. Accordingly, there emerged a kind of *philosophico-philological current in logic*, which was very strong and diverse, especially in the philosophical logic of the second half of the nineteenth century.

5. New systems of rational grammar

Already since the mid-nineteenth century, the framework of logic (both mathematical and philosophical) gave rise to new philosophical grammars, which – just like their predecessors — consisted in a rational reconstruction of linguistic forms of concepts and sentences accepted by linguistics, and of concepts, judgements (propositions), and inferences accepted by particular sciences. With respect to the needs and expectations, these systems were

short-lived and partial, but almost every new logic that had brought hope of universal applicability of its accounts of concept, proposition, and inference prompted attempts at a rationalizing reinterpretation. Boole's logic, first presented in 1847, and supplemented in 1854, in his main work, with a general strategy for logical interpretation of language. The catalogue which was supposed to enable a rational reconstruction of any discourse was based on established grammatical categories and can be outlined in the following way (Boole 1854: 27):

Grammatical category	**Its counterpart or logical function**
Substantives (nouns)	Correspond to 'letter symbols' replacing elective functions
Adjectives	
Verbs	
Particles "and," "not," "either … or"	Correspond to operations: ·, +, –
Pronouns	"May be regarded as a particular form of the substantive or the adjective"
Adverbs	Are syncategorematic expressions which "modify the meaning of the verb, but do not affect its nature [logical function]"
Prepositions	Are syncategorematic expressions which "contribute to the expression of circumstance or relation, and thus tend to give precision and detail to the meaning of the literal symbols"
Other conjunctions such as "if," "or"	Are used to construct complex expressions by means of established logical operations of forming compound elective functions
Other elements of speech	Are syncategorematic expressions which "are used either to give a more definite significance to the terms of discourse, and thus enter into the interpretation of the literal symbols already considered, or to express some emotion or state of feeling accompanying the utterance of a proposition, and thus do not belong to the province of the understanding"

The possibilities of analysing discourse and generating logical construction are even richer. Nevertheless, Jevons' diagrams, as well as Frege's ideography, suffice to present a general strategy of constructing a rational grammar. It involves the same stages and procedures which are also present in Peirce and Marty, or even in Frege and Russell. Namely: (1) ascribing grammatical structures to equivalent logical structures, (2) distinguishing unanalyzable grammatical structures and determining their logical function, (3) reconstruction of the vocabulary. Take Jevons' outline of the first stage of rationalizing the 'ordinary grammar' as an example in the field of nonmathematical logic:

Grammatical structure	Logical structure
Compound sentences (i.e. consisting of independent clauses)	
a) with many subjects and one predicate (S_1, S_2, … is P)	Conjunction of elementary sentences (S_1 is P and S_2 is P, and…)
b) with many predicates and one subject (S is P_1, P_2, …)	Conjunction of elementary sentences
c) with many subjects and predicates	A suitable conjunction of sentences of the form S is P
Complex sentences (i.e. containing a dependent clause)	
a) a dependent sentence which is a determination of the subject	A diagram of the form: dependent sentence-S} {P
b) a dependent sentence which is a determination of the predicate	A diagram of the form: S} {dependent sentence-P

Of course, the crowning achievements of this trend are the outlines of grammars based on the most developed systems of logic. In the algebra of logic, these are perhaps: the outline of a system of rational grammar based on the later version of Peirce's algebra of relations, presented in the *Syllabus of Certain Topics of Logic* (Peirce 1903), and Frege's ideography put forward for the first time in 1879 and developed in the first volume of *Grundgesetze der Arithmetik* (1893). Among the grammars associated with philosophical logic, the greatest achievement has certainly been Anton Marty's *Untersuchungen zur Grundlegung der allgemeinen Grammatik und Sprachphilosophie* (1908).

II. The philological trend in logic
1. Karl Prantl and his 'linguistic logic'

Already by 1849 Prantl had attempted to:

create a linguistic logic (*eine sprachliche Logik*) (not a grammatical one in the customary sense of the word "grammar") as one that – while preserving dialectic as the only proper method in philosophy — captures and develops the ideal and real aspects of human thought in their real identity; and logic is not something purely formal or something exclusively real, but through form it develops the content and via content — the form [of thought]. (Prantl 1849: IV)

Prantl's call for creating a sort of logic of contents, repeated 25 years later, must sound antiquated and — in the light of Jan Łukasiewicz's (1951) opinion about Prantl's logical competence — apparently deserves no attention. That would be the case, however, if not for a certain argument accompanying

it, which – regardless of its validity — played a significant historical role in the debate on the general form of proposition. In *Reformgendanken zur Logik*, Prantl summarizes the results of the discussion and adds his own arguments for the necessity of a thorough reconstruction of the account of proposition. The central point is his listing of the forms of sentence which are impossible to adequately reconstruct in terms of the traditional notion of subject-predicate, conditional, or disjunctive proposition, together with the conception of modality popular at that time.

A few examples should be enough to assess the validity of the project of this linguistic logic of contents. Apart from modalities, the second group of examples consists of various grammatical forms of propositions containing the word "if," which — depending on the context — not only denotes identity, a conditional or an equivalence, but also marks simultaneity, a causal relation, or — sometimes – serves as an equivalent of the expression "as often as. . . " and many other 'thought values' impossible to be adequately expressed by means of implication, disjunction, negation, or the form of a predicative proposition. Although Prantl's examples and his way of arguing may seem inadequate, it is worth keeping in mind that the problem associated with them — "what is the logic of the English <<if — then>>" — has not been resolved to this day.[8] By analogy, Prantl adduces examples of propositions which — at the cost of an unacceptable inadequacy — are represented in logic by means of disjunctive and negative propositions.

Equally interesting, from the view-point of formal logic, are objections connected with the logical expression of generality. Prantl begins with a general remark that, like in the case of the previous distinction, "the distinction of propositions according to quantity juxtaposed with the logical value of linguistic expressions leaves many issues unresolved" (Prantl 1876: 200). Among them, it is worth mentioning the following matter which remained unsolved in logic until Russell's theory of descriptions:

In discussions about quantity, one should pay attention to determining the peculiarities of particular languages, namely, to the usage of the indefinite article and the so-called partitive article, as well as to the lack or omission of articles in

[8]William S. Cooper summarises the results of the contemporary research on "if — not:" "Of course, there is not necessarily anything wrong with a system of logic which fails to conform to ordinary English usage. But it seemed nonetheless legitimate to ask: if *none of the usual systems of logic is the logic of English*, what is? To this question there appeared to be no convincing answer in either the logico-philosophical or the linguistic literature" (Cooper 1978: VIII).

languages which possess them. (Prantl 1876: 200)

In summation, a logical form of proposition, which was supposed to be the basis for all other logical categories and for interpreting any grammatical forms of a sentence, is not universally applicable and is incapable of capturing numerous relevant aspects of propositions,[9] or even whole classes of propositions possessing a truth value, such as 'subjectless sentences' etc.

In order to realize the outlined project, Prantl intended to enrich logic by introducing imperative sentences, questions, requests, etc., and offered quite convincing reasons for this decision. The function of 'questioning' — asking to formulate a judgement (proposition) — and, by the same token, the function of ordering, requesting, etc., should become a subject of logical analysis just like the function of formulating a judgement.[10]

In *Reformgedanken zur Logik*, Prantl outlined the following research project concerning the 'logic of contents':

Since we cannot separate logic from thought, in logic we regard each sentence as a *judgement*, and each word distinguished in a sentence and consciously recognised — as a *concept*. Each connection of sentences, in turn, which — in the content of speech (*gedankenhalige Rede*) – associates various relations with one conceptually grasped word, is regarded in logic as a *conclusion*; which in turn is a means of expounding this word in *definitions* (*in definitorischem Wissen*); the constant mutual relation occurring in defining — that between the ideal generality and empirical singularity — leads to logical mastery of this duality by means of *methodology*, which is the final product of science-formation. This is how I see, in outline, the logic of the future. (Prantl 1876: 190, my emphasis)

In order to fully realize the scope and continuous actuality of this project, we must consider two contexts. (1) It was the content-bearing sentence, and not the word or concept, that Prantl regarded as the paradigm case of the synthesis of thought and speech — this was the gist of his first 'reforming idea'. In 1876 he had also offered methodological reasons corroborating this decision together with his second 'reforming idea': "the decisive requirement

[9]This verdict is confirmed by "a rich record of linguistic sentential forms that are disregarded by ordinary logic, which seeks to possess a valid reference of its formal laws in disjunctive and hypothetical sentences" (Prantl 1896: 201).

[10]The issue had to wait for a solution in the field of logic even longer than the problem of articles. The first serious attempt at its general account was the theory of performatives (Austin 1962, Searle 1969).

of making the science of judgement (proposition) the starting-point of the whole logic" (Prantl 1876: 189–190) and, in particular, the starting-point for the science of concept.

(2) The second context relevant to the entire project is the thesis — drawn from Humboldtian logic — about the parallel between thought and speech, together with a peculiar form of linguistic relativism motivated by it. In fact, a substantial part of *Reformgedanken* is dedicated to justifying this view, expressed in the phrase: "ultimately and completely justified translation is impossible" (*eine voll- und endgültige Übersetzung eine Unmöglichkeit ist*). Thus the universe of the research of the logic of contents is not given by 'our language', or even less by the traditional, 'school' grammar — like in Boole or Jevons — but by the universe of various ordinary and scientific languages.

A question arises — which Prantl was perfectly aware of (Prantl 1876: 201–204) – whether, as a result, the whole grammar would not become logic, and vice versa – logic would not be transformed into a kind of grammar. Perhaps it would! It would certainly not be linguistics though. For it would only deal with a 'thought value' of expressions and grammatical forms of particular languages, and not with its material side. Not every single grammatical form would automatically become a definite logical form either: "For not every single element of language corresponds to a particular thought value, proper to that element," but "as a result of the heterogeneity of acoustic material the same thought value is variously modified by linguistic forms, and the other way round: one linguistic form can express distinct modifications of a thought value" (Prantl 1876: 205). Thus it would only be a grammar of meaning or — as Prantl would put it — a grammar of 'thought value'.

2. Rational grammar in the framework of psychologism

Prantl's project of 'linguistic logic' — although in its radical form it may seem ludicrous today — was by no means an isolated phenomenon in the nineteenth century. Important contributions to linguistic logic can be found in many logics of that time. They are contained in their 'analytic parts', in particular those devoted to working out 'logical accounts of concept and judgement'. As the most important examples, of course, we should mention Trendelenburg's *Logische Untersuchungen*, Friedrich Ueberweg's *System der Logik und Geschichte der logischer Lehren* ([1]1857, [2]1874, [3]1882), in which the grammatical roots of logic and its 'grammatical duties' are stressed equally explicitly as in Carl Ferd Becker's *Organismus der Sprache* ([2]1841).

Numerous linguistic contributions to the theory of proposition and concept can also be found in the works of the advocates of psychologism. Even when, like Sigwart, they described their work as formal logic, they emphasized that the knowledge about "which acts of thinking are expressed in a judgement (proposition)," how to determine its general form which would encompass all its forms occurring in scientific and ordinary thought,

> can only be achieved by analysing real judgements, by recalling what we do when we formulate judgements, what other functions are presupposed by a judgement and how they form a judgement. [...] One must also assume that we have at least preliminarily established the range of acts which we call judgements; for this purpose, it is enough for the moment that we will *follow the usage of the language* and separate out — as its primary subject — all its *sentences*that contain a statement which has a claim to be regarded by others as a truth and to be believed. (Prantl 1876: 205, my emphasis)[11]

Basically the same goal of a logical account of language motivated Brentano when he created his descriptive psychology in order to:

> establish the ultimate elements constituting the whole psychological life, just as all words are made of letters; its realization should then be the foundation of *characteristica universalis* envisaged by Lebniz. (Brentano 1895: 34)

Since in his *Psychology from an Empirical Standpoint* Brentano also preferred indirect methods, including linguistic analysis, it should come as no surprise that the whole Brentano school was — to use Stanisław Leśniewski's description — "a one-sidedly philosophico-grammatical" culture, in which Leśniewski himself happened to live and fall victim to its 'destructive habits' of confusing logical and grammatical matters — until he came to know logistics (Leśniewski 1927: 179).

All in all, are we in a position to say that the second half of the nineteenth century — with its projects of 'linguistic logic' — saw a revival of hopes for creating a 'natural logic' that would be both a general theory

[11]It is difficult to find, even in contemporary philosophical literature, a more precise formulation of the chief motivations and strategies characteristic of the so-called linguistic turn. Sigwart was unaware, however, of the deep differences between languages, captured by contemporary linguistics and philosophy under the label of linguistic relativism; he was even less aware of methodological deficiencies of linguistics of his time (especially when it comes to semantics); or at least he disregarded these factors.

of language, 'transcending the grammatical level', and a pure logic, at the same time containing a suitable pragmatics and overcoming the limitations of 'pure semantics'?[12] Perhaps we could say this, especially given that — as illustrated by numerous texts– thinkers were unaware of two kinds of difficulties which immediately arise with respect to such a task. First, neither Prantl, Sigwart, Wundt, nor even Brentano — who wrote his *Psychology* before the time of synchronic linguistics — were aware of methodological problems faced by the synchronic description of a language. These difficulties were first encountered by Marty, who in his habilitation dissertation *Über den Ursprung der Sprache* (Würzburg 1875 — see Marty 1963) — 30 years before de Saussure — outlined a project of describing language "from the viewpoint of actual speech and understanding."

Second, thinkers were unaware of difficulties associated with the very notion of meaning and semantic interpretation of linguistic expressions. Prantl did not even care to clearly define the concept of a 'thought value' of expressions, and even less to provide methods for establishing it for particular types of sentences and other linguistic expressions. In fact, it was only the development of descriptive psychology, and especially the works of Kazimierz Twardowski, Anton Marty, and Alexius Meinong, that revealed the great difficulties faced by the semantic interpretation of language.

Still, projects of 'linguistic logic' or — as labelled by Trendelenburg – 'diffused logic of contents' were not enthusiastically embraced. Justified objections were motivated mainly by acknowledging deep structural differences between ethnic languages, and between these languages and the languages of science. Thus the objections stemmed, on the one hand, from a form of linguistic relativism and, on the other, from the claim to universal applicability of logic. They were voiced not only by thinkers who, like Benno Erdmann ([2]1907), treated logic as a normative discipline and rejected similar projects on philosophical grounds, but also by those who — like Fritz Mauthner — thought that the only plausible logic should be based on a purely descriptive, comparative linguistics. By acknowledging deep grammatical and semantic differences between ethnic languages, Mauthner thoroughly criticised the account of primitive languages as merely poorer or just earlier stages of 'our',

[12]This was the aim that motivated Cooper in creating 'logico-linguistics' — a "both global and particularizable" theory, whose "fundamental concepts should apply in their general statement to all languages, but should be potentially describable in particular detail for any given language. In a theory of logic of this kind, general questions as to e.g. the nature of implication can be discussed in a language-independent manner without sacrificing the possibility of specifying that relationship accurately for any specific language" (Cooper 1978: 10).

developed and 'civilised', language. He emphasized that these are not scientific but purely ideological notions. According to Mauthner, they appeared in reaction to languages with a lexical and grammatical structure which is incompatible with 'our language', or rather with the logic constituted on the basis of analyses of the Greek language and the grammar tailored to Indo-European languages. This is also the reason why they are often described as 'illogical'. Mauthner frequently compares this fundamentally unscientific approach to racial and cultural prejudice (cf. his remarks on the notion of barbarity and paganism). His linguistic relativism, like Erdmann's, also has far-reaching detrimental consequences for logic:

> In fact, our logic [from the Greek times on] did not budge an inch, while we have become less prejudiced in our knowledge of languages (*Sprachkenntnis*) thanks to comparing them with one another. Thus if we wish to avoid the mistake of introducing, to the new linguistics, the concepts of old logic, then we must seek to compare thinking habits of different peoples. Linguistics could not posit any higher purpose than the *transformation into comparative logic*, describing — as precisely as possible — these different ways in which different peoples associated the same thoughts. Of course, in the course of such an attempt, we would soon realize the poor state of our knowledge of the vocabulary and grammar of most languages. The ideal of comparative logic would be an ordered description of brain-habits (*Gehirngewohnheiten*), by means of which different languages capture and store memories of men and nations. (Mauthner 1912: 41–42)

Unfortunately, Mauthner deems this enterprise unfeasible, and its unfeasibility, like in the case of the impossibility of linguistics as science — stems from considering languages and thinking habits in terms of genetic psychology — as *Gehirngewohnheiten*. For we would need, for this purpose, "entirely isolated parts of brain, free of our own thinking habits." The top limit attainable by people must remain a very imprecise familiarity with languages and logics most similar to ours.

While writing their works, however, Mauthner and Erdmann did not know any newer system of logic, and in particular, of mathematical logic. It might seem that given a more general account of concept, judgement (proposition), and inference, we could forget not only about Trendlenburg's objections — against the traditional notions of concept as a sum of attributes, of abstraction as disregarding singular properties and preserving the common ones, and of judgement (proposition) as a juxtaposition of concepts — but also about any ideas of 'diffused' logic, 'logic of contents', or 'linguistic logic'

deriving their general forms from particular grammatical forms of sentences. Such hopes returned with the development of mathematical logic, especially due to the reception of Frege's logic and the rise of logistics. Leśniewski's reaction bears witness to this fact: when he first came to know the system of *Principia Mathematica*, he condemned his infatuation with the grammatical tradition and definitively renounced it. Unfortunately, it also soon turned out that the new accounts of concept and proposition are decidedly too weak to avoid Trendelenburg's grammatico-logical argument.

III. The grammatico-logical argument in the framework of logistics

1. Gottlob Frege and the problem of non-extensional contexts

Even before the publication of *Grundgesetze*, Frege had noticed difficulties in applying his symbolism to the analysis of language. In the essay which became one of the milestones of twentieth-century philosophy of language, *On Sense and Reference* (alternatively translated as *On Sense and Meaning*) (1892!), he distinguished a variety of cases resistant to the ideographic analysis. These are the non-extensional contexts, in which a given expression cannot be substituted with an expression with the same 'meaning' or reference (*Bedeutung*), for instance:

The Copernicus example.

Form: *X believes* (*is convinced, thinks, claims, knows...*), *that* Δ.

(1) *Copernicus believed that* planetary orbits are circles.

(2) *Copernicus believed that* the appearance of solar motion is due to the real movement of the Earth.

The subordinate clause in (1) is false, while in (2) it is false, but we can substitute one for the other without affecting the truth value of the whole sentence.

The Wellington example.

Form: *I'm glad* (*I expect*, *I regret*, *I fear*) *that* Δ.

(1) The sentence uttered by Wellington at Waterloo: "I'm glad that the Prussians are coming!".

