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PARADOX RESOLUTION

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If we set aside cases where a statement is called paradoxical merely because it is surprising and clashes with common sense or previously accepted scientific theory (i.e., cases such as the opinion that Einstein's theory is paradoxical, common among our great grandfathers) then what remains on the battlefield are apparently valid inferences that lead from acceptable premises to unacceptable conclusions. The phrase *on the battlefield* seems apt because we tend to regard paradoxes as painful blows to human reason. We feel they must be parried or eliminated by means of iron-clad solutions. Often, different proposals to solve a single paradox enter into fierce competition.

Roughly speaking, paradox solutions fall into the following four categories: (A) Those that justify the thesis that the conclusion merely appears to be unacceptable when in fact it is quite natural and harmless; (B) Those that show that, appearances to the contrary notwithstanding, at least one of the steps in the inference is logically invalid; (C) Those that prove that at least one of the premises, which occurs explicitly or implicitly in the inference and seems to be acceptable, is actually false; the falsity of such a premise is sometimes argued for independently of the paradox, but sometimes the paradox itself is treated as a proof by contradiction of the premise's falsity; and (D) Those that show that what was taken to be an acceptable premise is semantically defective or, indeed, completely nonsensical (is not a statement), and thus cannot serve as a premise for any reasoning.

As an example of a type-(A) solution consider of how one may handle a version of the liar paradox attributed to Eubulides. Suppose, as this version invites us to, that the Cretan Epimenides says that all Cretans lie; from the

assumption that he is telling the truth it follows that he is lying. Appealing to the principle of charity, we gloss over the difference in meaning between *to lie* and *not to tell the truth* and assume that what the sentence "All Cretans lie" is meant to say is that no Cretan ever tells the truth. However, the conclusion of this inference merely says that Epimenides cannot truthfully assert that all Cretans are always lying. This conclusion should not be surprising, for if no Cretan ever tells the truth then no statement made by a Cretan can be true. The conclusion is harmless because from the assumption that Epimenides is not telling the truth it does not follow that he is telling the truth, ergo we do not get a contradiction.

Solution type (B) is difficult to apply because the authors of well-known paradoxes had usually taken great care to make their inferences logically valid. The only exception I know of is an analysis of Zeno's paradox of the arrow. According to this paradox, the arrow cannot be in motion, since, at every given time, it is located at a particular place. On the analysis in question, Zeno's reasoning involves a logically invalid inference from a statement of the form $\forall x \exists y \mathrm{R}(x, y)$ to a statement of the form $\exists y \forall x \mathrm{R}(x, y)$: i.e., from "At every moment of its flight the arrow is located at a particular place" to "There is a place at which the arrow is located at every moment of its flight." However, this interpretation is quite unique in the literature devoted to the arrow paradox (see Ajdukiewicz 1965).

We employ type-(C) solutions to handle some other paradoxes by Zeno of Elea, which were allegedly intended to prove the impossibility of motion. One of those paradoxes, known as "Achilles and the Tortoise," leads to the conclusion that one runner (Achilles) will never overtake another runner who has had a head start (the tortoise) as long as the latter continues running, no matter how slowly. This conclusion is premised on the claim that, before Achilles has reached the point where the tortoise was a moment ago, the tortoise will have already moved to another place further down the track; this will happen over and over again infinitely many times. The fallacy rests on the implicitly assumed general claim the members of any infinite sequence of non-zero time intervals must add up to eternity; in reality, their sum can be finite, which solves the paradox.

We know that the premise under discussion is false from the mathematical theory of infinite series, independently of the paradoxical nature of Zeno's conclusion. As an example of a type-(C) solution where the paradox itself is used to disprove one of its premises consider the way we analyze the following reasoning. Suppose that an aunt likes all those, and only those, members of her family who do not like themselves (or that a barber shaves

all those, and only those, denizens of his town who do not shave themselves; both versions of this paradox are due to an unknown author or authors). Every possible answer to the question "Does the aunt like herself?" implies the answer's own denial; consequently, the final conclusion is a statement of the form $p \wedge \sim p$. We solve the paradox by pointing out that it constitutes a proof by contradiction of the claim that no such aunt can exist in any family (and no such barber can exist in any town), for what the paradox shows is that the assumption of the existence of such an aunt or barber leads to contradiction.