(2) The reference ('meaning') of the subordinate clause — its truth value – does not seem to affect the reference of the whole sentence. If the Prussians were not coming, and Wellington were wrong, then he would remain glad as long as he was wrong. If, in turn, they were indeed coming, and he knew nothing about it or did not believe it, he would have no reason for being glad.

A similar class of cases consists of contexts such as: *To ask* (*order*) *that* Δ. Although the references ('meanings') of such sentences are not truth values but orders, requests, etc., considering their logical properties — their behaviour in the light of such and such understanding of consequence — is nonetheless important for the application of logic. It is equally important to distinguish all such (non-extensional) contexts from descriptive expressions — since it is a preliminary condition for applying ideography to the analysis of discourse.

2. Ludwig Wittgenstein — the rejection of logical atomism and the problem of the form of atomic sentences

Not only intensional sentential contexts point to a need for a more thorough investigation into the logical structure of language. It was soon realized that even expressions in the most traditional of senses, namely the elementary sentences, are equally resistant to logical analysis, albeit for reasons other than non-extensionality. One of the first thinkers to indicate limitations of logical analysis with respect to elementary sentences was Wittgenstein. One of the main reasons for his departure from the views put forward in the *Tractatus* was the rejection of logical atomism. The point was not about the so-called ontological theses of the *Tractatus*, or at least not mainly about them. What turned out to be deficient was the assumption of logical independence of elementary sentences.

Thursday, 2 January 1930 (at Schlick's house)
(Elementary proposition)
I want to explain my views on elementary propositions and first I want to say what I used to believe and what part of that seems right to me now. I used to have two conceptions of an elementary proposition, one of which seems correct to me, while I was completely wrong in holding the other. My first assumption was this: that in analysing propositions we must eventually reach propositions that are immediate connections of objects without any help from logical constants, for 'not', 'and', 'or', and 'if' do not connect objects. And I still adhere to that. *Secondly I had the idea that elementary propositions must be independent of one another.* A complete description of the world would be a product of elementary propositions, as it were, these being partly positive and partly negative. *In holding this I was wrong, and the following is what is wrong with it.* I laid down rules for the syntactical use of logical constants, for example 'p·q', and did not think that these rules might have something to do with the inner structure of propositions. *What was wrong about my conception was that I believed that the syntax of logical*

constants could be laid down without paying attention to the inner connection of propositions. That is not how things actually are. I cannot, for example, say that red and blue are at one point simultaneously. Here no logical product can be constructed. *Rather, the rules for the logical constants form only a part of a more comprehensive syntax about which I did not yet know anything at that time.* (Waismann 1979: 73-74, my emphasis)

Thus the analysis of the assumptions of logical atomism revealed the limitations of logistics. In 1929/1930 this meant for Wittgenstein that it was not a sufficient basis for semantic analysis, contrary to what he had believed at the time of the *Tractatus*. In fact, the applicability of 'the truth-functional grammar' was very limited.[13] It turned out that logic is in need of a reform that would reach much deeper than to the grammar of truth functions. In addition to narrowing its applicability to the analysis of compound sentences, it was necessary to reject unjustified claims associated with Frege's crowning achievement — the notion of concept and of the form of elementary sentence as a propositional function — $\phi(x)$. The fact that elementary sentences sometimes fail to make up compound propositions by means of truth functions must be reflected in their internal structure — in their logical form. It must be much more complicated that it is possible to express in terms of Fregean symbolism of propositional functions – in contrast to what Wittgenstein staunchly believed while writing the *Tractatus*. Now he was forced to admit that:

There is nothing wrong with a symbol like "Φx", if it is a matter of explaining simple logical relations. This symbol is taken from the case where 'Φ' signifies a predicate and 'x' a variable noun. But as soon as you start to examine real states of affairs, you realize that this symbolism is at a great disadvantage compared with our real language. *It is of course absolutely false to speak of* one *subject-predicate form. In reality there is not* one*, but very many.*[14] (Waismann 1979: 46, my

[13]Cf. Waismann 1979, where Wittgenstein refers to theses 2.1512 and 3.42 of the *Tractatus* and restricts the conditions of applying truth functions only to forming sentences made of elementary sentences: "Every proposition is part of a system of propositions that is laid against reality like a yardstick. (Logical space). What I first paid no attention to was that the syntax of logical constants forms only part of a more comprehensive syntax. Thus I can, for example, construct the logical product p·q only if p and q do not determine the same co-ordinate twice. *But in cases where propositions are independent everything remains valid — the whole theory of inference and so forth*" (Waismann 1979: 76, my emphasis). Cf. also Waismann 1979: 89–90.

[14]Similar conclusions, in the context of criticizing — or rather correcting — the

emphasis)

The immediate result of the above self-criticism was a modification of the concept of 'mathematical variety of language', which was developed not only by Wittgenstein but also by Waismann. Yet the rejection of logical atomism had other far-reaching consequences. It turned out that the rational reconstruction of language and the general theory of meaning requires a logic that would get deeper into the structure of elementary sentence. Even in a 'world' as simple as the world of colourful squares and rectangles, describable in terms of four 'logical coordinates' for an unequivocal specification of the surface, and a few additional ones for specifying colours, one needs 'a much broader syntax'. Given that it must be a syntax probing the structure of elementary sentence and reflecting internal diversity of forms of elementary sentences, Wittgenstein labelled it 'logic of content' and — by distinguishing it from logistics as the 'logic of form' — he characterized it in the following way:

> Discuss: The distinction between the logic of the content and the logic of the propositional form in general (*Logik der Satzform überhaupt*). The former seems, so to speak, brightly coloured, and the latter plain; the former seems to be concerned with what the picture represents, the latter to be a characteristic of the pictorial form like a frame. (Wittgenstein 1974: 217)

While writing 'his book' (*Big Typescript*), Wittgenstein was already certain that the logic of 'form of representation', that is, the grammar of representation (i.e. grammar of meaning), or — as it is called in linguistics — the 'deep structure', can only be provided by the logic of content.

Of course, this logic, also presented in *Philosophical Grammar*, was impossible to build *a priori*. It could be achieved only through semantic analysis of 'sentences of our ordinary language'. Due to the limited applicability of Frege's logic, or even of the symbolism of *Principia*, it cannot be created — contrary to what was believed by Frege, Russell, and Wittgenstein from the time of the *Tractatus* — in terms of an ideographical analysis of language. Since the 'logic of propositional form' is neither universally applicable nor — even less so –provides an *exhaustive* 'form of representation', a translation into the symbolism of *Principia* is ruled out as well. As a starting-point for

Tractatus, also appear in *Philosophische Grammatik* (containing a part of the *Big Typescript* from years 1932–1933) — see Wittgenstein 1984: 211–212, 215–218 (English translation — Wittgenstein 1974),as well as in *Philosophische Bemerkungen* (comprising notes from 1929–1930) – Wittgenstein 1981: 109–111 (English translation — Wittgenstein 1964).

constructing the logic of content, the grammatical analysis must deal with "the sentences of our languages as they [really] are!"

Thus a crisis of a certain (nineteenth-century, after all) system of logic once more (like in Trendelenburg's and Prantl's times) led to proposing and undertaking a project of linguistic logic aimed at a thorough reform of formal logic.

3."Philosophy is actually purely descriptive"

In this situation, Wittgenstein definitively dismissed the project of creating a *logical language* and discovering the logical structure of sentences of natural, scientific, and other languages, characteristic of the analytic philosophy of Russell and Moore. Also Carnap's project of a unified language of science turned out to be misguided. Eventually, Wittgenstein rejected even his own idea of creating a 'phenomenological language'. What was needed was not a logical unification of the language of science but an extension of the language of science in accordance with the variety of conceptual and propositional forms in natural and scientific languages. A breakthrough — which William S. Cooper called for in 1978 in his 'logico-linguistics', where he encouraged the creation of a descriptive 'natural logic'[15] — had actually come about half a century earlier. On 22 December 1929 Wittgenstein was convincing Waismann and Schlick that — albeit not in the same way as the logic of Frege and Russell — but still:

> our language is completely in order, as long as we are clear about what it symbolizes. [...] If I consider, not only one proposition in which a certain word occurs, but all possible propositions, then they specify its syntax completely, much more completely than the symbol 'Φx'. (Waismann 1979: 46-47)

Nothing is more typical of this radically descriptive approach than the replacement of the question "What is the meaning of a word?" with "How to explain the meaning of a word?" — a word of a given language in the framework of this language, barring its translation into some canonical

[15] In the introduction to *Foundations of Logico-Linguistics*, Cooper expresses his hope that: "The possibility of a science of <<natural logic>> is an exciting one. [...] It holds out the prospect of an eventual shift of emphasis in logic away from the traditional <<prescriptive logic>> toward <<descriptive logic>> – a shift which, if it comes about, would be analogous to the shift of interest among linguists from prescriptive to descriptive grammar that took place a half-century ago" (Cooper 1978: 11).

language of representations, mental acts, Husserlian 'intentions', Fregean senses, or the symbolism of *Principia* and the *Tractatus* (cf. Wittgenstein 1958).

Still, associations of Wittgenstein's 'logic of content' and *Philosophical Grammar* with the nineteenth-century tradition are not limited to the crisis of a certain nineteenth-century system of logic and the revival of Trendelenburg's grammatico-logical argument. In 1929/1930, while looking for a new idea that would enable fulfilling the project of 'logic of content', Wittgenstein turned to another nineteenth-century conception of the foundations of mathematics — to formalism. This is the origin of treating language and its grammar as a game. In the initial period, Wittgenstein spoke of games in the original, formalist sense of the term — *a game of signs* (*Zeichenspiele*).

The account of the syntax of a language as a system of a sign-game directly appeals to the so-called 'older formalism', already proposed by Eduard Heine and developed by Carl Johannes Thomae, first in *Elementare Theorie der analytischen Functionen einer complexen Veränderlichen* (^{2}1898) and later in an essay under the characteristic title *Gedankenlose Denker. Eine Ferienplauderei* (1906). This position was developed (albeit with a critique in mind) — in a way which preserved the basic idea of arithmetic (and function theory) as a sign-game — by Frege in §§ 88–130 of his *Grundgesetze der Arithmetik* (1893), where he supplied it with a required precision and generality, and — in fact — raised it to the status of a theory of foundations of mathematics on a par with logicism.

This is the source of Wittgenstein's acquaintance with sign-games, arbitrariness of their rules, and problems associated with their semantic interpretation.[16] Although Wittgenstein "read an article by Hilbert" about formalism, he never accepted either Hilbert's project of metamathematics or even the characteristically formalist notion of sign as "a certain extralogical discrete object which is given — in the form of an insight – before any act of thinking [i.e. before concept-formation and reasoning] in direct experience".[17]

[16]"We can lay down the syntax of a language without knowing if this syntax can ever be applied. (Hypercomplex numbers.) All you can say is that syntax can be applied only to what it can be applied to. [...] The essential thing is *that syntax cannot be justified by means of language*. When I am painting a portrait of you [Waismann] and I paint a black moustache, then I can answer to your question as to why I am doing it: Have a look! There you see a black moustache. But if you ask me *why* I use a syntax, I cannot point at anything as a justification. *You cannot give reasons for syntax. Hence it is arbitrary.* Detached from its application and considered by itself it is a game, just like chess. This is where formalism is right" (Waismann 1979: 104–105).

[17]The above-mentioned article by Hilbert is (Hilbert 1923), which is also the source

It is precisely this 'older', nineteenth-century formalism that was the origin of his conception of language-games. Such a genesis of this notion, and of many other fundamental ideas of the second philosophy of Wittgenstein, becomes evident in the following fragment of a conversation with Waismann and Schlick:

> The truth in formalism is that *every syntax can be conceived of as a system of rules of a game.* I have been thinking about what Weyl [cf. Weyl 1927: 25] may mean when he says that a formalist conceives of the *axioms of mathematics as like chess-rules. I want to say that not only the axioms of mathematics but all syntax is arbitrary.* In Cambridge I have been asked whether I believe that mathematics is about strokes of ink on paper. To this I reply that it is so in just the sense in which chess is about wooden figures. For chess does not consist in pushing wooden figures on wood. [...] It does not matter what a pawn looks like. It is rather the totality of rules of a game that yields the logical position of a pawn. A pawn is a variable, just like 'x' in logic. (Waismann 1979: 296–298)

It is not that simple though — even in the light of a position which does not presuppose anything about the rules (internal structure) of the analysed syntax, namely, in the light of formalism, according to which, Frege's ideography, as emphasized by the author himself (Frege 1893, 1968: §90), is just one among many different and equally genuine sign-games. It might seem that it is enough — as Boole and Jevons did, and even Prantl considered possible — to make use of descriptions of language supplied by linguistics. Yet both Wittgenstein and Josef Schächter were free of such delusions: logical and linguistic categorizations are motivated by utterly distinct aims, so that we should not expect to find any close parallel. Nor did they ever look for a solution in the 'ordinary grammar'. In its light, even Frege's procedure of varying the constant only leads to a semantic confusion and superficiality, whose examples are provided by the traditional lexical categories:

> I may say 'This chair is brown' and 'The surface of this chair is brown'. But if I replace 'brown' by 'heavy', I can utter only the first proposition and not the second. This proves that the word 'brown', too, had two different meanings. [...] For if there were only one, then all nouns and all adjectives would have to be intersubstitutable. For all intersubstitutable words belong to one class. But even ordinary language shows that this is not the case. (Waismann 1979: 46)

In the grammar of meaning, this substitutability must occur *salva congruitate*, i.e. without affecting the assessibility — or more generally:

of the quotation. On the rejection of the concept and the project of metamathematics, cf. Wittgenstein 1984: 296–298.

decidability, feasibility... — of the modified context, as opposed to the so-called well-formedness, which can be attributed even to Chomsky's well-known example of a meaningless string of symbols "Colorless green ideas sleep furiously," or to an equally famous example given by Carnap: "Pirots karulize elatically."

In his solution to this problem, Wittgenstein employed the same nineteenth-century idea of a sign-game — not the newer, model-theoretic one. Constructing models proved to be a sufficient method for establishing the consistency of rules and starting positions in sign-games, their independence, and other formal properties of deductive systems, but not for finding out the meanings of linguistic signs "as they are." Of course, the problem cannot be solved in any other way than by a radical interpretation, which, in turn, cannot be conceived of in any other way than by making at least some of the linguistic expressions elements of reality, and treating some elements of reality as linguistic expressions. After all, the propositional content must be directly connected with reality. A sentence, as a measure 'laid against reality' must contain elements which — like the standard metre stick — come into direct contact with it.

This fruitful extension of the notion of sign-game was presented by Wittgenstein in *Philosophische Bemerkungen* (Wittgenstein 1964, 1981: §§ 38–48), where he came up with the idea of 'a means of representation', which includes the most famous example of the standard metre (yardstick), analysed in the first part of *Philosophical Investigations*. It is something both material and linguistic — a metal bar whose rules of usage in measurements are set out by geometry, which, in itself — without suitable 'means of representation' — is just a sign-game. Due to this kind of means of representation, which include colour samples, a pointing gesture, models of behaviour, etc., "our propositions [...] are commensurable (*kommensurabel*)with the present" (Wittgenstein 1964, 1981: § 48), and sign-games become sign-games with reality – 'language-games', 'forms of life', etc. Of course, not all language-games constituting 'our language' are of this kind, but already in the *Blue Book* Wittgenstein used the notion of 'language-game', as opposed to its prototype (the sign-game), so as to account for the connection between grammar and reality.

4. Josef Schächter and his 'critical grammar' (1935)

The new Wittgensteinian project was endorsed by some members of the Vienna Circle. In particular, it was taken up by Josef Schächter, who presented the results of his research in *Prolegomena zu einer kritischen*

Grammatik (1935, see Schächter 1973):

The task of critical grammar is a *logical completion and improvement of traditional grammar. Wherever conventional theory of language has failed to read off correctly from usage the rules current in language*, critical grammar is to fill the gap. In this book, as in an extensive account of critical grammar on which I am currently working, my aim is to keep the account in the kind of philosophic spirit for which, I believe, the enquiries of Ludwig Wittgenstein are the model. (Schächter 1973: Author's preface; my emphasis)[18]

The first part of Schächter's book, devoted to the definition of sign and sentence, to the construction of the concept of linguistic rules, of the usage of a sign in language and through language, to the problem of the arbitrary character of rules, the grammar of material and the grammar of meaning, etc. is characteristically titled *The Nature of Logic*.[19] It is fully dedicated to the methodology of philosophico-grammatical analysis of language and contains no logical theses in the strict sense. The following are the most noteworthy results of Schächter's book:

(1) the distinction between grammar of material and grammar of mean-

[18]The project was accepted and supported by Schlick, who wrote, in the introduction to Schächter's book, that: "This volume of *Schriften zur wissenschaftlichen Weltauffassung* differs from previous ones in style and intention, in that it is propaedeutic in character. It aims to introduce and prepare: prepare for a serious study of logic and grammar, and introduce a genuinely philosophic treatment of them. The books ordinarily used for teaching these subjects are philosophically most inadequate; above all they fail to satisfy those who have won through to the conviction that genuine philosophic problems are in the end grammatico-logical in the deep sense in which <<critique of language>> coincides with <<critique of knowledge>>" (Schächter 1973: Schlick's introduction).

[19]The contents of this part are as follows. Part One: *The Nature of Logic*. Chapter I. *Signs and Language*. 1. Use and Meaning of Signs. 2. Laying down Conventions of Use. 3. 'Arbitrary' Convention. 4. Symbol — Symptom, Two Aspects. 5. Words as Signs. 6. Word and Sentence (Sign and Expression). 7. Language and System of Signs. 8. The Vagueness of Words in Language. 9. The Meaning of Words in Science. Chapter II. *Concerning the Formal*. Chapter III. *Logic and Grammar*. 1. Grammar of Material — Grammar of Meaning. 2. Essential and Unessential Rules in Grammar. 3. Grammatically and Logically Unobjectionable Sentences. 4. The Motive for Introducing Grammatical Distinctions. 5. Greater or Smaller Repertoire of Linguistic Forms. 6. The Pre-Grammatical Stage of Language. Chapter IV. *Logic and Psychology*. 1. Psychologism. 2. On the Refutation of Psychologism. 3. Psychologistic Interpretation of Words.

ing,[20]

(2) the distinction between essential and unessential rules in grammar,

(3) the distinction between the use of words in language and through the language, as well as raising the closely related problem of the indefinite number of categories of independent statements.

Indeed, Schächter focused, like Wittgenstein, on pointing out the principles of reconstructing the rules of meaning.

Like Wittgenstein in *The Blue Book*, in accordance with the requirement of 'pure descriptiveness', Schächter replaces the question "What is meaning?" with the question "How to explain it?," and, in the course of giving his answer, he systematises Wittgenstein's ideas from years 1928–1933. Thus we explicate the meaning of a word in the following way:

(i) As with children, by pointing to an object or performing an action, while pronouncing the word. This results in the child using this word whenever such objects or actions supervene.