The universally accepted solution to Russell's antinomy and the solutions to several other paradoxes in set theory are similar in character: all these paradoxes are now treated as proofs of the inexistence of certain sets. But the decision to treat them so was incomparably more dramatic than the decision to eliminate from our ontology the eccentric aunt or the monopolist barber. The realization that we need to abandon the assumption that every open sentence determines a set of objects that satisfy it had shaken the foundations of mathematics; it was also a painful reminder that our intuitions are not as trustworthy as we would like them to be.

Solutions of type (D) recommend themselves when we are confronted with paradoxes that clearly rely on the lexical or syntactic ambiguity of sentences or on the widespread vagueness of natural language expressions. Eubulides's paradox of the heap is a case in point. It is easy to agree that one grain of sand does not make a heap and that the difference of a single grain cannot determine whether or not something is a heap. But if you drop grains of sand one by one in the same place, sooner or later you will have made a heap. How is that possible if, as we have agreed, we cannot make a heap by adding a single grain to something that is not a heap? We reply by pointing to the vagueness of the word *heap*, a semantic defect of sorts (one that the word *heap* shares with many other words of our language) which makes it impossible for us to use the word in a consistent manner in some inferences — such as the one above.

We use the same kind of solution to tackle the modern version of the liar paradox, which is incomparably more troublesome than the original version discussed above. It is represented by the following reasoning. Let the letter S stand for the statement:

Statement S is false.

Now ask: Is S is true? What we get is a contradiction, for every answer implies its own denial (given the dichotomy of truth and falsehood): if S is true then S is false, and if it's false then it's true.

It is not easy to identify a defect in the notions of truth and falsehood (as well as other semantic notions, including that of reference, which yields a similar paradox) that we could blame for the contradiction. And it is not easy to simply stop using these notions as nonsensical — as some authors would have us do — or to restrict their use to selected contexts, of which we would be confident that they did not engender a contradiction. Both these solutions seem too radical. And what I have in mind are not the practical problems with enforcing such restrictions in philosophy or everyday communication if one is confronted with people who do not feel particularly inclined to follow the rules of logic; rather, the trouble is that accepting such strictures might damage some discourses the logician is inclined to treat as cognitively valuable, especially now that we know, thanks to Tarski, that truth is definable for many of them.

The common feature of most (variously formulated) solutions to the liar paradox is that they treat semantic notions as systematically syntactically ambiguous. What we actually have, instead of two notions "true" and "false," are infinite families of notions: "true_0," "true_1," "true_2,"..., "false_0," "false_1," "false_2,"..., and, furthermore, when you have a sentence predicating truth or falsity about a sentence that itself features "true" or "false" with the subscript x, syntactic coherence demands that it contain the appropriate term with the superscript $x + 1$. In light of this requirement, what we have marked as S above is not a well-formed sentence of any language. The right answer to the question "Is an utterance that attributes falsity_0 to itself true_1 or false_1?" is "No, such an utterance makes no sense." This answer has no paradoxical consequences (the answer that the utterance is false_1 would not be paradoxical either, though it would be false_2).

Of course, this kind of solution is not a description of the actual use of semantic concepts in any of the previously existing languages; rather, it is a prescription of how to use semantic concepts in order to avoid contradiction — it is a piece of advice addressed to all those who construct languages with semantic concepts. However, there is no suggestion here that we should modify our use of semantic notions in natural language to bring it in line with this idea; logicians who offer this kind of solution see the liar paradox as a price natural language has to pay for the indispensable universality of communication functions it fulfils. But some philosophers and linguists try to defend the ordinary notion of truth against the charge of inconsistency.