(ii) By means of sentences. This happens for instance in the teaching of a foreign language, which itself serves as the teaching medium. The sign is here clarified by its context, that is by those sentences in which it occurs.

(iii) However, we can explain a word also by adducing sentences in which usage does, and others in which it does not, allow its occurrence.

These are the *rules* of use. We sometimes speak of use for short, intending the necessary and sufficient rules. *The meaning then consists of the various kinds of use, that is of the rules that hold.* (In the phrase *rules that 'hold'*, the 'holding' refers to *linguistic usage*, which we come to know by observing how members of a language area use the signs, by asking people in what sentences the signs may occur, and so on.). (Schächter 1973: 5–6, my emphasis)

The criterion for having a meaning is, of course, possessing a usage 'through language'. It is due to the fact that sentences are used not only to produce other sentences but also to perform other activities, that the

[20]The difference between linguistics and the grammar of meaning, or just the logical grammar, is explained in the following way: "grammar of material is involved wherever a material difference shows up in language without a corresponding semantic difference; such differences would not be recorded in a logical grammar. We have no wish to abolish these differences by intervening in the field of conventional grammar in order, for instance, to simplify (as Esperanto does). By <<critical grammar>> we intend no reform of language whatsoever, but an examination of language as to semantic differences of its signs. For the grammar of meaning all material is equally suitable" (Schächter 1973: 20).

words used in them have a denotation, albeit it need not be a denotation in the sense of a set of *designata* (referents) in the actual world or in one of other possible worlds. After all, requests, orders, questions, etc. also have meanings.

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Adam Olech

AJDUKIEWCZ AND HUSSERL ON THE ISSUE OF THE MEANING OF EXPRESSIONS

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This paper on the topical issue at hand is an elaboration on my deliberations (Olech 1995) and some passages from my monograph (Olech 1993). I do not venture into logical details of Ajdukiewicz's directival theory of meaning, which I referred to in the monograph, but I set out to indicate the Husserlian inspirations present in Ajdukiewicz's philosophy of language. And the semiotic-logical affinity of this philosophy with the philosophy of the author of *Logical Investigations*. This paper also has a polemic aspect — it is critical of H. Skolimowski's and A. Lubomirski's views on Ajdukiewicz's philosophy of language, although I should like to stress that this polemic ought to be treated mainly as a pretext for the demonstration of Ajdukiewicz's stance on expression meaning that was far from nominalism and close to that of Husserl.

I. Regarding the approach by K. Ajdukiewicz to the issue of language expression meaning, following some opinions by historians investigating 20^{th} century Polish philosophy, it ought to be accepted that in his 1930s theory of the meaning of expressions, he sought to avoid treating meanings as abstract beings, for fear of possible charges of hypostatization; because of Kotarbiński, "Polish philosophers were extremely wary of hypostatization. Therefore," writes H. Skolimowski in his otherwise valuable monograph, "Ajdukiewicz defined meaning in terms of synonymy and would risk making a definition of meaning as such." (Skolimowski 1967: 142; id. 1983: 286).

Similarly, A. Lubomirski (in a major tract on the reception of Frege's philosophy in the Lvov-Warsaw School) stated that Ajdukiewicz had assumed

"from the very beginning (like other Polish authors and unlike Frege) such a semantic perspective in which language simply confronts the reality being the object of cognition, where *tertium non datur* in the form of, say, a Fregean world of senses" (Lubomirski 1987: 257). And despite "Ajdukiewicz repeatedly mentioning 'judgments' (in a non-psychological understanding of the term) as meanings (that is, senses) of sentences and [even if] one could sometimes suspect that by saying 'judgment' (in a logical sense), he meant something corresponding to what Frege called 'thought' [*Gedanke*]" (Lubomirski 1987: 257), by saying this — the author goes on — Ajdukiewicz claimed that in his concept – rather than to judgments in a logical sense, whatever they were to be — a logical value refers to sentences seen as linguistic expressions, and that this value must be held relative to language." "True and false — Lubomirski quotes the paper by Ajdukiewicz, presented at the 1935 Paris Philosophical Congress – are not absolute but, rather, relative properties of sentences, which only befit them in relation to some language" (*cf.* Ajdukiewicz 1936: 247).

A. Lubomirski's conclusion concerning this issue is as follows: "knowledge, and true knowledge in particular, must render itself for description without going beyond the whole, consisting of the reality being the object of cognition and the language which is used to talk about the reality; there is no room for the Fregean concept of the cognitive subject expressing an absolutely and eternally true (or false) thought that pre-exists in the 'Third Realm"' (1987: 257-258). In the footnote to this conclusion, he adds that his remarks concern only one period in Ajdukiewicz's writings (one may guess that this is the period of radical, or perhaps also moderate, conventionalism) and that most of the difficulty in the Lvov-Warsaw philosophy of language originated from the school "knowing of no [. . .] satisfactory way of overcoming the alternative: either psychologism or a consent to such creations as 'senses,' or 'meanings' being 'ideal' (either in a Fregean or Husserlian version)" (1987: 258).

My interpretation is different from H. Skolimowski's and A. Lubomirski's. The difference does not eliminate those beings from Ajdukiewicz's language philosophy that are similar to Fregean 'senses,' and Husserlian 'meanings' in particular, even though it does not contradict part of the above conclusion by A. Lubomirski, which holds that cognition should be possible to characterize without going beyond the reality and the language in which the reality is discussed. Moreover, my interpretation is meant to make more specific what according to A. Lubomirski is vague in Ajdukiewicz's philosophy of language. I believe that Ajdukiewicz's stance on concepts and judgments in a logical

sense (if we consider *Język i poznanie* [*Language and Knowledge*], coming from the period of radical and moderate conventionalism or referring to this period, as well as his 1930 lectures[1] on logical semantics that were given at John Casimir University of Lvov) is this: like with other philosophical problems, as was the case with concepts and judgments in a logical sense — the Husserlian *ideale Bedeutungen* that remind one of the Fregean *Sinne* — Ajdukiewicz conducted their semiotic explication in the 1930s.[2] This explication is particularly noticeable in the tract *O znaczeniu wyrażeń* [*On the Meaning of Expressions*], which could be taken to be an introduction into what he was to follow up with in the treatise *Język i znaczenie* [*Language and Meaning*], and which, as it turned out later, was to have interesting epistemological consequences in the form of radical conventionalism. In this latter tract, the Husserlian ideas concerning expressions are less clearly visible, and for a reader who has not been introduced into Ajdukiewicz's philosophy, they might be outright unnoticeable.

The result of the explication process is that the fact of meaning, through a given expression (and to be more precise: through a sign of some shape) of its meaning,[3] is capable of being brought down to the intralinguistic property of the expression by means of syntactic-pragmatic concepts. This property is defined as a class of abstractions through the equivalence relationship of synonymy indicated in a given language. Without going into detail of thus understood meaning,[4] allow me to say that:

[1]These have not yet been published in full (extensive passages have been included by Prof. J. J. Jadacki, in the quarterly *Filozofia Nauki* 1993, no 1 and by A. Horecka also in *Filozofia Nauki* 2014, no 1. Lecture XVIII was published by A. Olech in his paper *O Ajdukiewiczu i Ingardenie — uczniach Husserla* (2014). Lecture XVII has not yet been published). Ajdukiewicz gave these in the winter term of the academic year 1930/1931. Their shorthand record was made by Mr. Kazimierz Szałajko, a student of John Casimir University at that time, who in the 1980s made these available to Prof. Jan Woleński alongside with his shorthand records of Ajdukiewicz's lectures on the theory of knowledge, coming from the same period.

[2]Ajdukiewicz carried out semiotic explication of a number of philosophical problems, such as idealism vs. realism, the issue of universals or the issue of empiricism vs. apriorism.

[3]The meaning could be a nominal or functional concept, or a logically understood judgment, and these categories can roughly be perceived in their ontological status as the Fregean *Sinn* or *Gedanke*, as the Husserlian *ideale Bedeutung* with *Logische Untersuchungen*, or as *Satz an sich* or *Begriff an sich* of B. Bolzano (Ajdukiewicz 1937: 265); however, as I stress in this paper, the Husserlian *ideale Bedeutung*, understood as *ausdrückliche Bedeutung*, appears to be the closest to this meaning (Ajdukiewicz 1931: 135; Ajdukiewicz 1934a: 147).

[4]I presented detailed analysis in the monograph *Język, wyrażenia i znaczenia.*

1. The concept does not make it possible to speak of 'being an expression at all' but the phrase 'be a expression' (hence 'being a meaning,' as the essence of an expression is meaning) always relativizes to the language, to which its user 'subscribes;' everyone is always a user of a language and therefore subscribes to some language whether they want it or not.

2. The concept is based on Ajdukiewicz's discovery, present in all languages, of regularities concerning the use of expressions in the situations in which the subject of the language finds itself . These regularities are reported to almost every language by sentence recognition rules (directives), which — Ajdukiewicz did not realize this at the time — BELONG TO the METALANGUAGE of the respective lower-order language, and which allow a definition of the synonymy relationship. They assert that the user of a language should in a given situation recognize a given sentence if they wish to remain the user of the language, and if they don't want to violate the meanings of the expressions of the language by rejecting that sentence or by becoming neutral and assertive. The recognition of the sentence is motivated by the situations.

3. This concept may but NEED NOT be linked to the theory of cohesive and closed languages. It was not linked to it in the tract *O znaczeniu wyrażeń* (1931) but it was in *Język i znaczenie* (1934a).

II. When one takes into account the works by Ajdukiewicz that are freely accessible, including the *Lectures* mentioned (importantly, I mean the works publicly available rather than the conversations which H. Skolimowski held with Ajdukiewicz, and which would possibly be interesting in the topical question), it is hard to agree with the statement by H. Skolimowski that, in the 1930s theory of meaning, the philosopher defined meaning as intralinguistic property of synonymous expressions because he wanted to avoid the charge of hypostatization, of which "Polish philosophers were extremely wary because of Kotarbiński." In section V of this paper I indicate, without getting into the detail of semiotic-ontological argumentation, that Ajdukiewicz did not feel repelled by general and abstract beings if he repeatedly defended universals.

I cannot agree with the view by A. Lubomirski that although Ajdukiewicz repeatedly spoke about judgments in a logical sense, whose ontological status

Semiotyka Kazimierza Ajdukiewicza (1993).

seems to bring to mind Frege's *Gedanken*, his claim that logical value refers to propositions rather than judgments, and has to be relativized to the language, undermines the validity of the claims by those who would see Ajdukiewicz's meanings as objects similar to Frege's *Gedanken*.

One cannot leave the statement by Ajdukiewicz that has just been referred to without a broader comment. It comes from the September of 1935 and was formulated at the Parisian Congress of Scientific Philosophy when Ajdukiewicz was still a radical conventionalist; he would abandon this position the following year, which he would announce in Krakow during the III Polish Philosophical Congress. Radical conventionalism was an epistemological concept stemming from the semiotic conception of cohesive, closed and mutually untranslatable languages. If, then, the word 'true' occurs in two such mutually untranslatable languages (to be precise, in the metalanguages of these languages), then it has a separate sense that is relativized to each of these languages; these senses are, obviously, mutually untranslatable in the same way as any two expressions from two mutually untranslatable languages are also untranslatable, and, as such, nonequivalent. However, the word 'true' has no classic, or in other words, semantic sense in this semiotic-epistemological concept. When Ajdukiewicz would speak of language in the 1930s, he meant intentionally rather than extensionally interpreted language. Ajdukiewicz's semiotics of the period is referential, and therefore the use of the word 'true' is governed by the syntactic-pragmatic directive of sentence recognition, which in the event of this word says: if you want to speak language L and do not wish to violate the system of the attribution of meaning proper to this language, on the basis of recognizing sentence S from this language, you should be ready to accept the sentence "Sentence S is true in language L." However, putting things this way by a radical conventionalist is not equal to affirming its inerrant quality; such an affirmation would be as follows: "If I recognize some sentence, it is thus true." A radical conventionalist only says "If I recognize a sentence, I am ready to affirm its truthfulness." So, the equivalence of 'truth' and 'affirmation' is not ascertained, and what is ascertained is *de facto* – even if Ajdukiewicz does not speak of this — a partial definition of "a sentence of which one should be ready to affirm its truthfulness by means of a 'recognized sentence'; even so, I think that the definition should have the form of equivalence, i.e.: "I affirm sentence S if and only if I am ready to affirm the truthfulness of sentence S." It is so because, as I assume, the reverse conditional sentence is true: "If I am ready to affirm the truthfulness of sentence S, I thus recognize sentence S." Both the fact of affirming of the sentence S and the actualized

readiness (in the sense of predisposition) of predication about the sentence S that it is true are pragmatic categories and, moreover (here is the clue to my point), are equivalent categories. Ajdukiewicz does not then partially define a 'truthful sentence' with a 'affirmed sentence' (which would read 'If person P accepts sentence S, then sentence S is true'), that is, he does not reduce a pragmatic category to a semantic one (and partially — a semantic category to a pragmatic one).

A partial definition, if based on a necessary or sufficient condition, sets the range of the defined to the range of that which is defining in a subordination or superiority relationship, respectively. This hypothetical (category mixing), partial definition of a truthful proposition could be charged with inadequacy since the aforementioned ranges of the definitional terms are *de facto* in the overlapping relation rather than in the relationship of the subordination of the range of the defined term in relation to the range of the defining term. The hypothetical partial definition of the 'true proposition' is based on a sufficient condition, and in this kind of definition the range of the defined term is a 'part' (subordinate towards) of the range of the defining term.

A radical conventionalist goes on to say that a 'true' attribute is applied to sentences rather than to judgments and, as I said, this statement by Ajdukiewicz is emphasized by Lubomirski, who sees in it an argument for the possibility of eliminating from the 1930s Ajdukiewicz semiotics such a perception of judgments in a logical sense which would be convergent with an understanding of Frege's *Gedanken*. Bear in mind, though, that a sentence, like any linguistic expression, according to Ajdukiewicz is always an expression of a language and that there are no expressions as such. It stems from the fact that an expression is not made up of (the Husserlian influence on Ajdukiewicz is marked here) an outer form of an expression (a linguistic sign) alone (such as chalk residue on the blackboard), but also what the sign means — its linguistic (logical) meaning. This, in turn, is fully definable in its cognitive (substantive) content by the rules of sentence acceptance that govern the language. (After Tarski's critique, it became evident that linguistic rules only allow a partial definability of the meaning of expressions, *cf.* Ajdukiewicz 1964). Expression is then at least a two-layer object and consists of the physical layer and the one of meaning (logical). But this is not all: according to Ajdukiewicz's directival concept of language (which, although with modifications, Ajdukiewicz did not endorse until almost the end of his life; I say 'almost' as at the beginning of the 1960s he was contemplating the possibility of another concept, *cf.* Ajdukiewicz 1964), what is immanent to language is the subject alongside the semiotic-pragmatic

acts of expression comprehension and sentence acceptance, characteristic of the subject. In each of the language definitions that Ajdukiewicz proposed in the 1930s, the subject is a category necessary for it, and without this category language is either impossible to define (Ajdukiewicz 1931: 128f) or other categories constitutive of language remain undefinable (Ajdukiewicz 1934a). The two layers mentioned need to be supplemented with the third one — of the subject — which is the act of meaning-intention involved in the expression, and alongside the act of perception-intention, directed at the physical layer of the expression, the two constitute the very act of the comprehension of the expression. Very importantly, an act of expression comprehension is a fundamental category in Ajdukiewicz's semiotics; it is also another fundamental, which in Husserl's philosophy of language is termed 'understanding without intuition' and 'thinking without intuition' (Husserl 2000: 83-87).

According to Ajdukiewicz: TO BE AN EXPRESSION is the same as TO BE USED AS AN EXPRESSION OF A LANGUAGE, the same as BE UNDERSTOOD, the same as PERCEIVED A LOGICALLY UNDERSTOOD SENSE IN AN ACT OF MEANING-INTENTION. If sense is always definable (fully or partially) *sub specie* of the rules of a specific language, then this sense is the LINGUISTIC MEANING of that specific language. Sense 'belongs' to the language as its linguistic meaning because, on account of the language and the rules governing it, the meaning can be perceived, determined and defined.

What, then, does this 1930s statement by Ajdukiewicz mean: a logical value pertains to sentences rather than judgments? As we know judgments in a logical sense are linguistic (logical) meanings of sentences. It means that a true/false attribute refers to a sentence which, as any expression, is a multistratum object, one of those being a logically perceived judgment. This statement cannot be understood in the way that the attribute accrues only to the physical side of the sentence because this side is no sentence — it is only a physical object, e.g. such as a stone; stones are neither true nor false in the sense discussed here.

The above claim by Ajdukiewicz has an interesting metaphilosophical and analytical background which cannot be omitted: objectively understood knowledge is the sum total of concepts and judgments in a logical sense (which fulfill some additional criteria). But these judgments do not occur in a vacuum, and neither do concepts (and this is the case in knowledge understood as Bolzano's *Satze an sich*, Frege's *Gedanken* and *Sinn*, Husserl's *Bedeutungen an sich* or Ingarden's ideal concepts), but are determined as

to their content. However, in order to be determined as to its content, one should be a linguistic meaning of a nominal expression or sentence (Ajdukiewicz 1937: 266-267; Olech 1996-1997: 173-177); in other words, speaking in the language of the author of *Logical Investigations*, one should be *ausdrückliche Bedeutung* (Husserl 2000: 128-129, Ajdukiewicz 1937: 266-267). Concepts and judgments thus determined as to their content, that is, the linguistic meanings of expressions create objectively (i.e. intersubjectively) understood knowledge, of which Kant would say *allgemeine Gültigkeit*, universally valid, and which Ajdukiewicz referred to as anti-irrational as fulfilling a necessary (though insufficient for anti-irrationality) condition of intersubjective communicability. Unverbalized or unverbalizable knowledge (cognition) may be some possible knowledge (cognition), but *de iure* it does not merit the term 'knowledge (cognition)'.

To conclude the polemical part of the paper, allow me to emphasize that which has already been mentioned, though perhaps vaguely: neither in the period of radical conventionalism nor later did Ajdukiewicz claim that language is a CREATOR of meanings of expressions — concepts and judgments in a logical sense. Language allows to grasp, determine, and define these meanings, also as an intralinguistic property of synonymous expressions. But such an approach is no hindrance when speaking of concepts and judgments in a logical sense as residents of the 'Third Realm.' These residents of the realm that happened to be the meanings of expressions have become actual meanings, and this fact renders itself to explication as an intralinguistic property of the expression; those that have had nothing like this happening to them are still just potential meanings. Some works by Ajdukiewicz which speak of ideal science clearly betray the convergence of the ontological status of ideally perceived sentences (judgments), which add up to make science so perceived, with Frege's *Gedanken* or Husserl's *Bedeutungen an sich* (Ajdukiewicz 1948).

A possible charge that Ajdukiewicz's position, from the period when he accepted the conception of cohesive, closed and mutually untranslatable languages, is irreconcilable with a possibility of accepting meanings in themselves (*Satze an sich, Gedanken, Bedeutingen an sich*) and that such a possibility only surfaced in the later years of Ajdukiewicz's life, can be answered as follows: although the conceptual apparatus of language *L'*, that is, a class of all meanings (of expressions) proper to expressions belonging to a closed and cohesive language *L'*, is different in content from the conceptual apparatus of another language *L"*, which is closed, cohesive and untranslatable to language *L*', each of these apparatuses actualizes the

contents of the same domain of ideal concepts, which is what, following Frege, can be called the 'Third Realm.' In other words, these apparatuses are extensionally same but, as intensionally untranslatable, are different in content. So, the first apparatus might feature the meaning of the expression 'rectangular, equilateral parallelogram' and the other — the meaning of the expression 'equilateral, rectangular quadrilateral with two pairs of parallel sides.' Even though the meanings are different because each time their substantive (intensional) content is different, they are extensionally the same in the sense of the term 'sameness' that they actualize different contents contained in the same ideal concept of square; in other words, two different meanings belong to the same concept of an ideal square, regarding the idea of square. Such an approach to the apparatuses of two cohesive, closed and mutually untranslatable languages and their interrelationships to the hypothetical apparatus of ideal concepts is convergent with R. Ingarden's approach to the relationships obtaining between the meaning of expressions (their material content) and ideal concepts (Ingarden 1988: 135f).

III. The contentious issues, touched upon in the preceding paragraphs and related to cohesive and closed languages, occasion an apparently essential charge that can be put forward against the concept of cohesive, closed and mutually untranslatable languages, which I have encountered in those discussions on this issue that I know of, as well as against Ajdukiewicz's epistemological design that stems from this concept — radical conventionalism. The charge supports, albeit from a different side, the arguments in favor of a possibility of making Ajdukiewicz's approach to the meanings of expressions compatible with the concept of the world of meanings (however conceptualized) as the so-called 'Third Realm'. The essence of the charge is basically that it has a metaphysical background – one characteristic for Twardowski's school. The issue which gave rise to this charge arose on account of work on this paper, and the charge itself is this: the thesis by Ajdukiewicz that states the existence of mutually untranslatable closed and cohesive languages is accepted without good grounds. It is so because anyone who speaks any cohesive and closed language *L'*, in order to ascertain the existence of a close and cohesive language *L"*, untranslatable to *L'*, must be doing this from the standpoint of the metalanguage of language *L'*, which is at the same time the metalanguage of language *L"*. This metalanguage, as the metalanguage of two different languages, must contain both the names of the expressions of language *L'* and the names of expressions of language *L"*. Each of the two languages *L'* and *L"* is closed and cohesive, so the metalanguage that encompasses the two languages will be incohesive, so it

will not be language in the strict sense of the term, that is, in the sense which Ajdukiewicz used on that occasion. This metalanguage will have two areas: the area of the names of the expressions from language *L'* and the area of the names of the expressions from language *L"*, which obviously will not remain in any meaning relationships, because the expressions from language *L'* and the expressions from language *L"* will not remain in any such relationship, being expressions from closed, cohesive and mutually untranslatable languages. The subject of such a metalanguage will thus be the subject of just one area (to be the subject of two areas it would have to be split into two different subjects, i.e. the so-to-speak 'original' form of the subject would have to cease to be a subject the moment it generated two separate subjects). If, then, it knows e.g. the names of the expressions of language *L'* (as the subject of that area of metalanguage), as one that is at the same time the subject of language *L'*, it will not know the area of the names of the expressions of language *L"* (it will not be the subject of that metalanguage area), for it will not be the subject of language *L"*; this will happen because the knowledge of the names of expressions is equivalent to the knowledge of expressions (with, at least, a traditional designation of the names of expressions by means of quotation marks circumscribing the expressions being named). And if it is not the subject of language *L"* and also the subject of the metalinguistic area appropriate for the language, it will not know its meanings, and in not knowing its meanings it will not be able to ascertain its untranslatability into language *L'*. Language *L"* will not be recognized as language at all by this subject and, to be more precise: language *L"* will not EXIST FOR IT as language. This is the consequence of describing the subject of a language as always immanent to a language, and hence: describing a subject as a constitutive part of language. In trying to find some deeper causes of the state of affairs, it needs to be stated that this is a consequence of the intentional theory of expressions and, more broadly: the intentional theory of language, in line with which the status of 'being an expression' is dependent on the subject perceived individualistically or understood as a type, that is, as a universal (on the latter Olech 1993: 131).

The thesis that the existence of any untranslatable languages into the language of a person who puts forward the thesis is a metaphysical thesis, if we understand language as presented above; it is analogous to the thesis claiming the existence of absolute beings, beings *per se*, which as opposed to relative beings (*ab alio*) will never be a subject of anyone's presentations. Being, according to Twardowski, as an *ab alio* being (admittedly though, Twardowski does not use the term), i.e. whatever

can be presented through a presentation, affirmed or denied through a judgment, desired or detested through an act of emotions[...], which in the broadest sense is 'something' [. . .] first in REFERENCE to the presenting SUBJECT, but then irrespective of this reference [...] (Twardowski 1894: 33; emphasis A.O.).

In brief, only that is a being which is linked with the subject in a broadly understood intentional relationship (cognitive, emotional, volitional). While recognizing such an understanding of being — and I have no grounds to suppose that Ajdukiewicz perceived 'being' in different terms — it needs to be recognized that language too (it is something, too, and so a being), can be language only *sub specie* of a subject. This position was explicitly put forward by Ajdukiewicz in his *Lectures on logical semiotics* when he said that to be an expression is tantamount to being used as one, and being used as an expression is the same as being understood, that is, alongside the act of perceptual intention directed at the physical side of an expression, the same as experiencing an act of meaning intention directed at the meaning of this expression.

In conclusion to these remarks (they have the character of a sketch as an in-depth investigation of their subject matter goes well beyond the volume of this paper) is just to note that the substance-rich concept of an *ab alio* being could be made more precise and allow the distinguishing of between eight precisely defined meanings of the term 'relative being' (Ingarden 1987: 125) and that the relativity of being we are dealing with in the case of language is to Ajdukiewicz a different type of relativity than that which is used in a statement that speaks of the table we are sitting by as a relative being. Both language and this table are linked with consciousness by an intentional relationship but — and this would be the position of Ajdukiewicz — a table is not existentially dependent on consciousness, unlike language, which can be characterized by such a relationship.

IV Now on to Ajdukiewicz's language philosophy's direct references to the Husserlian philosophy of language as presented in *Logical Investigations*. The criticism of the associationist theory of meaning, which Ajdukiewicz carried out in the paper *On the meaning of expressions* [*O znaczeniu wyrażeń*], was, which Ajdukiewicz admitted, "largely influenced by Husserl's argumentation concerning the 'act of meaning' presented in *Logische Untersuchungen*, vol. II, part I, in the chapter *Ausdrück und Bedeutung*" (Ajdukiewicz 1931: 116).

According to Husserl the 'act of meaning', i.e. the use of written signs (or verbal sounds) as an expression of a language [using it is same as the UNDERSTANDING of this expression — A.O.] consists in the fact that in our consciousness there appears a sense-content due to which one might have a visual representation of that inscription (or verbal sound) provided a suitable intention directed upon that inscription (or verbal sound) were also present (what is meant is a perceptual intention which refers the mentioned immanent content to some physical sign that is transcendent to the subject, i.e. the user of the language — A.O.). However, when we use the inscription as an expression of a language the sense-content is joined by [yet –A.O.] a different intention, not necessarily representational, and directed in general upon something else than the inscription (or string of word-sounds) [this other intention is a meaning one, *das Bedeuten*, that is, an act of meaning intention which can be termed 'meaning in a psychological sense' and which must be distinguished from *ausdrückliche Bedeutung*, that is, a meaning in a logical sense – an ideal expression meaning — A.O.]. This intention, together with sense-content, forms a homogeneous experience (unitary total act); however, neither the awareness of the sense-content nor the intention itself is a complete and self-contained act of consciousness. Each forms a complementary component of the act of consciousness. The meaning of an expression (as an expression-type) of a language for Husserl would be that type of intention which must be attached to the sense-content in order that the inscription (or string of word-sounds) is used as an expression of that specific language. (Ajdukiewicz 1978: 14).

Names: notably, 'expression E' and 'thought T' are treated by Ajdukiewicz in the cited study not as general names, referring to a number of designates, but as names referring to just one designate — to a certain universal: the type of expressions which E-shaped expressions fall into and the type of thoughts that T-thoughts fall into. So, Ajdukiewicz takes those names in formal supposition. The MEANING of the expression mentioned in the cited study is a TYPE OF THOUGHTS which meaning-intentions of people who comprehend the expression fall into; these join the perceptual intentions of the people who perceive the expression.

V. Anticipating possible criticisms by some philosophers (also some from the Lvov-Warsaw School of logic) that meaning cannot be treated as a universal, because, allegedly, the very conception of universals engenders problems or even logical-semiotic contradictions (whereas the historical context makes us presume that he might have meant charges leveled from a semiotic or semiotic-ontological reist), Ajdukiewicz states, also in this study, that every language having two semantic categories of names — a name category concerning individuals and a name category pertaining to

universals — allows for the speaking of universals without the hazard of the aforementioned difficulties. Such a language is any informal language, not only Polish. The first of these categories is one of the names suitable for subjects only in subject-predicate sentences; the other is one that fits predicates in such sentences, too.[5] If the prewar tracts by Ajdukiewicz that discuss universals directly or indirectly indicate a semantic-logical POSSIBILITY of the acceptance of universals on the grounds of some languages that are rich in semantic categories of names, the postwar study by Ajdukiewicz *Trzy pojęcia definicji* ([*Three concepts of a definition*] 1958) points to a semantic-logical NECESSITY of accepting universals. Ajdukiewicz's notion of real definition has a real tinge of Platonic idealism about it, understood as acceptance of general objects, with every real definition characterizing some universal. Without getting into serious logical trouble, one cannot replace a real definition of some object with a nominal definition of this object's name, formulated in an objective stylization; if this were to succeed — and that would be equivalent to the possibility of abandoning real definitions in a general theory of definition — it would enable an avoidance of a need to accept such beings — 'suspect' for a nominalist — as universals.[6] I have mentioned this because one cannot agree with the position by Skolimowski and, I suspect, that of Lubomirski's, either (the author does not state that expressly, but leaves room for such an interpretation), holding that Ajdukiewicz allegedly avoided commitment to the acceptance of abstract beings. The postwar defense of universals, so striking in the paper *Trzy pojęcia definicji,* continues his prewar position presented in *W obronie őuniwersaliówŕ* (1932) and *W sprawie őuniwersaliówŕ* (1935) or the even earlier review (see footnote 5) of Kotarbiński's *Elementy*, discussing the possible semiotic-logical acceptance of universals and their possible defense of the same positions.

VI. The definition of the meaning of expressions, proposed by Aj-

[5]Concerning the defence of universals, presented in the treatise *O znaczeniu wyrażeń* (*On the meaning of expressions*), see Ajdukiewicz 1931: 112, note. Other works by Ajdukiewicz that contain a precise semiotic-logical analysis of the issue of universals and make use of such arguments to defend them include: *Reizm* (*Tadeusz Kotarbiński: Elementy teorii poznania logiki formalnej i metodologii nauk. Lvov 1929*) (Ajdukiewicz 1930b); *W sprawie őuniwersaliówŕ* (*On the Problem of őUnversalsŕ*) (Ajdukiewicz 1935); *W obronie őuniwersaliówŕ* (*On the Defence of őUniversalsŕ*) (Ajdukiewicz 1932).

[6]Regarding an argumentation that favors the need to accept universals, and is itself an outcome of investigations concerning real definitions see Ajdukiewicz 1958: 306-307.

dukiewicz in his tract *O znaczeniu wyrażeń*, preceding the semiotic-logical explication, which appeals to an abstract and general object — the designate of the term 'type' — is this: the meaning of a given expression (meaning in a logical sense) is a type of thought the meaning intentions of the people comprehending this expression fall into. The same definition, albeit in a slightly different formulation, presented in the *Lectures on logical semantics* reads: the meaning of expression E in language L is the type of thought, which it is sufficient and necessary for the thought involved in expression E to fall into so that the expression can be used as an expression of language L.[7]

The drawbacks of these definitions are their generality and their blurring of the difference between mono- and poly-semous expressions. To eliminate these, it was necessary to determine from which perspective the types of thought to which definitions refer are distinguished. This was addressed by Ajdukiewicz in the *Lectures*:

> one of the best solutions [..] is what Husserl did; he subjects thoughts to investigation, distinguishing between their different properties, and in particular — what is commonly called 'content'. Husserl says that in each thought we can distinguish, among others, between two such sides or parts as the quality of thought (Husserl says: the quality of the act of thinking) and the matter of thought. The quality of thought is what marks a distinction between presentations and convictions, and differentiates between convictions and suppositions, etc. [...] The matter of the act is that which directs it onto a given object — one having certain properties. (*Lecture XVIII*, trans. L. K.)

The sense of the word 'matter' — the author of *Lectures* continues – is not exhausted by a mere orientation of thought onto this or that object,

> because two thoughts directed on the same objects can be different in their matter if in these thoughts objects are grasped from a different standpoint, as it were, as something different [...]. Matter of a thought [hence] includes that which makes thought orient itself at an object as the specific object [orienting itself at the person of Napoleon as a victor of the Battle of Austerlitz or one defeated at Waterloo — A.O.] The quality of thought

[7]The phrase "thought involved in expression E," which Ajdukiewicz uses has the same sense that an expression from Husserl's *Logical Investigations*, vol. II, which can be summarized as follows: the meaning-intention on which the act of understanding the expression E is founded, associated with the perceptual intention, whose intentional (or, in Ingarden's writings intent) object is the physical sign of the expression E.

alongside matter is called by Husserl the meaning essence of a thought. The meaning essence of thought is a trait of thought which makes a certain class of thought distinct, hence there can be a number of thoughts on a certain meaning essence of a thought. [...] Now it could be said that the meaning of a word of this or that shape is the meaning essence of thoughts which must be involved in this word so that the word can be used as a word of some particular language. (*Lecture XVIII*, trans. L. K.)

To put what the quoted sentence states in other words, it could be said that the meaning of an expression of a certain shape is the meaning essence of the meaning-intentions which must be involved in this expression so that the expression can be understood by the subjects of the intentions as expressions of a specific language; the act of understanding this expression is none other than the very act of meaning-intention.

The above characteristic of the meaning essence of a thought involved in a certain expression — an essence being an ideal (logical) meaning of this expression — is an exact synopsis of #20 and #21 from tract V, volume II of *Logical Investigations:* "On Intentional Experiences and Their Contents." Despite the exactness mentioned, it will be proper, in my opinion, to draw upon these sections directly, in order to demonstrate the outright literal fidelity of Ajdukiewicz's lecture vis-a-vis the original text by Husserl.

Before I do this, bearing in mind the early phenomenological categories from Investigations, I should like to note that a dozen or so years later — in the *Ideas* — Husserl saw the categories of matter and quality noematically:

"quality" (judgment-quality, wish-quality, and so forth) is nothing other than what we have hitherto [in the hitherto parts of Ideas — A.O.] treated as "positing" character, "thetic" character in the widest sense [...] The "material" which within limits coincides with the "what" that the positing characteristic takes from the "quality" manifestly corresponds to the "noematic nucleus" (Husserl 2002: 362).

that is, let us be precise, the pure object sense, to which characters variably belong, which alongside the sense (kernel) add up to create a noematic concrete thing (Husserl 2002: 361-371).

Our distinction posited two sides in every act: its quality, which stamped it as, e.g., presentation or judgement, and its matter, that lent it direction to an object, which made a presentation, e.g., present *this* object and no other (Husserl 2001: 235).

However, such a characteristic of the essence of an intentional act is

incomplete because:

> Two identically qualified acts, e.g. two presentations, may appear directed, and evidently directed, at the same object, without full agreement on intentional essence. The ideas *equilateral triangle* and *equiangular triangle* differ in content, though both are directed, and evidently directed, to the same object: they present the same object, although 'in a different fashion.' [...] The *matter,* therefore, must be that element in an act which first gives it reference to an object, and reference so wholly definite that it not merely fixes the object meant in a general way, but also the precise way in which it is meant (Husserl 2001: 235).

and further:

> In so far as quality and matter now count for us (as will be shown later) as the wholly essential, and so never to be dispensed with, constituents of an act, it would be suitable to call the union of both, forming one part of the complete act, the act's *intentional essence*. To pin down this term, and the conception of the matter it goes with, we simultaneously introduce a second term. To the extent that we deal with acts, functioning in expressions in a sense-giving fashion, or capable of so functioning – whether all acts are so capable must be considered later – we shall speak more specifically of the *semantic* [meaning — A.O.] *essence* of the act. The ideational abstraction of this essence yields a 'meaning' in our ideal sense (Husserl 2001: 236).

VII. What is the ideal sense? What is its ontological status? In order to give an approximate answer to the questions — difficult ones as the text of Investigations does not authorize the giving of unambiguous answers — it ought to be remembered that Husserl's analyses in *Investigations* concerned the essence of conscious experiences, that is, the eidetic descriptions of these, and so they were not descriptions of changeable, individual experiences — concrete consciousness facts. Moreover, these descriptions concerned only that which occurs within experiences themselves; no judgments were allowed that asserted anything about transcendental objects in relation to the immanent content of these experiences. It was descriptive and aprioric psychology (in the sense of being eidetic) that foreshadowed what was later to come to be called 'phenomenology.'

On the grounds of the thus perceived psychology, the ideal meaning referred to in the preceding quotation is understood as a universal — a general concept – but this general concept, expressed *in specie*, is the character of a significative act — an intentional act that confers meaning on linguistic

signs. Thus perceived *species* still remains within the bounds of an act of consciousness, although treated by Husserl as beyond time and (as we can presume) existentially independent from conscious experiences. This is how it should be treated because:

> Meanings constitute, we may say further, a class of concepts in the sense of 'universal objects'. They are not for that reason objects which, though existing nowhere in the world, have being in a τόπος οὐράνιος or in a divine mind, for such metaphysical hypostatization would be absurd (Husserl 2001a: 230).

Put succinctly, ideal meanings in Husserl's expression from the time of *Investigations* (important as this position was later to be changed) are no creations of conscious experiences but are something transcendent to concrete psychic experiences. But this is a *sui generis* transcendence: individual meaning-intention is something that always falls under some ideal *species*, and this *species* — being part of no real act, as nonexistent — is, however, something that exists *in individuo*, within a conscious psychic experience. If one were to seek an analogy to this position, it would be fitting, I think, to indicate Aristotelian moderate realism as a position on the issue of general objects.