They usually seek to prove that S is either ungrammatical or does not constitute a complete, autonomous unit of natural language and, as such, cannot be true or false; in a sense then the meaningfulness of S is

being questioned here along with the role S plays in the liar paradox. How can one secure such a claim? The task seems hopelessly difficult. Above all, if it is to escape the charge of being *ad hoc*, such a defense of the ordinary notion of truth must cast doubt on the meaningfulness of S along with a whole class of expressions with a similar structure. Yet, even if we concede that the status of S as a sentence of natural language is dubious, there are a multitude of expressions that bear close structural resemblances to S but which are often used as independent statements and raise no suspicions. More specifically, one should not dismiss as senseless all self-referring statements, because one would thereby reject many perfectly natural sentences (which do not generate contradictions), such as the question "Can you hear what I'm saying?" uttered while testing the microphone.

This appeals to a particular type of grammatical description (namely, generative grammars) that exclude expressions such as S from the set of well-formed sentences and do not constitute a plausible argument: any natural language is describable in terms of many different grammars, which, though better or worse from the pragmatic point of view, are theoretically on a par even if they do not generate the exact same set of sentences. For any such description is an idealization; it arbitrarily sharpens the notion of a sentence of a given language. Not even the best empirical evidence will yield a determinate answer in this matter. However, a grammar is not an adequate description of language if it excludes from the set of sentences (as nonsensical or non-autonomous) many expressions used in communication as independent sentences.

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Jan Woleński

LINGUISTICS, LOGIC AND THE LIAR PARADOX. COMMENTS ON THE ARTICLE BY A. GAWROŃSKI "THE 'LIAR SENTENCE' AS A RECURRING SENTENCE FUNCTION ('THE POLISH SOLUTION')"

Originally published as "Lingwistyka, logika i paradoks kłamcy. Uwagi o artykule A. Gawrońskiego <<Tzw. 'zdanie kłamcy' jako rekurencyjna funkcja zdaniowa ('the Polish solution')>>," Studia Semiotyczne 25 (2004), 67–75. Translated by Maja Wolsan.

There are many versions of the Liar Paradox (LP). J. Agassi names 13 of them (Agassi 1963: 237—238). But the most important one is related to Tarski's theorem that the truth predicate (P) is non-definable for systems that are sufficient for the formalisation of elementary arithmetic of natural numbers. Let S be such a system. We assume that S is consistent and that the syntax of S has been arithmetized as understood by Gödel. Let E be any sentence of S. E^* is the symbol of the Gödel number of E (these comments are a bit simplified as per: R. Smullyan 1992: 102—104). If formula $\mathrm{A}(\nu)$ belongs to the language of system S, then formula E is a constant point for formula $\mathrm{A}(\nu)$ if and only if $\mathrm{S} \vdash E \rightarrow \mathrm{A}(E^*)$. It can be proved that every formula $\mathrm{A}(\nu) \in \mathrm{S}$ has a constant point in S.

If P is a truth predicate (as defined by Tarski) for S, then for $\mathrm{S} \vdash \mathrm{P}(E) \rightarrow E$ for each sentence E [it is the so-called T-convention; in other words, formula E is a constant point for $\mathrm{P}(E)$]. However, predicate P (i.e. the set of all true sentences) is non-definable in S. Let us assume that it is. According to the constant point theorem, there exists formula E such that $\mathrm{S} \vdash E \rightarrow \neg\mathrm{P}(E^*)$. However, this leads to a contradiction, as we also have $\mathrm{S} \vdash E \rightarrow \mathrm{P}(E^*)$. What does formula $\neg\mathrm{P}(E^*)$ tell us? It tells us that a sentence with

a Gödel number is not true, i.e. (remaining within the domain of classical logic) it is false. As the Gödel number of an expression can be considered its name, the above formula describes itself as false. Therefore, adding a truth-defining formula as an arithmetic axiom, I will get LP. Or by adding $\neg$P(E^*) to axioms of S I will get a contradictory system. All this shows that the LP is not a toy or a curiosity, but a barrier to defining the arithmetic truth in arithmetic itself. Although the LP was formulated more than two thousand years before Tarski and Gödel, it has quite unexpectedly found an application in the deepest problems of elementary mathematics.