To elaborate on the reasons why it is difficult to determine Husserl's position on what *is* being discussed here, this realism would concern expression meanings, that is, the ideal meanings, which are *in individuo* within conscious experiences — acts that confer meaning as meaning-intentions.

> There is, however, no intrinsic connection between the ideal unities which in fact operate as meanings, and the signs to which they are tied. i.e. through which they become real in human mental life. We cannot therefore say that all ideal unities of this sort are expressed meanings. Wherever a new concept is formed, we see how a meaning becomes realized that was previously unrealized (Husserl 2001a: 233)

The case with ideal meanings is like with numbers: unless numbers come and go along with the acts of computing, neither do ideal meanings 'in themselves' arise nor disappear. Some find an expression in meaning-generating acts and as essences of these acts become expression meanings; this does not occur to others.

> There are therefore countless meanings which, in the common, relational sense, are merely possible ones, since they are never expressed, and since they can, owing to the limits of

man's cognitive powers, never be expressed (Husserl 2001a: 233).

In commentary to it, one may say this: meanings 'in themselves' form a closed set of general objects. Those that happen to be expression meanings have become FACTUAL meanings, without becoming any less general; those which have not had it happen to them remain potential meanings. The former — essences of acts that confer meaning to linguistic signs — also determine a realized possibility of linguistic communication. As it is realized, to put it metaphorically, one might say that this communication is an 'encounter' of individual and subjective thoughts (semantic intentions) in the world of objective meanings — MEANING ESSENCES; put otherwise, essences are media that incarnate individual acts each time these occur, and as a result confer to these acts a supra-individual (hence objective) value. Someone might say that the meaning essences of meaning- intentions — expression meanings (entities that are *ausdrückliche Bedeutungen*) — are phenomenological correlates of meanings 'in themselves' (*Bedeutungen an sich*), that is, that POSSIBLE meanings become ACTUAL meanings by way of acts that confer meaning. I think that one would find in *Investigations* some reasons legitimizing such a proposition.

VIII. Returning to Ajdukiewicz's position, allow me to remind ourselves about his statement from *Lectures in logical semantics*: the meaning of an expression of a certain shape is the meaning essence of thoughts that must be involved in this expression so that it can be used as an expression of a particular language, whereas the meaning essence of thoughts is the quality and matter of thoughts (*Lecture XVIII*). If one replaces Ajdukiewicz's 'thought' with Husserl's counterpart — 'meaning intention' — we will say that meaning is the essence of meaning intention, that is, meaning- intention grasped *in specie*.

However, Ajdukiewicz claimed in *O znaczeniu wyrażeń*[8] that the terms

[8]Notably, Ajdukiewicz's lectures and his tract *O znaczeniu wyrażeń* come from the same year; also, full realization of the philosophical context of this publication, including the influence exerted upon it by Husserl's *Investigations* requires that the reader knows the content of *Lectures*. The tract goes further than the lectures, though: it demonstrates how one can arrive at meaning perceived as an intralinguistic property of expression on the grounds of language syntax and pragmatics with the starting point being critical remarks on meaning, shown in terms of eidetic descriptive psychology.

That one cannot speak of the concept of meaning in Ajdukiewicz's philosophy in isolation from the position of the author of *Investigations* is a recurrent theme in this paper. Also, I believe the contents of the reasoning in *O znaczeniu wyrażeń* had been influenced by *Investigations* — the criticism of J. S. Mill's theory of connotations had

concerning the concepts of the 'quality' and 'matter' of an act typically use metaphors, which allow reaching a consensus (concerning the meaning of expressions, but:

> The last definition which we have been discussing shares with the previous ones the defect that it fails to specify the point of view from which the types of thoughts are to be distinguished that are the meanings of the various types of expressions. (Ajdukiewicz 1978: 18)

Therefore, Ajdukiewicz constructed his syntactic-pragmatic concept of meaning with a view to overcoming the shortcomings mentioned, and with an intention of a possibly adequate rendition of those intuitions which Husserl linked with the quality and matter of an act of meaning-intention. This conclusion is made possible by paragraphs 7 and 11 of the fifth part of the tract *O znaczeniu wyrażeń*. Paragraph 7 precedes the formulation of the definition of meaning as a equivalence class with respect to the relation of synonymy. Paragraph 11 is a philosophical-linguistic commentary on the definition, performed in Husserlian vein. To quote the relevant passage from paragraph 7,

> We have arrived at our definition of meaning guided by the following basic idea: two terms in a language have the same meaning provided that when we are presented with a certain aspect of an object we are prepared to apply to the object either of the two terms. (Ajdukiewicz 1978: 30)

However, even in this paragraph, it was clearly stated that the acceptance of this intuition does not narrow down the applicability of the directival theory of meaning to nominal expressions, but it pertains to expressions belonging to any syntactic categories: the expressions, which with synonymy one is to assert, are not formulated in isolation but always as component parts of sentence in a logical sense (truth-apt); these sentences are to be

been inspired by the second part of *Investigations*, where Husserl criticizes the conception of meaning as connotation. To use the language of contemporary philosophy, the conception does not allow perceiving meaning as intension and see it in opposition to extension. Aware of Husserlian influence, one should not forget that Ajdukiewicz's directival theory of meaning, which sought meaning in language itself, was also inspired by the conception by Hilbert (*cf.* Ajdukiewicz 1934b: 85), which I mention only in a footnote here, as a more thorough analysis, would warrant a separate paper. It was this conception that made Ajdukiewicz inclined to explicate in semiotic and logical terms Husserl's eidetic ideas in the meanings of expressions (more on this in Olech 1993: 121f).

accepted or rejected in situations that motivate the act of positive or negative assertion. Only this approach, that is, positing these expressions in a sentential context allows for asserting the synonymy of expressions belonging to each syntactic category. The statement made in paragraph 11 is this:

> One uses the word 'table' as an expression of English in which 'table' occurs and if one is prepared to accept certain sentences of English in which 'table' occurs and if one is prepared to accept them on the basis of some motives rather than others. If when using 'table' I am prepared to accept sentences like 'A table is a piece of furniture', 'One takes meals at a table', etc., and if, besides, I am prepared to accept the sentence 'This is a table' on the basis of certain intuitive presentations, then I am using 'table' as an expression of English. The question whether this preparedness is exclusively in the sphere of disposition or whether some of its components are actualized in consciousness, is difficult to answer. In our view these who say that the word 'table' is used as an expression of English if one has a thought of certain objects as being such and such merely state the following: one is then thinking in such a way that one is prepared to respond to certain intuitive presentations by accepting the sentence 'this is a table', furthermore one is prepared to accept other sentences containing 'table' given those and not other motives. In our view 'the intentional (object-directed) nature of acts' and 'the matter of acts' reduces to just such dispositions. (Ajdukiewicz 1978: 34)

In commenting on the above-quoted passage one ought to be reminded that Ajdukiewicz thus understands in language that the subject is its constitutive component part. The subject is not abstracted from the world but it is in the world and has experiences as such. These are for it a motive for some verbal behavior, of which notably are those (in terms of theory of language) which are about sentences acceptation. They permit a decision on how the subject understands the accepted sentences (including every word that makes up the sentence), that is, the question of the meaning of the sentence (i.e. the issue of the component parts of the sentence); sentences stem from experiences and these in turn motivate the acts of sentence acceptation. If two people P_1 and P_2 encounter experiences Ex_1 and Ex_2, which are experiences of the same type (both people perceive the same object as the same or reads the same sentence with understanding), these experiences being for both of them a motive to accept the sentence of this and that form — sentence S — and the persons accept the sentence, then they use sentence S in the same meaning that is understand the sentence in the same way or, in other words, the quality and matter of the acts of meaning-intentions of these two people — intentions involved in sentence

S – are identical. What would happen if person P_1 accepted sentence S_1 and person P_2 accepted sentence S_2, with both sentences having a shape predicted by the same language L? In this situation, if these sentences were for each of these people a motive to accept the subsequent, same sentence of language L, say, a sentence of the shape S_3, then S_1 and S_2 would be synonymic sentences in language L. It would be so because sentences S_1 and S_2 would be motives of the same type for these persons — the same would derive from them; sentences (or, more precisely, expressions) of the same type are synonymic sentences (expressions).

IX. In conclusion: the *explicatum* by Ajdukiewicz for the Husserlian meaning- intention, involved in expression E is, again, the derivation of a sentence that includes the expression from the experience Ex, i.e. acceptation this sentence by the user of the language if the acceptation act is motivated by encountering this experience by this very user.[9] Expression synonymy as an *explicatum* for the situation in which the expressions are involved in the same (though not identical, as varying numerically) meaning-intentions was discussed above. What remains is the explication of Husserl's ideal meaning, understood as *ausdrückliche Bedeutung*. The *explicatum* of this concept (termed linguistic meaning or logical meaning by Ajdukiewicz) is, as I have mentioned, a shared property of synonymous expressions or, more precisely (*cf.* Ajdukiewicz 1931 and Ajdukiewicz 1934a): a equivalence class with respect to the relation of synonymy. Allow me to take this *explicatum* down, demonstrating how faithfully it renders the Husserlian idea, that

[9]The derivation of the sentence including expression E from experience Ex is to be ESSENTIAL DERIVATION FOR THE EXPRESSION and is modelled on inferential derivation of one sentential formulas (propositions) from others on account of the meaning of logical constants. This category is not defined in this paper, and neither are others in order not to complicate the argument or exceed the customary volume of the paper, which is above all about demonstrating the Husserlian influence on Ajdukiewicz's philosophy of language. A precise definition of this category can be found in Ajdukiewicz 1931: 133. However, this is to notify the reader that the reprint of this tract in *Język i poznanie,* vol. I published both in 1960 and in 1985 contains an error on page 133 and which refers to the category of 'relevant derivation,' fundamental for the tract. This error is absent from the original publication in *Księga pamiątkowa PTF we Lwowie* [Polish Philosophical Society memorial book of Lvov] (*cf.* p. 72) and in *Język i poznanie,* vol. I published in 2006. The sentence on page 133 ought to read: "According to directives obtaining in the Polish language, from the acceptance of the sentence 'merchants are sometimes Poles' another sentence 'Poles are sometimes merchants' can be directly derived: 'Poles are sometimes merchants' in a way which is essential for the expression 'are sometimes' but not for the expression 'Poles."'

is, changes no sense of the *explicandum*. It takes reference from Husserl again:

> I see that in repeated acts of presentation and judgement I mean, or can mean, the same concept or proposition [sentence –A.O.] [orig.: denselben Begriff, bzw. denselben Satz — A.O.]. [...] The genuine identity that we here assert is none other than the identity of the species. As a *species* and only as a *species* can it embrace in unity [..] and as an ideal unity the dispersed multiplicity of individual singulars [...] [which are] the corresponding act-moments of meaning, the meaning-intentions (Husserl 2001a: 230).

In brief: meaning is meaning-intention *in specie*.

Ajdukiewicz's *explicatum* for the Husserlian *ausdrückliche Bedeutung* is a shared property of synonymous expressions, hence identical ones. Husserlian identity of *species* is Ajdukiewicz's synonymy. The possible sequence of expressions demonstrating that Ajdukiewicz's *explicatum* is translatable with no change of sense to Husserlian categories (and conversely, too, of course) would be as follows:

i) linguistic meaning — the same as shared property of expressions,[10]

(if an expression — the same as to be used as an expression, then)

ii) linguistic meaning — the same as shared property of the uses as expressions of language,

(if used as an expression of language — the same as to be understood, then)

iii) linguistic meaning — the same as shared property of the acts of understanding,

(if an act of understanding — the same as an act of meaning-intention, then)

iv) linguistic meaning — the same shared property of acts of meaning-intentions,

(if a shared property of acts of meaning-intentions — the same as their essence, that is *species*, then)

v) linguistic meaning — the same as an act of meaning-intention *in specie*.

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[10]The precise shape of this sentence would be this: the meaning of expression E in language L is the same as the shared property of synonymous expressions with this expression in language L. The remaining sentences of the sequence ought to be made more precise in a similar fashion, which I have given up for stylistic considerations.

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PREFERRED THINKING PATTERNS — METAPROGRAMS

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Human beings possess a natural ability to create mental structures. In the past, theories about the functions of the mind (for instance those established by Berkeley, René Descartes, Locke) were presented in the form of myths. Sometimes, even at advanced stages of scientific development, theories contribute to the creation of myths. This phenomenon frequently occurs on the borderline between philosophy and psychology. The concept of metaprograms presented in this article may fulfill a similar function.

Numerous experiments were conducted to analyze the repeatability of events and their impact on the human psyche. P. I. Pavlov and B. Skinner examined habits; however, it is not certain whether they encompassed only conditioned responses or if this mechanism can be interpreted more broadly and used to describe memory as a mental function performed in response to various stimuli. Although our knowledge about the way the human brain operates increases every year, we still do not know which factors influence the things we remember and to what degree. The memories we retain are selected by our conscious will, but our minds also frequently retain unconscious stimuli. Psychologists conducted experiments which revealed that human memory could be the key to analyzing the unconscious mind. They noticed that in certain situations, people exhibit the tendency to use identical expressions, even if these situations are significantly different. This observation induced them to examine patterns and possible relationships between linguistic expressions and similar events. After years of research, similar results were divided into three groups: 1) REACTIONS TO THE FIRST CON-

TACT WITH A PERSON OR AN OBJECT, 2) MAKING DECISIONS, 3) SITUATIONS REQUIRING THAT USERS BREAK THEIR INNER RESISTANCE. Next, inspired by certain aspects of cybernetic methodology, the researchers constructed a theory which ordered the observed mental "strategies" and corresponding expressions. The psycholinguistic theory of metaprograms[1] broadens our knowledge of phenomena which occur on the borderline between what is conscious (and can in certain situations be controlled) and what is hidden in subconsciousness.

The human brain processes enormous amounts of information and transforms them into configurations which allow us to make sense of the surrounding reality. The unconscious part of the brain registers approximately twenty thousand fragments of information. Organizing information at the "entry point" (term borrowed from cybernetics) first initiates the processes of ordering and categorizing. Empirical studies revealed that at any given moment, people are capable of CONSCIOUSLY keeping 7 (± 2) fragments of information within their attention span. Due to this perceptive limitation, we must select certain pieces of information from an enormous pool and force the rest of it out or make generalizations, thus forming a distorted image of reality in our minds. As a result, our view of reality is always subjective and manifests itself in the goals we desire to achieve.

Diligence, sense of duty, reliability, etc. are in fact certain ideas which we have imposed on ourselves, or which have been imposed on us by others; we adhere to them not really knowing why and how they entered our psyche. Thinking patterns have been instilled in us by past events, which have shaped our manner of speaking and acting. Regardless of changing circumstances and subjective experiences, people tend to have configurations of preferred thinking patterns that are used to organize their thoughts, evaluations of experiences, cognition and behavior.

THEORY OF METAPROGRAMS is based on the conviction that "inner coherence of the psyche" is the only higher instinct of the *homo sapiens*, although it has not been fully developed (other species possess only rudimentary forms of this instinct). This internal "psychological coherence" manifests itself in the fact that people have certain habitual and unconscious

[1] The concept of metaprograms is an integral part of neurolinguistic programming and has been established in 1973 by Richard Bandler (psychologist) and John Grinder (linguist). Grinder was the greatest contributor to the psycholinguistic structure of metaprograms. His theories were later developed by Tad James. The comprehensive bibliography of works referring to NLP can be found in the publication: Joseph O'Connor, John Seymour, *Introducing NLP: Psychological Skills for Understanding and Influencing People* (London: Thorsons, 1993).

patterns of behavior. These patterns are referred to as strategies, which form metaprograms.

One can say that strategies are used to filter and order information, allowing our minds to create and understand reality. A person's metaprogram is their characteristic pattern of sorting information and consists of various strategy sets. Their action occurs mostly outside of human consciousness, and therefore, deciphering a singular metaprogram would allow one to consciously access their own or other people's previously unconscious strategies.

Metaprograms consisting of opposing and complementary strategies are responsible for the way people process information and – consequently — perceive reality. Strategies influence how we focus our attention, which decisions we make and what meanings we ascribe to the things we see, hear and feel. They guide our actions and determine the things we avoid. They decide which information will grasp our attention and which fragments ought to be omitted. Knowledge of these strategies — preferred thinking patterns — used for managing one's goals provides the key factor that allows us to establish fundamental differences and in turn helps us recognize various forms of interaction. Identified strategies allow people to effectively manipulate their auto-communicative processes (talking to oneself in one's thoughts in order to better understand one's own behavior and choices) and their communication with others. By getting to know our strategies and the strategies used by other people, we can communicate faster and without unnecessary disturbances or misunderstandings. Analyzing strategies and correlated ideas, gaining a deeper knowledge of their mechanics, as well as ordering them and conducting occasional re-evaluations, are crucial processes in the maintenance of a healthy psyche.

Understanding the function of internal processes which organize thoughts enables one to identify rules governing the manner of expressing information so that one can reach and adapt to the other person's empirical structure. If we want to effectively communicate with other people, we need to carefully observe them and listen to the language they use. People constantly provide new information about themselves through the manner in which they use language — it indicates their preferred thinking patterns (strategies selected from among the established metaprograms), which determine the way they think, make decisions and act.

In order to communicate successfully, one ought to adapt one's communication style to the metaprograms used by other people instead of shaping it in accordance with one's own perception and wishes (wishes concerning the way we think the world should operate or wishes pertaining to other people's

behavior). By learning our own preferences and the preferences of people with whom we communicate frequently, we gain better control over the issues discussed during conversations; we are understood better and therefore can achieve our goals more easily and acquire necessary information.

One ought to remember that preferred thinking patterns (pairs of strategies constituting metaprograms) are not absolutes. No one reacts to the same stimulus in the same way. People develop and modify their dominant set of preferred strategies (metaprograms). As a result, most people's metaprogram strategies are very distinct and firmly attached to a certain attitude towards life. Very few people function in a monotonous manner, using only a single, unchanging strategy. Some of them do not have unambiguously distinct strategies which would characterize their thinking patterns. It should also be noted that deciphering other people's metaprograms may distort the picture of their value systems. That is why METAPROGRAMS SHOULD NOT BE INDENTIFIED WITH THE VALUE SYSTEM OF THE PERSON WITH WHOM WE ARE TRYING TO COMMUNICATE.

IN HUMAN SUBCONSCIOUSNESS, STRATEGIES DO NOT FORM OPPOSITE PAIRS. They have been ordered this way only to facilitate the meta-analysis of phenomena that are both unconscious and conscious. Certain people may alternate between various strategies, in a manner similar to a flickering light. However, alterations within one metaprogram are extremely rare, with the exception of metaprogram III: SAMENESS — DIFFERENCE, which also consists of the so-called complex strategies: sameness with difference in the background and difference with sameness in the background.

Each metaprogram will be discussed according to the following structure. First, we shall analyze opposing strategies. Strategies will be described in the subsection COMMUNICATION SUGGESTIONS. It will contain linguistic guidelines for rapid recognition of a given strategy. The configurations of strategies in the mental universe of each person may be described as reciprocally connected. They will be explained in the section titled MOST FREQUENT TYPES OF INTERFERENCE.

Psycholinguistics divides metaprograms into eight types. I shall refer to them using their singular form. However, since there are as many strategies as individual representations of a given thinking pattern, I shall refer to specific strategies in plural form. Basic metaprograms are pairs of strategies used to sort thoughts and thinking patterns:

– Metaprogram I: Toward — Away,

– Metaprogram II: External — Internal (External authority – internal authority),

– Metaprogram III: Sameness — Difference (aside from sameness and difference strategies, the metaprogram contains so-called complex strategies: sameness with difference in the background and difference with sameness in the background),
– Metaprogram IV: Self — Others,
– Metaprogram V: Possibility — Necessity,
– Metaprogram VI: Detailed — Global,
– Metaprogram VII: Proactive — Reactive,
– Metaprogram VIII: In-Time – Through-Time.

METAPROGRAM I: TOWARD — AWAY

This metaprogram consists of thinking patterns or strategies aimed at moving away from everything that is unpleasant and odious, as well as strategies aimed at moving towards things that are pleasant and satisfying.

"AWAY" STRATEGIES

People whose thinking patterns mostly employ away strategies tend to focus their attention on problems, on things that did not go well for them in the past, or things that can or will go wrong in the future. They often find it difficult to define and describe their goals. They are disoriented and indecisive when faced with the necessity of establishing goals. They get easily distracted by the prospect of negative consequences. Their thoughts about situations, people and decisions are centered around finality and exclusion.

People with these thinking patterns use the following expressions: *I will avoid; I'm staying away; I'm getting rid of; there is NO issue; I DO NOT want to; I DO NOT like/want; I DO NOT want it to happen; I will get rid of*.

Communication suggestions for "away" strategies

Establish what they do not want and what they would like to avoid. Emphasize that you can help them avoid the things they do not want. Predict potential problems. Assure them that potential problems can be solved. Help them specify what they really want, but be aware of the fact that for them it is truly difficult.

Most frequent types of interference in "away" strategies

Strategies applied by people who use "away" thinking patterns are very often connected with an internal source of authority (see: internal strategies

in the metaprogram Internal — External). Such strategies occur in reactive people (see: reactive strategies in the metaprogram Proactive — Reactive), who need guidance. Such people often feel obligated, rather than free to do something, so their actions are motivated by necessity, not possibility (see: Necessity – Possibility).

"TOWARD" STRATEGIES

These strategies are used by people with strong mental motivation for achievement. They work towards goals and get closer to what they desire and like. It is often difficult for them to recognize things that should be avoided. They play down negative consequences, tend to be ambivalent toward things that do not function properly or do not work out. They respond to profits, awards, compliments and other forms of positive psychological feedback. They collect experiences, friendships, acquaintances, successes.

People representing "toward" strategies use the following expressions: *I want; I will achieve; I will get; I have; I have gathered around me*. They emphasize the elitism of their environment.

Communication suggestions for "toward" strategies

When speaking to such people, emphasize their goals and things they desire to achieve. Emphasize that the things you are doing will help them achieve what they want. Remember that they tend to ignore potential problems, or even delegate them to others and blame others for their own failures.

Most frequent types of interference in "toward" strategies

People using the "toward" strategy most often seek points of reference on the outside (external authority); however, strongly motivated and very ambitious individuals may act in a different manner.

One also ought to note that people who aspire toward something are usually proactive and independently initiate new tasks (see: proactive strategies in the Proactive — Reactive metaprogram.) Such people do not like it if others try to impose goals upon them or give them orders. They value freedom and therefore like hearing about what they can do and not about what they have to do (see: Necessity – Possibility).

METAPROGRAM II: INTERNAL — EXTERNAL (INTERNAL AUTHORITY — EXTERNAL AUTHORITY)

The name of this program refers to the source of authority, the locus where a person places the motives which inspire their behavior. This metaprogram is relatively stronger than others because it reinforces self-awareness. It consists of thinking patterns/strategies which the individual directs inwards and outwards.

STRATEGIES BASED ON INTERNAL FRAME OF REFERENCE (INTERNAL AUTHORITY)

People who think this way tend to rely on their internal judgments and sets of criteria. They evaluate things according to their own internal grading scale. They judge things based on what is right in their own judgment. Their feelings help them decide whether they have done something right. They are their own sources of authority, and seek confirmation for their actions, words and opinions only within themselves. Such individuals turn INWARDS to establish whether their efforts have been successful.

They believe mostly in proof found within their retrospective consciousness. They evaluate the effects of their actions based on subjective criteria. They motivate themselves without outside help. They can be convinced by others only if the person attempting to convince them refers to issues, events and situations which they recognize from their own experience. They will offer resistance if someone suggests that something is good for them without referring to their inner "self."

People using the internal strategy speak about decisions they have made, they will speak about things they "just know and feel," etc. They will also use the following expressions: *I feel this is right; I feel it inside; this makes me happy.*

Communication suggestions for internal strategies (internal frame of reference)

Do not speak to them about what other people think or what decisions others have made. Emphasize what they think, tell them they have to make their own decisions, take responsibility for themselves. Help them clarify their thoughts.

When trying to convince such people of something, tell them: *I cannot persuade you to do anything*; *only you can decide*; *only you can make the best decision for yourself*; *what you decide is entirely up to you.*

Most frequent types of interference in the internal strategies

Very often, the internal point of reference is connected with the "away" strategy (see: the "away" strategy in the Away – Toward metaprogram).

Example: *You are the only person who knows what you will lose if you do not...*

STRATEGIES BASED ON EXTERNAL FRAME OF REFERENCE (EXTERNAL AUTHORITY)

People who prefer this thinking pattern rely on the opinions of others. For them, the sources of authority and confirmation lie on the outside. Such people adhere to external standards and rely on external feedback. Their opinions are formulated based on the judgments made by others. They seek external confirmation, they need other people's approval. They require external guidance. They often draw conclusions based on reactions observed in other people. They allow others to make decisions for them, they withdraw, retreat into the background. They need to ask other people what they think about their work. They count on the opinions of others when asking if they had done well. They adopt other people's criteria and often assimilate other people's beliefs. Such people interpret incoming messages as if they were already decisions. They often react to ambivalent information as if it was an imperative or an order.

People using external strategies say that they know something because someone told them or because they heard it in the media, read about it in a book or a newspaper. That is why they frequently use the following expressions: *someone has to tell me*; *facts clearly show that*; *scientists have proven*; *I heard about it*; *my information is up to date*; *I'm interested in this, so I know*; *I will be praised*; *I have been noticed*; *I have captured their attention*; *I expect a reward*; *it's just the way it is.*

Communication suggestions for external strategies

First, you ought to learn who enjoys the greatest respect from your interlocutor.

When speaking to such individuals, you ought to emphasize the opinions and actions of others, especially if these people impress your interlocutor, for instance: *Other people think that...*

When trying to convince them, present numbers, facts, scientific data, statistics. Say for instance: *Research shows...* Provide a lot of positive feedback, carefully praise them for giving you their attention. Constantly inform them about their progress. Suggest to your partner to talk to people who have already made a decision.

Most frequent types of interference in external strategies

People who rely on external sources of authority like to lead or at least be part of the leading elite. They do not like orders, however, they may allow themselves to be coerced if obeying an order will help them fulfill their ambitions. They only avoid risk if they are the ones bearing responsibility (see: "away" and "toward" strategies in the metaprogram Away — Towards).

METAPROGRAM III: SAMENESS — DIFFERENCE

This metaprogram allows one to determine the manner in which information is sorted during the processes of perception, learning, memorizing and understanding new phenomena. It consists of the strategies which aim at identifying similarities and the strategies that mostly point to differences. It belongs to a group of more autonomous metaprograms.

STRATEGIES FOCUSED ON FINDING SIMILARITIES

These strategies manifest as a tendency to search for sameness or, at the very least, similarity. They are based on memories of the past and comparisons between the current, past and foreseeable events. People operating in accordance with such strategies tend to state things "which are" as opposed to things "which are not." They look at the outside world in search of common features, they match events, situations and people they meet. They try to match what we say with what they already know and are familiar with. They tend to formulate generalizations that can sometimes be quite different from those universally accepted by others.

People who employ such strategies use the following expressions: *the same*, *just like*, *similar to*, *I stand by my opinion*, *because...*

Communication suggestions for sameness strategies

When speaking to people employing this strategy, emphasize everything that is common, concentrate on similarities between situations and aspirations. Demonstrate that you both have the same intentions, goals, etc.

Most frequent types of interference in the sameness strategies

Although there is some interference with other strategies, it is usually too vague to be easily identified. Most frequently, one of the strategies (either sameness or difference) will move to the foreground, while the background

accommodates the opposite style of thinking. Thus, we shall be dealing with complex strategies: sameness with difference in the background and difference with sameness in the background.

COMPLEX STRATEGIES: SAMENESS WITH DIFFERENCE IN THE BACKGROUND

Attention is mostly focused on the way in which events, people and objects are the same or similar; then some emphasis is put on differences. People employing these strategies refer to similarities and then enumerate one or two less significant differences. They use many comparative clauses. They like to observe gradual changes and the way situations and problems evolve.

When such people want to express similarities with differences in the background, they use the following expressions: *the same; but; better; more; less; except for gradually; but it is almost the same*; *generally the same; however*...

Communication suggestions for "sameness with difference in the background" strategies

When speaking to people employing such diverse strategies, focus on the common issues. First emphasize similarities, then notice past or future changes. When pointing out differences, present them as evolutionary, gradual; preferably, refer these differences to tasks which can be completed in the future.

"DIFFERENCE" STRATEGIES

Thinking patterns focusing on differences usually manifest as an observation of inconsistencies or incompatibility of objects. People who use such strategies emphasize the way in which certain objects differ from each other. They tend to search for deficiencies, faults, disabilities and shortages. They seek out contradictions because they value them. Contradictions help them understand the information that they receive from the world. They generalize disorder, chaos, negative views of reality. It is difficult for them to adopt a unified picture of the world.

People employing strategies which emphasize differences use words and expressions indicating contradiction: *day and night*, *old/new*, *changed*, *different*, *revolutionary*, *unique*, *radical*.

Communication suggestions for difference strategies

When speaking to such people, emphasize differences between things. Issues presented to them should be described as innovative, revolutionary, unusual, rare, radically altered, different from...

COMPLEX STRATEGIES: DIFFERENCE WITH SAMENESS IN THE BACKGROUND

Attention is first focused on the way events, people and things differ from each other; then some emphasis is put on similarities. People using these strategies speak first about the way various issues and things differ from each other, and at the end of their utterance they mention one or several less significant similarities.

Strategies focused on differences with sameness in the background include the following expressions: *in fact; but*; *it has changed; however*.

Communication suggestions for the strategies of difference with sameness in the background

First, one ought to emphasize differences, and then gradually and seamlessly direct their attention toward similarities and common features. One ought to concentrate on changes, new, creative solutions and promise success based on previous experiences.

Most frequent types of interference in the the strategies of difference with sameness in the background

People who employ complex "sameness – secondary difference" strategies are often friends with people who employ the strategies of "difference – secondary sameness."

METAPROGRAM IV: SELF — OTHERS

The metaprogram encompasses strategies in which people focus their attention on the "self" – "self" with reference to other people and strategies, which above all rely on their attitude towards others. The metaprogram Self — Others serves as a signal which captures attention and determines our behavior. It is also highly autonomous. People who talk about the "self" can sometimes turn out to be socially benevolent individuals and people whose language is full of information about others may in fact be trying to build

up their own sense of worth, in other words — their "self." However, due to the structure of the language we use, such connections between strategies within the "Self – Others" metaprogram are easily identifiable.

"SELF" STRATEGIES

People employing "self" strategies enter into social relations with the attitude: *What do I get out of this? What could I get out of this?*

In extreme circumstances, one might refer to them as egotistic, narcissistic and self-centered. Such individuals focus on their own behavior, thoughts and feelings to such a degree that they almost completely exclude other people and fail to notice them. They generalize experiences which refer to their own person. They have a compulsive need to respond to the needs of their internal universe. They spend a lot of time "inside themselves" and seem to be ambivalent towards the internal worlds of other people. They are prone to boasting. They evaluate their interactions with others based on their own perception of what is going on, regardless of external messages.

Communication suggestions for "self" strategies

Emphasize potential advantages. When speaking to such people, remember that their "self" is an "abyss." Remember that they can be praised and complemented more than others.

Most frequent types of interference in "self" strategies

Most frequently, individuals who employ strategies aimed at the self favor "toward," "possibility," "difference" and proactive strategies. However, there are also people with an infinitelyvariable configurations of strategies connected with the "self" strategy.

"OTHERS" STRATEGIES

Individuals using these strategies perceive interactions mainly in terms of what they can do for others. Other people come first, other people focus attention, other people carry stronger signals. Such individuals need strong, straightforward messages, which provide them with emotional support. They frequently seem to be "on the outside." They pay a lot of attention to the thoughts and feelings of others. They judge the quality of their interactions based on the reactions observed in others. They try to recreate other people's thought processes within themselves, sometimes distorting them. Their actions are aimed at achieving inner satisfaction by working for others. Because they value other people's reactions, they focus their attention on

trying to predict those. They try to create situations (sometimes artificial) that enable them to do something nice for the other person.

Communication suggestions for "others" strategies

When speaking to such people, emphasize frequently how glad you are that they exist, express your appreciation of all that they have done, how many advantages their presence, efforts and care have brought you. Do not be deceived by their occasionally fake altruism. Such people often possess a strong sense of responsibility, which may hinder their ability to make decisions. In such situations, one ought to gently guide them in the right direction.

Most frequent types of interference in "others" strategies

Strategies focused on other people are often linked to "external authority," "necessity," reactive, "sameness" and "away" strategies.

Most frequent types of interference in the entire "self — others" metaprogram

Generally speaking, the "Self – Others" metaprogram presupposes the existence of a certain line of division around which all the strategies belonging to all the other metaprograms are gathered. It is important to establish the points of convergence and divergence between strategies and place them on the above-mentioned Self — Others continuum (determine when and which strategy emerges based on whether we are approaching the "self" or the "others" end of the continuum and which role can be ascribed to each relation with others in conjunction with specific strategies). Understanding the way this configuration works in other people may be used in a destructive critical judgment of one's opponent.

Furthermore, when interpreting the "Self – Others" metaprogram, one ought to focus on the grammatical form used by the speaker rather than specific expressions. A certain problem arises with the first person plural – "we." When talking to a group of people, it is helpful to notice whether the word "we" is meant to establish a boundary or to include the person with whom the group is speaking, because it can be used to emphasize either a difference or a similarity. Occasionally, it is merely a detail; however it has great significance, such as when speaking to university authorities: "we" can mean "students" or "representatives of the academic community." Another

example: when speaking to the person in charge at work, the expression "we, young people under thirty" may not emphasize OTHERS, but US TOGETHER — a community which we are part of.

METAPROGRAM V: NECESSITY — POSSIBILITY

This metaprogram can be identified by modal operators (words such as: *must*, *should*, *it is required*, *I want*, *it is needed*). Modal operators express our belief in the existence of a potential connection between ourselves and conscious obligations, aspirations, needs, expectations or results. They may be interpreted as expressions that describe the mental state which influences a person's reactions and behavior.

NECESSITY STRATEGIES

People employing necessity strategies are motivated by needs, a sense of obligation, a sense of responsibility and pressure. They are motivated to do something because they have to, rather than want to. They predict that if they do not do what they "have to," then they will receive a negative result or no positive result. They tend to take advantage of any approaching opportunity, take what is given rather than search and wait for something that may possibly happen. They are interested in things that are known and certain, they stick to familiar choices, do not take risks and avoid the unknown. They find it difficult to get involved in situations and tasks that do not have a planned schedule or result. They rarely speak about their life choices, they seem to be enslaved, they cannot or are not able to choose.

People employing necessity strategies often use the following expressions: *I have to*; *I should; it is required; one ought to*; *it just happened; someone or something is making me do...*; *I did it because I had to.*

Communication suggestions for necessity strategies

When speaking to such individuals, one ought to present a plan of action. One should describe the procedure step by step and provide all the details. When the process is already underway, it is helpful to inform the other person how much still needs to be done. One should also make sure they understand the procedure.

Expressions to use in conversations with such people: *this is the way it is always/usually done.*

Key words: *procedure*, *step by step*, *reliable strategy*, *known method*, *the right path.*

Most frequent types of interference in necessity strategies

The most important goal for individuals who speak and think this way is to avoid the negative results of the pressure they imagine is put upon them. As a result, other people are important to them, but chiefly as sources of apprehension ("others" strategies). Such individuals often place their source of authority on the outside (external strategies in the "Internal – External" metaprogram). They prefer to describe pressure as coming from the outside, because that makes it easier to explain; however, their impressions may not always be true.

A different configuration of strategies focused on necessity indicates an internal source of authority: the individual's values, habits and conscience. In such situations, necessity strategies will be linked to "self" strategies and the strategies of internal source of authority, as well as difference strategies. If the individual's self is to defy another person, then it must focus on the differences between itself and the environment. Such an individual will be a difficult partner in negotiations.

POSSIBILITY STRATEGIES

People whose mind motivates itself by perceiving possibilities explain their actions with the following qualities: curiosity, passion, expectation, desire to own things. They want to learn, feel, experience, enlarge their scope of possibilities; they are not interested in what already is, but in what might be. They are constantly curious and interested in the unknown. They derive a great sense of joy from possibilities which are not always defined clearly. They search for new solutions and challenges from the outside world, they are interested in the potential that lies within themselves or the group they belong to. They are successful in developing new procedures and finding alternatives, they often give the impression that some inner need drives them to constantly seek improvements and new solutions even if everything is functioning correctly.

People who prefer to think about possibilities often use the following expressions: *I want/ choose/hope/wish/can/am able to; it is possible*. Their words manifest a readiness for action: *do*, *help*, *undertake*, *search*. When talking about options and possibilities, they tend to magnify and exaggerate.

Communication suggestions for possibility strategies

When speaking to such people, emphasize various possibilities and options; never impose any limitations. They ought to be informed that our actions

increase the number of their opportunities and options. Do not keep to a rigid routine, do not tire them with details, present a vision. It ought to be remembered that such people find it difficult to follow an established procedure, fulfill their obligations and complete their work. Key words: *possibilities*, *choices*, *alternatives*, *big picture*, *other options*.