Alfred Gawroński would answer that what he is interested in is the LP in natural language, not in formal mathematical systems. Indeed, he discusses the status of the Liar Sentence (LS), i.e. a sentence claiming itself to be false, in everyday language. He claims that there is no LP, only an illusion of this antinomy, stemming from the wrong interpretation of the nature of the LS. I will discuss the arguments supporting this thesis later in this article. For now, we need to identify the object of this dispute. Although the natural language cannot be subjected to arithmetization, it can be ordered a little, in particular to eliminate the obvious incidentality of the LP from the original sentence:

(1) This sentence is false.

In particular, we can number natural language sentences and put them in countable strings like $C = Z_1, Z_2, Z_3 \ldots$. This way k, being a number in subscript Z_k, clearly defines the place of $Z_k$in string C. Let us now introduce the following convention: (k) means sentence in the k-th position in C. Instead of speaking about sentences, we can therefore speak about their numbers such as (k). They are the imitations of numerals in the language of arithmetic. There are as many strings C as the potential number of orderings of the sets of sentences, that is always $2^n$for a set composed of n sentences. Analysing the possible strings, we will finally find a string such that:

(2) (k) = $Z_k$is false.

Let us now discuss the sentence '$Z_k$is false'. If it is true, then (k) is also true. But (k) is sentence Z_k. It follows that:

(3) $Z_k \rightarrow$ $Z_k$is false,

and further through the T-convention (Z is true if and only if Z)

(4) Z_k is true $\rightarrow$ $Z_k$is false.

If the sentence '$Z_k$is false' is false, then (k) is also false and Z_k is true, which again leads to (4).

In fact, the reasoning for natural language repeats the basic elements of mathematical argumentation. Both also show the key importance of T-convention and T-equivalence in the derivation of the LP, and consequently show that the proper definition of truth as understood by Tarski is impossible for natural language as a whole. Let me add some additional comments. For each (k) we can build an LP according to the following pattern:

(k) The sentence written in line (k) is false.

At first, it seems that it is the same nonsense as in (1), implying the need to adopt nonsensical equivalence:

(5) This sentence is false if and only if this sentence,

(6) (6) is false if and only if (6).

This seeming nonsense disappears when we realise that these are sentences which, under certain conventions, are introduced by the expressions 'this sentence' and '(6)'. Furthermore, the derivation of contradiction does not imply marking the sentences expressing the LP as either true or false. The contradiction arises in both cases. We do not, therefore, need to wonder what the LS actually states, we only need to examine what it expresses.

I cannot analyse all of Gawroński's theses here, but I will try to comment on the most important ones and to prove his thesis that the LP is illusory to be an illusion itself. I will discuss the following issues: (a) the concept of meta-sentence and theme-rheme structure of sentences; (b) the syntactic ambiguity of expressions such as 'this' and '(k)' in sentence (1) and convention (k); (c) the problems of self-reference of sentences.

Re. (a), without going into general definitions, I will just focus on an example of a meta-sentence, namely sentence (6). It consists of a propositional predicate 'is false' and its argumentation, i.e. '(6)'. However, this sentence may be called pathological, as the argument in a normal meta-sentence would have an object argument, e.g.:

(7) Sentence Z is false.