Most frequent types of interference in possibility strategies

Possibilities are interesting for people who want to work towards goals. Such individuals are frequently focused on the self ("self" strategies in the "Self – Others" metaprogram). People who view their life's purpose through the lens of possibilities often alternate between strategies from the "Internal – External" metaprogram.

METAPROGRAM VI: DETAILED — GLOBAL

This metaprogram refers to the manner in which people receive and assimilate information, as well as how they keep their attention focused when the information is presented to them. It relies chiefly on the linguistic competence of both the speaker and the listener, as well as their emotional relations (trust).

DETAILED STRATEGIES

People who prefer these strategies divide information into small, intricate fragments. They tend to view issues as sets of components. They split each undertaking into smaller, more specific stages. They concentrate on particulars. Before they make a decision, they need to obtain single, detailed pieces of information. Because they tend to lose sight of the general goal and immerse themselves in particulars; they are sometimes viewed as recalcitrant people, who stand in the way of progress. They need to know detailed sequences of each task and receive information on the starting point, the following stages and the way each step helps them approach their goal. When presenting information, such people enumerate all the details and will often reach the deepest levels of specificity. They talk about steps and stages; if their train of thought is interrupted, they will often go back to the beginning. They overload their memories — only the knowledge of all the components allows them to view the entire issue. They require specific examples and calculations.

Communication suggestions for detail strategies

When talking to such people, one has to divide information into smaller fragments and emphasize the details. Remember that they need to memorize a lot of particulars, so help them by sorting information into sequences and categories. They will become disoriented if there is too much vagueness and generalization or a lack of division into stages or sequences. They cannot be expected to automatically grasp the issue in its entirety, they have difficulties with viewing matters globally.

Key words and expressions used when speaking to such people: *exactly*, *specifically*, *ordinal numbers*, *enumerating steps*, *before*, *after* (*with emphasis*), *plan*, *schedule*, *structure*.

Most frequent types of interference in detail strategies

Being meticulous and focusing on details constitute the features characteristic of people who are interested in others ("others" strategy in the "Self – Others" metaprogram). Such people most often "have to" rather than "are able to" do something (necessity strategy in the "Necessity – Possibility" Metaprogram) and usually try to avoid certain things rather than work toward them ("away" strategies in the "Away – Toward" Metaprogram). Attention to detail is a symptom which very often conceals the speaker's true intentions, fear, unwillingness to accept responsibility or need to be guided (reactive strategy in the Proactive — Reactive Metaprogram).

GLOBAL, GENERAL STRATEGIES

People who use these strategies tend to speak about general matters. They are usually convinced by general ideas and concepts. They concentrate on the general aspects of a project or task. They tend to react most strongly to a global vision. At the beginning, they want to look at the big picture, a general concept and only then do they think about specifics and particulars; if they are excited, they may even forget them. They need a complete structure before they can arrange pieces and position components, configurations and stages. The latter can pose a problem, because they fail to see them clearly and tend to make mistakes. They try to summarize tasks and events. Their thoughts on tasks are general in nature. They use abstract examples, which may be incomprehensible to others. They find it difficult to observe and adhere to procedures. Many of them perform well only if they leave specific aspects of the tasks to others. Such individuals present an entire picture of an issue and provide little to or no details. They describe situations without referring to the sequence of events. It takes them a long time to

learn the correct order of steps in a procedure and they frequently forget them. Usually, when they hear too many details, they will ask you what it all means and what you are aiming at; they might get impatient. If they want to be polite, they might ask you to go on (because they have not heard the general idea).

Communication suggestions for global, general strategies

First present an outline of the issue: the general idea, "the big picture," do not complicate matters. Refrain from introducing too many particulars (such individuals are easily bored). Concentrate on basic, generally outlined issues.

When talking to such people, it is important to remember that they often tend to read between the lines and if they suspect you of something, they will fill the gaps with their own unconfirmed details. They frequently fail to discuss their strategy with you and often will not do things according to your expectations. They tend to display a disdainful attitude towards procedures and rituals.

When speaking to such people, use words such as: *generally*, *in general*, *typically*, *view*, *frame*, *outline*, *ideas*, *concepts*, *general analysis*, *open*, *flexible*, *holistic*, *spontaneous.*

Most frequent types of interference in global, general strategies

Global issues most frequently capture the attention of people who work towards goals (toward strategies in the "Toward – Away" metaprogram), prefer possibility to necessity (possibility strategies in the "Possibility – Necessity" metaprogram) and focused on the self rather than others ("self" strategies in the "Self – Others" metaprogram). The connections between global strategies and source of authority (external or internal) are a problematic issue. They are impossible to identify without asking several specific questions, to which one can hardly receive satisfactory answers.

METAPROGRAM VII: PROACTIVE — REACTIVE

This metaprogram is difficult to identify and undergoes frequent alterations. People with high levels of intelligence and self-knowledge are able to use both strategies. Many aspects of their choices depend on their social environment, goals, intentions, psychological and physical condition, etc.

The "Proactive – Reactive" Metaprogram mostly refers to an individual's attitude towards their environment, rather than particular forms of linguistic expression. Hence, other strategies must also be included in the communication suggestions for this metaprogram and must be taken into account when analyzing your interlocutor's psyche.

PROACTIVE STRATEGIES

Proactive people tend to speak most frequently about doing things; they use verbs and expressions describing action. They initiate actions themselves. They talk a great deal about designing, altering, shaping their environment. They speak this way from the position of a subject connected to the verb describing their activity. They are convinced that their actions have a significant impact on the result. If they fail to achieve it, they often become frustrated.

Proactive people use the following expressions: *I choose/decide/create/can; let's consider other possibilities; I influence events; I'm in control (of my emotions).*

Communication suggestions for proactive strategies

Such people are reluctant to yield to suggestions and are highly sensitive to any forms of manipulation. They can achieve a great deal and make many sacrifices, provided that one does not order them around but skillfully stimulates their ambition. One cannot formulate specific linguistic directives relying solely on the conclusion that one is dealing with a proactive individual. One needs to refer to the types of interference between proactive strategies and other strategy "sets."

Most frequent types of interference in proactive strategies

Proactive people are naturally stimulated by strategies focused on aiming towards a goal and searching for possibilities (see "toward" and "possibility" strategies in the "Toward – Away" Metaprogram and the "Possibility – Necessity" Metaprogram. Similarly to people with dominating "self" strategy, they are highly capable of taking risks ("Toward – Away" Metaprogram). Such people are capable of taking a great amount of risk, but when they become responsible for others, they may become overly cautious ("Toward – Away" Metaprogram). Most frequently, proactive people rely on external

sources of authority, which can sometimes be a hindrance because they have to ask others about the results of their work (external strategies). Proactive people engage their efforts in significant, clearly outlined goals (global strategies) but may lose sight of them along the way, so one needs to remind them about this distant, desired goal.

REACTIVE STRATEGIES

People who use these strategies speak a lot about expectations, take a long time to make decisions and talk to others about their thoughts, ruminations and doubts. Their actions are determined by the environment. Such individuals wait for something or someone to make them take action. They focus on analyzing and rethinking issues. They do not make decisions or take action. Very often, making an independent decision is perceived as torture. They formulate their sentences in the passive voice. They do not like to use simple, direct orders. Their utterances tend to be vague. They find it difficult to describe and identify states and thoughts. They replace verbs with gerunds. Instead of talking about themselves, they replace the subject of the sentence with a generality, for instance the word "human." Such linguistic patterns are indicative of helplessness, a lack of influence on the surrounding world and an inability to shape one's experiences. Such people seem to be controlled by their environment or by things they have imagined. When interacting with other people, they often become overwhelmed by emotions. They seem to suffer from a lack of personal potential.

Reactive people use the following expressions: *I can't; I'm not able to; I can't help it; he bosses me around; he makes me angry; he exasperates me*,;*if only; I don't have time/ money/talent*, etc.

Communication suggestions for reactive strategies

When talking to reactive people, one ought to adopt the role of a diagnostician. Acquiring a good rapport with one's interlocutor is key. It is advisable to approach issues gradually, guide the reactive person from one stage to the next, like a child that is being taught to climb the stairs.

Most frequent types of interference in reactive strategies

When interacting with reactive individuals, it is important to recognize other strategies that they use, especially those saturated with strong obstinacy.

Action strategies of reactive people are stimulated by the external focus of their attention, and their aim is to avoid and notice differences rather than similarities (external, away and difference strategies). Reactive people do not have a strong sense of their own identity, they feel uncomfortable when they have to establish a boundary between their self and the other person. That is why such people do not have their own clearly defined "Self –Others" metaprogram.

It has been observed that prolonged suffering, isolation, disease, witnessing a tragedy in the life of a close person can turn even the most energetic individual into a reactive person.

METAPROGRAM VIII: IN-TIME – THROUGH-TIME

This metaprogram refers to a person's attitude towards time. It presents the manner of organizing and the ability of understanding one's own time and the understanding of time by other people. It allows one to realize the perception of the passage of time or the perception of time which has been sacrificed for the fulfillment of a specific task or achievement of a specific goal. Temporal strategies differ from the ones discussed previously in that we can decode them only in exercises referring to imagination or through observation of other people's behavior. Recognized linguistic patterns are of no assistance here.

CHARACTERISTICS OF PEOPLE WHO USE IN-TIME STRATEGIES:

- They perceive time as moving in a linear fashion, either forward (present, future) or back (past).
- They tend to view events as a set of unconnected episodes.
- When they seek access to memories, they revert back to one memory and identify with it, become immersed in it. Memories are experienced emotionally with the entirety of their being.
- Frequently, they are less aware of the duration of certain events, of the passage of time and can easily become "trapped in the now." They may find it hard to conclude a meeting.
- They tend to make decisions quickly.
- They tend to be late because they become easily entangled in things happening in the present, and they lose their sense of time.

- They tend to treat work and play in the same manner.
- They tend to show more interest at the initial stage of the project rather than along its further progress.
- They can feel the need to conclude an issue quickly, but with time this necessity becomes less important.

CHARACTERISTICS OF THE PEOPLE WHO USE THROUGH-TIME STRATEGIES:

- They view time from the left (the past) to the right (the future)
- They tend to view events as series of connected episodes. Time is linear, continuous and uninterrupted. They are conscious of the existence of time.
- They tend to assemble several experiences into one category – *Gestalt* (they construct one memory to represent all memories of a certain type), which may cause them difficulties in recalling a specific situation. They refer to memories like actors on a movie set — emotionally, they feel as though they are on the outside.
- Making decisions is usually a long, arduous process for them.
- They are punctual.
- They draw a firm line between the time spent working and the time spent playing.
- They engage slowly in undertaken issues and are truly interested in the advanced stages of a given task.
- They have a strong need to conclude issues and tasks "through time."

Most frequent types of interference in the "In-Time — Through-Time" Metaprogram

It ought to be emphasized that in practice, metaprograms VII: Proactive — Reactive and VIII: In-Time — Thru-Time are usually modified by our own will. This phenomenon may result in greater or lesser susceptibility to external manipulation. We might encounter people who will treat suggested

changes as impositions, or individuals who will expect us to make such suggestions. Many people may offer resistance and become suspicious if they assume (either correctly or not) that our attempts to convince them to take certain actions or cease them and our suggestions concerning temporal discipline arise from our own self-interest.

RESEARCH ON METAPROGRAMS AND STRATEGIES USED WITHIN THEM

The concept of metaprograms fills a previously vacant area of research about the matter of languages, which extends from Noam Chomsky's generative grammar and analyses of the cultural determinant of speech. It was initially thought that the concept discussed can only be used with reference to the English language, and its critics went as far as to limit its usefulness to managerial communities in California. However, with certain modifications, this concept can in fact be adapted to the majority of Indo-European languages. The modifications would encompass: linguistic expressiveness of the metaprograms, their internal contradiction, mutual interference of strategies and expressions representing the given strategies, as well as corresponding communication suggestions.

Strategies can be analyzed through psychological introspection and detailed records of the conducted conversations. We can use hypnotic trance to uncover events which led the person to adopting a certain attitude and determined their not entirely conscious adherence to a specific configuration of strategies. We can also make audio recordings of people's utterances (for instance public speeches) and then play the role of a laboratory technician, leaning over a sample of blood plasma, and meticulously count the frequency of certain words or expressions. This frequency allows us to specify the strategies which determine the thoughts and actions of the analyzed individuals.

STRATEGY	RECOGNIZABLE EXPRESSIONS	COMMUNICATION SUGGESTIONS	INTERFERENCE
Away	Expressions used: *I will avoid*; *I stay away from*; *I'm getting rid of*; *there is no issue*; *I don't want to*; *I don't like*; *I don't want it to happen*; *I will get rid of.*	Psychological instructions: establish what they do not want and what they would like to avoid; emphasize that you can help them avoid the things they do not want; foresee potential problems; assure them that potential problems can be solved; help them specify what they really want, being aware of the fact that for them it is truly difficult.	Necessity Internal Reactive
Toward	Expressions used: *I want*; *I will achieve*; *I will get*; *what I have*; *I have gathered around me*; indicate the elitism of their environment.	When speaking to such people, emphasize their goals and things they want to achieve; emphasize that the things you are doing will help them achieve what they want; remember they tend to ignore potential problems, or even delegate them to others; they blame others for failures.	Proactive External Possibility
Internal	Expressions used: *I have decided*; *I just know it*; *I feel it*, etc. May also say: *I feel this is right*; *I feel it inside*; *this makes me happy.*	In order to convince such people of something, tell them: *I cannot persuade you to do anything*; *only you can decide*; *only you can make the best decision for yourself*; *what you decide is entirely up to you.*	Away

STRATEGY	RECOGNIZABLE EXPRESSIONS	COMMUNICATION SUGGESTIONS	INTERFERENCE
External	They say they know something because someone told them. They heard something in the media, read something in a book or newspaper, so they use the following expressions: *someone has to tell me*; *facts clearly show that*; *scientists have proven*; *I heard about it*; *my information is up to date I'm interested in this, so I know*; *I will be praised*; *I have been noticed*; *I have captured their attention*; *I expect a reward*; *it's just the way it is.*	When trying to convince such people, tell them: *Others think that…* Present numbers, facts, scientific data, statistics, for instance say: *research shows.* Provide a lot of positive feedback, carefully praise them for giving you their attention. Constantly inform them about their progress. Suggest to your partner to talk to people who have already made a decision.	Towards
Sameness	Expressions used: *the same*; *just like*; *similar to*; *I stand by my opinion because…*	When speaking to such people, one ought to emphasize common factors, concentrate on similarities between situations and desires. One needs to show them that both parties have the same intentions, goals, etc.	Difference
Sameness with difference in the background	Expressions used: *the same, but*; *better*; *more*; *less*; *except for*; *gradually*; *however*; *but it is almost the same*; *in general*; *the same*; *only…*	First emphasize similarities, then notice past or future changes. When noticing differences, give them an evolutionary, gradual character; optimally, transfer these differences to tasks which can be completed in the future.	Sameness with difference in the background
Difference	Words and expressions indicating opposition: *day and night*; *old/new*; *changed*; *different*; *revolutionary*; *unique*; *radical.*	When speaking to such people, emphasize differences between things. Issues presented to them should be described as innovative, revolutionary, unusual, rare, radically altered, different from…	Sameness

STRATEGY	RECOGNIZABLE EXPRESSIONS	COMMUNICATION SUGGESTIONS	INTERFERENCE
Difference with sameness in the background	Expressions used: *in general*; *but*; *it has changed*; *although.*	First, one ought to emphasize differences, and then gradually and seamlessly direct their attention toward similarities and common features. One ought to concentrate on changes, new, creative solutions, promise success based on previous experiences.	Sameness with difference in the background
Self	They construct their utterances trying to veil the question: *what do I get out of this*; *could I get out of this.*	Emphasize potential advantages. When speaking to such people, remember that their 'self' is an 'abyss'. Remember that they can be praised and complemented more than others.	Toward Difference Proactive Possibility
Others	Speakers try to recreate the thought processes of other people within themselves, sometimes distorting them. Their actions are aimed at achieving inner satisfaction by working for others. Because they value other people's reactions, they focus their attention on trying to predict them. They try to create situations (sometimes artificial) that enable them to do something nice for the other person.	When speaking to such people, emphasize frequently how glad you are that they exist; express your appreciation of all that they have done, how many advantages their presence, efforts and care have brought you.	Necessity Reactive Sameness Away

STRATEGY	RECOGNIZABLE EXPRESSIONS	COMMUNICATION SUGGESTIONS	INTERFERENCE
Necessity	Expressions used: *I have to*; *I should*; *it is required*; *one ought to*; *it just happened*; *someone or something is making me do...*; *I did it because I had to.*	Expressions to use in conversations with such people: *that is the way it is always/usually done.* Key words: *procedure*, *step by step*, *reliable strategy*, *known method*, *the right path.*	External (connected with Internal) Others Difference
Possibility	Expressions used: *I want / choose / hope / wish / can / am able to*; *it is possible.*	Key words: *possibilities*, *choices*, *alternatives*, *big picture*, *other ways.*	Sameness Self External (connected with Internal)
Detail	Recognizable in concrete utterances. It is difficult to enumerate specific expressions because emphasis or lack thereof is determined by the cultural context.	Use expressions such as: *exactly*, *specifically*, *ordinal numbers*, *enumerating steps*, *before*, *after* (with emphasis), *plan*, *schedule*, *structure.*	Others Necessity Away Reactive
Global	Recognizable in concrete utterances. It is difficult to enumerate specific expressions because emphasis or lack thereof is determined by the cultural context.	Use words such as: *generally*, *in general*, *typically*, *view*, *frame*, *outline*, *ideas*, *concepts*, *general analysis*, *open*, *flexible*, *holistic*, *spontaneous.*	Proactive Toward Possibility Self

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COMMUNICATION SYSTEM OF SCUBA DIVERS

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1. INTRODUCTION

This article falls within the scope of my scientific interests, focused for many years now on the conventional language of gestures. My interests have been reflected in several works, wherein I have discussed gestures as an independent tool of communication as well as an auxiliary tool of communication (e.g. Jarząbek 1989, Jarząbek 1994, Jarząbek 2002a, Jarząbek 2002b). In those publications I have also included a rich literature on the subject. The topic of the abovementioned works was not only the description of various gestures and gestic codes. I have also attempted to show therein in what circumstances gestures "take the floor" in interpersonal communication.

The object of analysis in this text is a gestic code, which so far has not been described in Polish linguistic or semiotic literature, i.e. the gestic code of scuba divers, which is used by them to communicate underwater. Moreover, this topic has neither been described in more detail by either Polish or foreign authors of works on scuba diving. Works of such authors mainly include drawings of gestures with descriptions (e.g. Gussmann 1984: 95; Komisja Działalności Podwodnej PTTK1999: 53, 82-83) or scant information on selected gestures (e.g. Przylipiak, Torbus 1981: 570-571; Macke, Kuszewski, Zieleniec 1989: 162-163). Detailed information on the functioning of the gestic code are obtained by a scuba diver in the course of his training conducted by a highly specialised team of instructors.