Generally, each normal meta-sentence has its rheme, i.e. the sentence in which we speak, and theme, i.e. the sentence of which we speak. In this particular case, (7) is a rheme as a whole and sentence Z is the corresponding theme. Rheme is grammatically more important than theme, and Gawroński states as much in his text. On the other hand, he says that sentences have a theme-rheme structure. But if the rheme is a sentence in which we speak and theme is the sentence of which we speak, then instead of a single sentence we have an ordered pair <rheme, theme> (this direction seems right due to the said order of importance) composed of two sentences. Another way to understand rheme and theme, more consistent with the need to analyse the structure of sentences in these categories, is to treat 'is false' in (7) as a rheme and sentence Z as a theme. The rheme would thus be a sentential connective of a sentential argument, superordinate to it. This analysis is more suitable for forms such as:

(8) It is false that Z.

then for sentences like (7), the rheme of which is the relevant predicate (e.g. 'is true' or other), and the argument being not a sentence but rather its name. The difference between (7) and (8) is not very important for further discussion, thus I am going to use sentences of type (7). However, I do not know what to do with theme and rheme. I will proceed just as if both methods led to the same consequences.

I am going back to Gawroński's article, although I will not always use his own terminology. A normal, non-pathological meta-sentence requires closure/complementation by an object-sentence, e.g. 'Snow is black.' But, in fact, all known versions of the LP operate in meta-sentences that do not end with object-sentences. Thus, sentences created according to convention (k) should not be considered correct, as they violate the basic syntactic rule for meta-sentences, i.e. that a correct meta-sentence ends with an object-sentence. How I understand it is that this superordination of rheme over theme consists in the meta-sentence having an object argument.

The key problem is to find an answer to the question whether predicate arguments (from now on I will omit logical operators) are to be limited. It is where the real dispute begins. Gawroński claims that even everyday language forces some restrictions, like the need to complement a meta-sentence with an object-sentence. I do not believe it is so. Let us consider

(9) (k) and (k) are equivalent.

This is a typical meta-sentence, which is not controversial from the perspective of an everyday language. However, it does not have an object complement — nor does it need to. I also do not see the reason to claim, like Gawroński does, that self-complements, i.e. situations when a meta-sentence complements itself, must be excluded *a priori* as absurd. This decision is completely arbitrary. After all, Epimenides, the stoics or Savonarola were competent users of their own mother tongues and invented relevant LSs as absolutely acceptable — though perhaps a bit odd — examples of sentences in the grammatical sense.

Gawroński clearly confuses the syntactic and semantic orders. For a logician, the fact that theme is subordinate to rheme is a banality and means simply that a logical connective is defined by what it creates and of what it creates. In this sense, the argument of the rheme related to (7) is the name of a sentence (or a sentence itself, if we are considering other structures or pairs such as <rheme, theme>). Gawroński adds a new requirement, namely that it must be an object-sentence. This is a semantic argument, as object-sentences are defined in semantics, not in syntax. From the point of view of syntax, this condition is arbitrary. Gawroński continues by saying that there exists no LP, that the structure of meta-sentences of the type derived from convention (k) were just wrongly recognised. As I have shown, however, it is not about structure, but about semantics. A logician would therefore claim that the paradox indeed exists, without assuming any syntactic constraints, and then would conduct a relevant reasoning (which, interestingly, is of no interest to Gawroński) and propose certain restrictions. All in all, these restrictions are not very far from what Gawroński proposes. Tarski's solution consisted in assuming that if a meta-sentence predicate belongs to k-order language, then it concerns sentences of k-1 order, although the whole meta-sentence must be formulated in the former language. Both these positions can finally be reconciled by assuming that a non-pathological meta-sentence must be such that its rheme is one step higher than the theme. This way syntax is reconciled with semantics.

In addition, I should mention that the sentence:

(10) Sentence (10) is true

does not lead to any problems (at least in as much as we operate the

standard concept of logical consequence (see Woleński 1993: 89—102, for the Truth-Teller Paradox), although it is also wrong, just as the sentences based on convention (k). This fact is an additional argument supporting the view that linguistic criteria of accepting sentences as grammatically correct, in particular those based on thematic-rhematic analysis, are insufficient for logic.

Re. (b), according to Gawroński, one of the sins of logical analysis of the LP is related to the following construction:

(11) Expression '(k)' means 'sentence (k) is false'.

Gawroński says that this way expression '(k)' functions syntactically in two meanings. Although both instances of '(k)' refer to the same, i.e. to the sentence marked as '(k)', they function in different syntactic forms, as the second instance means an example of sentence (k) which is subordinate to the one marked by the first instance. This is what, according to Gawroński, is ignored by logicians.

First, we should observe that (11) expresses only that there exists such a numeration of sentences that sentence number (k) is 'Sentence (k) is false.' Even if from a linguistic point of view it is indeed as Gawroński says, i.e. that symbol (k) stands for a specimen of a sentence, subordinate to another specimen, this fact is essentially of no importance to the subject issue. Let us notice, by the way, that a new understanding of subordination (and its opposite, superordination) has appeared, that is the relation between the specimens of sentences instead of their rhemes and themes. Gawroński does not stop at (11), he also discusses the LS from the same point of view. He thus writes (Gawroński 2004: 49):

> Sentence expressions such as 'This sentence is false' or '*A* is false' (as the result of the assumption that '*A* means "*A* is false"') already in the assumption contain *A* in two different syntactic positions which are NON-REDUCIBLE to each other. [...] For if they were, we would have one and the same specimen of the expression, superordinate to itself, which is a syntactic absurd.

Nevertheless, the names 'this sentence' and '*A*' appear in the quoted sentences only once and it is not very clear that they have different syntactic positions. Maybe what Gawroński means is rather that in LP derivations expression '(k)' acts sometimes as a name, and sometimes as a sentence. However, as obvious as it is, it does not imply that we are dealing with one

and the same specimen of a given expression, e.g. 'This sentence is false,' nor does it imply that we are trying to reduce one to the other. It is, in fact, quite the opposite [cf. the comments to (5) and (6)), as the logical analysis of the LP clearly recommends a careful distinction between '(k)' as a name and as a sentence.

Second, logicians do not ignore anything in this respect. Since the time of Leśniewski and Tarski, they have been pointing out that the lack of distinction between expressions and their names entails serious semantic problems. Consequently, a symbol introduced to mark a sentence may be interpreted both as its name and as the sentence itself. This leads to complications, as self-names appear in the context of semantic terms.

Re. (c), Gawroński believes that in some cases the self-reference of sentences is not a big problem, just as in the following case:

(13) This sentence (i.e. sentence (13)) is composed of seven words.

It is true, which can be easily verified by counting the elements. Gawroński claims that it is correct from the perspective of the theme-rheme structure — as opposed to the LS. In fact, (13) is an elliptical abridged version of the following sentence:

(14) 'This sentence is composed of eight words' contains seven words,

where 'this' refers to (13). This, however, leads to a disastrous consequence. If (13) is an abridged version of (14), we have

(15) (13) $\rightarrow$ (14).

On the other hand, the expression 'this sentence' in (14) means the same as number (13). From this, it follows that:

(16) Sentence number (13) is composed of seven words if and only if 'sentence number (13)' is composed of seven words.

The equivalence in (16) is false, as its right side is true, whereas its left side is false; the expression 'sentence number (13)' contains three words. More technically speaking, Gawroński made a groundless assumption that (13) is a constant point for (14).