I have obtained the material for this article in three centres: the Upper-Silesia Dive Centre in Bytom (Górnośląskie Centrum Nurkowe w Bytomiu), KDP PTTK All-Poland Underwater Training Centre in Warsaw (Ogólnopolskie Centrum Szkolenia Podwodnego KDP PTTK w Warszawie) and the

Scuba Diver's Club at the Polish Defence League in Dąbrowa Górnicza (Klub Płetwonurka przy LOK w Dąbrowie Górniczej). In those centres I was not only provided with many books on underwater activity, but I also had the chance to speak to the staff who are training the divers.

In this text I will discuss the specificity of the gestic code and the situations, when it is used as a tool of communication. I also wanted to emphasize that mastering the gestures comprised in underwater sign language flawlessly is often the guarantee of safety and even the life of a scuba diver.

2. SCUBA DIVERS FUNCTIONING UNDER WATER AND THEIR TRAINING

In ordinary conditions a person reacts to the stimuli reaching him with the sense of scent, taste, touch, hearing and sight. When going underwater, a scuba diver finds himself in an alien environment, whose physical and chemical features are different from those of the atmosphere. For this reason, all of his senses and internal organs are forced to function in changed and usually less favourable conditions (Gussmann 1984: 19). A person located underwater cannot react to stimuli either with scent or with taste. Little can be discovered through touch, since the areas with which the diver interacts are slippery. Besides, after a while underwater skin undergoes certain changes and the fingertips loose sensitivity (Komisja Działalności Podwodnej PTTK1999: 24). It turns out that also human hearing is governed by different rules underwater. On one hand, in this environment sounds reach the human ear much faster than in the air. They may also be heard from a greater distance. On the other hand, however, a diver finds it difficult to specify the direction from which the sound comes from, and the distance from the source of the sound. Moreover, sounds reach both ears simultaneously. This gives the impression that one is constantly in the centre of the sound (Komisja Działalności Podwodnej PTTK1999: 54, 67). A very important sense in these conditions — often the most important one – is sight. It is isolated from the water environment thanks to a special mask. A diver puts it on when going underwater. Seeing underwater is however often not perfect. Objects seem closer and bigger by ca. one-third. Moreover, water absorbs light and this phenomenon intensifies with depth (Komisja Działalności Podwodnej PTTK1999: 66-67).

Faced with a considerably limited role of human senses, which need to function in altered conditions, the types of signs used to communicate underwater depends on the divers' equipment. The so-called frogman, also

described as a heavy diver, uses (as the name itself indicates) heavy equipment, which includes i.a. a helmet which makes it possible not only to get air to the helmet, but also to install radio communication — wire or wireless. Thanks to this option the diver is able to speak and has the chance to receive verbal communications from headquarters. Sometimes a frogman communicates with headquarters with the use of a signal line and items capable of generating an acoustic wave underwater.

The so-called light diver, also called the scuba diver, does not put on a helmet before going underwater, nor does he, as the frogman does, put on shoes with heavy inserts in them, since the scuba diver has flippers on his feet. His face is protected by a mask, which only covers the eyes and the nose. Yet, in this mask it is impossible to install equipment for radio communication, which would enable the diver to hear, unless the diver uses a full-face mask or electronic solutions. A scuba diver is also unable to speak, since he has the mouthpiece of the air pack in his mouth. In such a situation, the scuba diver communicates with headquarters with the use of a signal line or agreed sound signs generated by means of hitting some object with a piece of metal. Both a frogman, as well as a scuba diver need to communicate not only with headquarters, which is above the water level, but also with other divers underwater. Divers use optical signs, based on conventionalised gestures, to communicate with each other underwater. To a greater extent these are used by scuba divers, although they may also be used as a communication tool for a scuba diver with a frogman, and to a small extent, by both these types of divers with the surface.

Scuba divers perform many tasks underwater. They:

- locate and search sank ship wrecks,
- work on the construction of dams and hydroelectric plants,
- renovate submerged areas of ships,
- help with the construction of pontoon bridges,
- penetrate caves,
- are hired as pyrotechnists,
- examine the life of underwater flora and fauna,
- participate in underwater hunts,

- are used for military purposes (such as reconnaissance, transportation of battle groups to the shore, mining, surveillance of the enemy).

Diving is also a sport discipline. It may be done purely recreationally. Irrespective of the reason why a man goes underwater, the mere fact of his presence at great depths is connected with danger — one unfortunate accident may cost a life. Therefore, when interacting with the water environment, a person should be sure that their heath and training are sufficient to complete a given task. Above all, a diver needs to know the basics of physics and the physiology of diving, the methods of decompression time calculation and safety provisions (Gussmann 1984: 93).

Patronage over divers training, both professionals and amateurs, is held by international organizations.[1] One of the most prestigious organisations is Confédération Mondiale des Activités Subaquatiques, i.e. World Underwater Federation, in short CMAS. It was established in 1959 and it affiliates state federations and associations of scuba divers. It is also, among others, responsible for maintaining a relevant standard for trainings, by giving its name to them, as well as granting licenses to undertake work underwater and for the development of security provisions and provisions of law applicable for divers. Presently, CMAS affiliated federations and associations of scuba divers are found in over one hundred countries from all over the world, uniting thousands of diving clubs. Poland is represented in this international organisation by Komisja Działalności Podwodnej Polskiego Towarzystwa Turystyczno-Krajoznawczego (the Underwater Activity Commission of the Polish Tourist and Sightseeing Society — KDP PTTK in short) with its registered seat in Warsaw. Presently, this commission has registered and affiliated over 170 clubs, diving centres and other organizational units dealing with diving (Komisja Działalności Podwodnej PTTK1999: 12). In Poland, apart from the KDP PTTK, divers are also organized in units at the Polish Defence League (Macke, Kuszewski, Zieleniec 1989: 298).

Diving training is a process composed of several phases. At particular stages thereof, the scuba diver obtains not only knowledge, but also a worldwide-recognized diploma (degree). One of the most important parts of the training is to learn how to communicate underwater with the use of signs based on gestures.

3. UNDERWATER COMMUNICATION

[1]This has been described e.g. by Driessel 1999: 8-10; Dominik, Porada 1999: 45-47.

It needs to be emphasized that due to safety reasons, diving should always be a team activity. Therefore, when going underwater, scuba divers need to be in sight at all times and need to maintain visual contact with their partners. In no circumstances should one dive alone or leave the group. The minimum number of diving team members is two. It is the task of the partners to observe and help each other, and should a need arise, to call for help. If however, a scuba diver underwater loses touch with his partner or his group, then he should search the area around him for 30 seconds and then emerge overwater, observing thereby the basic safety principles.

There are several underwater communication systems worldwide. In Poland the most popular is the system developed and recommended by CMAS — it shall also be discussed in this paper. Before diving in a new team, each scuba diver should make sure that his partners know and understand the gestic signs, which he uses. Thanks to that it is possible to avoid misunderstandings underwater, which might be a cause of danger.

Each scuba diver is aware that the lack of an answer to an agreed sign means danger, requiring immediate help. For this reason, the sign most welcome by scuba divers is the sign meaning *OK*, i.e. *Everything is alright.* In order to communicate this the sender rises in front of him at the level of the neck or the head his right hand whose two fingers, the index finger and the thumb are joined at the fingertips, and the remaining fingers are slightly bent. This movement may also replace the question: *Is everything ok?* This sign is used both when the scuba diver is entirely underwater and when the diver's head is overwater. Certainly, in order to see this sign the recipient needs to be close to the sender. For this reason another sign functions overwater, which has the same contents: it consists in placing both hands over the head and joining them with the fingertips, or also, when one hand is occupied, raising one hand over the head and resting its fingers on the top of the head. This variation may be used, if there is a greater distance between the communicating divers.

From amongst the signs used when the diver is not fully underwater, we may mention one other sign: raising a hand and hitting the water surface with an open hand. This sign means danger and is an appeal for immediate help. It replaces the call: *Help!*

It is worth noting that a part of the gestic signs made underwater concerns the scuba diver's safety. These are safety signs. And so, raising an arm at the level of the neck bent at the elbow, with the hand turned with the internal side downwards and the fingertips turned to the side and hitting the neck with the internal edge of the hand signifies: *Lack of air.*

This gesture means not only that the diver might suffocate but also that he is lacking oxygen in his air pack or that the air pack has been damaged or that the scuba diver does not have at their disposal an alternative source of air. The partner, upon seeing such sign is obliged to make available to the sender his own alternative source of air, as well as to commence emerging overwater together.

Raising a clenched fist at the level of the ear turned with the inner side to the recipient communicates: *I opened the reserve* or *I am on the reserve.* It needs to be explained here that most of the presently manufactured air packs are equipped with an additional safety device, popularly called the reserve: it signals that eighty percent of air from the air pack has run out. The remaining twenty percent is the so-called reserve air. Therefore, if one of the scuba divers makes the abovementioned sign, this is an order for the entire group to emerge to the surface.[2] It needs to be added that sometimes the scuba diver is unable to open the reserve equipment on his own. In such cases he lowers his arm with a clenched fist, which for the partner communicates: *Open my reserve.*

Some gestic signs concern the feelings and indispositions of the scuba diver. And so, raising a hand to the level of the chest with the fingers spread out, and turned with the internal side to the ground and with the fingers towards the recipient, and then quickly alternating by firstly raising one and then the other edge of the hand signalizes: *Something is not right.* Making circles at the side of the head with the index and middle finger pointing upwards (with the other fingers bent) means *dizziness.* Crossing both forearms at the level of the chest and rubbing the arms with the hands is the equivalent of the following words: *I am cold.* These signs when received underwater from the partner are an order to emerge from under the water together.

Some signs may be used both when the safety of the diver is concerned, but also when there is no actual threat. Diving instructors call these signs informative signs. In fact they make it easier for the scuba divers to function under water and to perform various activities. Raising a clenched fist at the level of the chest with the thumb sticking upwards is the equivalent of the word: *Up.* Communicating an opposite message, i.e.: *Down,* requires that the sender raises a clenched fist to the level of the chest and points his thumb

[2]The value of the pressure in the bottle is shown by the manometer, which each scuba diver has on his hand. The pressure of the compressed air in the bottle is usually equal to 200 atmospheres. A scuba diver should start emerging, when the bottle has at least 50 atmospheres left.

downwards. Full understanding of both of these signs is obviously facilitated by the situational context. If the sender wants the recipient to remain at the same depth, he raises his hand to the level of his chest, the hand turned with the inner side downwards, the fingertips pointing towards the recipient, and then he moves his hand from side to side horizontally. Touching the thumb and the fingertips of the same hand, the hand turned with the back of the hand towards the ground, and then energetic straightening of all fingers and spreading them replaces the words: *I don't understand.* Raising straight arms to the sides — index fingers of both hands straight and the remaining fingers bent, and then joining the index fingers (at their entire length) at the level of the waist means: *Fall in!* When the recipient joins at the level of the chest the inner side of one hand with the inner side of the other hand, he wishes to "say" to the partner: *Grab my hand.* Making circles at the level of the chest with clenched fists directed towards the body and then moving the hands a bit further from the body means: *Tie it. Fasten it.*

Some conventional signs imitate those, which are used in everyday life by ordinary people. And so, pointing the index finger towards one's own chest means: *me.* Pointing the index finger towards another diver or some object is the equivalent of the pronouns: *you, he* or the pronoun *this.* Raising a forearm, with the edge of the hand directing outwards, and then lowering it to the horizontal level signifies the direction. This motion may therefore mean *there.* Making several arcs with a hand whose back is directed downward towards and away from the body replaces the order: *Get closer.* Raising one's arm in front with the inner side of the hand turned towards the addressee and tilting it from side to side expresses negation.

There are several more conventional gestures which to a certain extent mimic the gestures seen in everyday life. Raising an arm over one's head with the inner side of the hand turned towards the recipient replaces the following words: *stop, attention,* and is for the recipient an order to stop moving or stop what is being done at that time. The gestic equivalent of the words: *easy, slow down* – is raising a forearm to the level of the chest, with the hand turned with the inner side downwards, and making several moves up and down. In order to "say": *faster! hurry up!,* the scuba diver rises his right forearm in front of him, with the back of the hand towards the recipient, and makes several minor, circular moves with the hand.

Underwater, the scuba divers sometimes use gestures which are the equivalents of certain numerals. What is interesting, all of these gestures are made with one hand. This undoubtedly results from the fact that he scuba diver needs to have his other hand free in order to do other things with it.

And so, joining the tip of the thumb with the tip of the index finger, with the other fingers rounded, means *zero.* When the sender points the index finger upwards and presses the remaining bent fingers with the thumb, then undoubtedly he wants to express *one.* Raising the index and the middle finger and pressing the ring and little finger with the thumb means *two.* In order to "say" *three,* the scuba diver points thee fingers upwards: the middle finger, the index finger and the thumb — the remaining fingers are bent. The gestic equivalent of the number *four* is pointing upwards four spread fingers: the index finger, the middle finger, the ring finger and the little finger and bending the thumb to the palm. Rising all spread fingers is the equivalent of the number *five.* Gestures replacing the numerals from six to nine are very similar to the previous ones. Pointing upwards three fingers: the index finger, the middle finger and the ring finger, and joining the tip of the thumb and of the little finger means *six.* Numeral *seven* is represented by rising of the index, middle and the little finger and joining the tips of the ring finger and the thumb. Wanting to express *eight,* the sender needs to rise the following fingers upwards: the index finger, the ring finger and the little finger and to join the tips of the thumb and the middle finger. Numeral *nine* is shown by pointing the middle, the ring and the little finger upwards and pressing the tip of the thumb with the tip of the index finger. When making the gestures replacing all of the abovementioned numerals, the hand of the sender is pointing the fingers upwards with the inner side thereof turned to the recipient. The sender's fingers pointing upwards are spread.

It may be considered to be obvious that diving takes place not only during the day and not only in clear waters. Some tasks are performed by the scuba divers at night, as well as in dark waters. In such a situation partners communicate with each other with the use of a flash light, with which they light themselves and the sign made, yet they never turn the light at the partner. During night diving all the above day signs apply. Apart from them the scuba diver may also use certain new night signs, made with the use of the flash light. In such a case the flashlight is a kind of an extension of the hand. Making a circle with the face of the flashlight means *OK,* i.e. *Everything's alright.* Rising and lowering the light of the flashlight vertically replaces the words: *Something is not right.* The two latter signs are relatively big, and therefore it is easier to notice them.

Each scuba diver receiving a gestic sign is obliged to confirm that he has understood it, by repeating the sign sent. This rule applies in particular to the signs meaning: *Stop; Up; Down.* In case of poor visibility, when there is a risk that a sign will be misunderstood, the sign is read by determining

the position of the sender's hand, by touching the sender's hand.

As I was trying to emphasize, not all gestic signs used by scuba divers have the same rank. Probably for this reason, in the booklet, which each scuba diver always has on him, there are pictures of some obligatory signs and some supplementary signs — recommended by CMAS. Obligatory signs express the following contents: *OK — Everything's alright; Up; Down; I don't have air; Open my reserve; Something's not right; Help; I'm on the reserve.* The supplementary signs replace such words and sentences as: *I; you; Fall in!; Stop — attention; My head is spinning; Tie up; Fix it up* (Komisja Działalności Podwodnej PTTK 1998).

Underwater gestic signs are rarely used in isolation (solo). In the course of communication with another scuba diver or with a group of scuba divers a sign is usually combined with another sign or other signs. And so, the gesture meaning: *Up* or *Down* is usually used by the sender accompanied with the gesture indicating *me* or *you*. Thanks to that "sentences" can be created: *I swim upwards; I swim downwards; You swim upwards.* Precise understanding of the entire message is enabled by the context in which the signs are used.

"Utterances" composed of joint gestures are sometimes quite long. With the use of five conventionalised gestures, recommended by CMAS, a diving instructor may, for example, "say" to his pupils: *Fall in! You stay at the same depth, you go deeper.*

It is not difficult to figure out that during the exchange of joint signs there takes place a kind of dialogue between the scuba divers. It might "look" as follows:

- *Is everything alright with you?* — (signs: *you + everything's alright*);
- *It is cold* (signs: *me + I am cold*);
- *Are we going up?* (signs: *me + you + up*);
- *No* (sign: *no*).

From the talks conducted by me with the teaching staff it was revealed that underwater divers also use other gestures than those recommended by CMAS. Scuba divers often use conventionalised gestures which accompany the everyday language communication of ordinary people. These gestures are understandable of course, but only in the particular language-territorial-cultural area to which the scuba diver belongs, and may prove useless in contacts with scuba divers from a different area.

It is worth emphasizing that sometimes when underwater it is possible to see gestures which are of local character and are connected for example with performance of a particular work.

Diving instructors emphasize that it is not only the conventionalised hand movements that participate in communication of various information. A lot can be "read" by observing the diver's eyes. They above all give away the emotional conditions of scuba divers. For this reason they sometimes provide more information about the diver than one might expect. The expression of the eyes, when oblivious or not understanding, of course, does not serve particular purposes, immediately communicating something or reaching an understanding with another scuba diver. It however provides a lot of information to the one looking at them. The instructors claim that they are able to "read like an open book" the eyes of their pupils.

4. SUMMARY AND CONCLUSIONS

Communication of scuba divers underwater is possible thanks to conventionalised signs made with the use of the hands. Whole arms, forearms, hands and particular fingers take part in this communication. They are placed very precisely with respect to each other and to the remaining parts of the sender's body. Many signs are made with one hand — right or left.

The gestic code, developed by the World Underwater Federation, includes the following signs:

- safety signs and signs which cannot be directly connected with the safety of the scuba diver, sometimes called the informational signs,
- signs used under- and overwater;
- daytime and night time signs,
- obligatory and supplementary signs.

The signs of the scuba divers based on gestures have many functions:

- they signal danger,
- they make it possible to "call" for help,
- they facilitate the provision of help,
- they facilitate safety movement underwater,

- they provide conditions for performance of various actions and tasks underwater.

The signs discussed in this paper are made with the use of hands and received with the use of sight. Therefore, they are optical signs. They take over, in a clearly specified scope, the function of phonic signs communicated with the use of articulation, the organs and messages received by hearing. Gestic signs are in this case equivalents of selected words, elliptical sentences, as well as shorter or longer indicative, imperative or interrogative sentences.

In the opinion of diving instructors, there is no instance when diving should take place in avoidance of the conventionalised gestures. The fact that one of the scuba divers "says" nothing underwater should draw the partner's attention. "Silence" in this case is often proof that something is not right.

All gestic signs should be made very meticulously and for as long as they are understood. Misunderstanding's a partner's gesture usually results in a troublesome or even dangerous situation. In extreme case such a situation may cost the diver's life. Thus the communicative role of these signs cannot be underestimated.

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