In fact, Gawroński uses the method of analysis of (13) and (14) only

as an introduction to his critical remarks on self-reference of LS-type meta-sentences. One of the arguments against the self-reference of such sentences is the syntactical ambiguity of the methods of identification such as 'sentence number (k)'. We have already covered this. Gawroński's disquisition on this does not seem conclusive, therefore, I will proceed to the next argument, which is that the LS has no self-reference but instead has recurrence, i.e. generating a string of utterances repeating the first step. We start with (k), then we add '(k) is false', then "'(k) is false" is false', etc. As a result, we get a string

(⊢) <(k), (k) is false, '(k) is false' is false, "'(k) is false" is false' is false, . . . > ,

in which each subsequent specimen of '(k) is false' is subordinate to the previous one, and the previous one is a rhematic negation of the next one. The even-numbered formulae have the same logical values, and the odd-numbered formulae have opposite values. Thus, there is no self-reference in LSs, there is only recurrence. It is not strange that the logical values of various specimen of the LS in string (⊢) cyclically change from even to odd, and it is not a paradox either. This, according to Gawroński, explains the illusion of the LP.

But this all is an illusion itself that the LP has thus been annihilated. Gawroński thinks that string (⊢) is the same as the string:

(⊢⊢) <sentence (k) is false, sentence (k) is false, (k) is false. . . >.

In a sense, it is indeed so. We replace (k), i.e. the first element in string (⊢), and this way we get the first element of (⊢⊢). Then we repeat this operation in the other direction, thus getting the second element of (⊢⊢), etc. Two strings are identical if and only if their subsequent elements are identical. In this case, as we are dealing with sentences, we say that two strings of sentences are equivalent if and only if their subsequent elements are logically equivalent. Let us look, then, at the third element of string (⊢) and the third element of (⊢⊢), i.e. "'(k) is false" is false' and '(k) is false'. The first sentence is equivalent to '(k) is true', which gives us another instance of the LP because (4). The paradox can be formulated for any corresponding elements of the two strings. If we only look at (⊢⊢), the LP occurs for each of its elements. Consequently, recurrence does not eliminate self-reference nor the LP.

Gawroński might comment that the above analysis fails to take into account subordination, superordination, rheme and theme. I will now prove that taking these concepts into account does not lead to the conclusions drawn by Gawroński. Let us assume that string (⊢⊢) is generated in the following way: We start with '(k) is false'. Regardless of the fact whether the rheme is the whole sentence or the predicate 'is false', there is a need to add a relevant argument, which again is '(k)' (or a sentence marked by the symbol (k)). Again, we insert '(k) is false'. This procedure can be repeated any number of times and thus (⊢⊢) is created. Let us now assume that each previous element of the string is a negation of the next one and that the values of the elements change in the following way — even numbers are false, odd numbers are true. We translate (⊢⊢) into

(⊢⊢⊢) $<e_1,\ e_2,\ e_3,\ \ldots>,$

assuming that $e_i \rightarrow\ e_j$, where i, j are pairs of odd or even elements, while $e_i \rightarrow\ \neg e_j$where one of the indicators is even and the other is odd. However, string (⊢⊢) is diametrically different from (⊢⊢⊢), as in the first one all elements are equivalent as identical (as Gawroński defines them himself). Therefore, we cannot say that the recurrence of the LS generates a string of identical specimen of the sentence '(k) is false', if at the same time we assume that previous elements are negations of the next ones. This assumption generates a string (it still applies that even elements are true and odd are false; we also assume that '(k) is false' is true if and only if (k) is false):

(⊢⊢⊢⊢) <(k) is false, (k) is true, (k) is false ...>.

The string concerns one specific sentence, marked as (k). It was generated in accordance with the sentence's internal structure, and not by automatically alternating any sentence and its negation, thus it reflects the antinominal nature of sentence (k). It is unquestionable that self-reference plays a key role here. I would like to underline that Gawroński ignores the delicate problem of negation of the LS. The negation of (k) must be a sentence numbered at least (k+1), and therefore cannot produce a specimen of a sentence identical with sentence (k). Simply speaking: the negation of 'This sentence is false' is not the said sentence.

Gawroński completely failed to take into account the fundamental difference between the self-reference of type (13) and the one related to semantic concepts. Each version of the LP uses, indirectly (as in the Circle of

Liars/Vicious Circle Principle) or directly (as in the one-sentence version), the fact that T-equivalences determine constant points for sentences such as 'Z is true' and thus ensure compression of such formulae to their arguments or expansion of the arguments to expressions with a truth predicate. This two-way operation shows that any analysis in terms of subordination—supraordination or rheme—theme is secondary in this case to intentional contexts, e.g. 'X believes that Z.' Consequently, self-reference of sentences with semantic predicates and T-equivalences for such sentences are a source of LP, both in formal languages and in natural language. If we remain in the domain of classical logic, we can either prohibit formulating T-equivalence for sentences expressing the LP or eliminate self-reference.

There was a time when logicians thought themselves the only people competent to talk about any language, including natural language. They claimed, for example, that the logical grammar of natural language is the same as of a formal system. It is, fortunately, all in the past. Gawroński, on the other hand, presents the opposite extreme, or at least something close to it. He wants, namely, logical analyses to meet linguistic requirements. But a logician cannot be constrained by the view that sentences have a theme-rheme structure, even if this view is currently commonly accepted. One hundred years ago it was not, and in the next one hundred years yet a different theory might prevail. I do not think that the structures accepted in propositional calculus or predicate calculus depend on what linguists think about the nature of sentences. It may be that for a linguist theme is always subordinate to rheme, but for a logician it is not the case in extensional contexts, or at least it does not always have to be so. A logician would say that the relation of syntactic equivalence is a particular type of subordination, just as being the same set is a particular type of a subset. It is true that the distinction between expression-type and expression-specimen is important, but it cannot determine the correctness of a reasoning based on simple logical rules, just as the nature of representation or of the carrier of truth.

The latter remarks do not suggest that logic and linguistics should be separated. Indeed, the disqualification of the LS as incorrectly constructed because of the mixing of levels of language corresponds to the admission that the theme-rheme structure of such a sentence is pathological. The indication that the LS produces a string without a terminal element is a very interesting symptom of the defectiveness of this sentence. But this fact does not prove the non-existence of the LP, rather it proves the paradox real in situations when the rules of language levels or theme-rheme structures are violated.

Gawroński, however, questions this common point. In this article, I have tried to show that he is not successful in this. Let 'the Polish solution' continue to be associated with Tarski. No persuasive comments on logicians — that they do not understand this or that as regards natural language, complicate the LP, propose ever new *ad hoc* solutions, or treat important linguistic questions such as the subordination relationship as absurd because they are not familiar with the structuralism culture of contemporary linguistics — can change it. They are examples of wishful thinking, not arguments.

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Stanisław Karolak

ON THE ISSUE OF THE LIAR ANTINOMY

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I justify a non-logician speaking of the liar antinomy by Peano view that semantic antinomies are linguistic issues. The remarks I formulate below follow Alfred Gawroński's idea, namely, that the liar antinomy is an apparent antinomy.

Accepting "the liar sentence" as an antinomy, perhaps results from the fact that logic operates only on expressions with complete sense explication and neglects the fact that some content in sentences of a natural language, which is the only existing language, is sometimes communicated not explicitly.

Further considerations are based on three theorems:

1. Under a silent agreement, independent sentences that are true in a natural language express explicitly only the propositional content (or more strictly: the propositional content with its possible temporalization), while the truth content is given not explicitly (in other words: is expressed by a zero exponent) — is understood on the basis of a lack of the exponent of negation or the exponent of suspension of assertion. Thus, every indicative affirmative sentence is, in a natural language, a proposition which is true. From the point of view of logical value, such sentences are equal to sentences with an explicit truth exponent, cf.:

Snow is white = It is true that snow is white / It is thus that snow is white / The sentence <<Snow is white>> is true.

Let's point out, for the sake of avoiding misunderstanding, that sentences on both sides of the equation are not to be regarded communicatively

equal. Sentences following the equality sign are meant only to (artificially) explicate their truth content. Thus, if sentences of the type *Snow is white* are symbolized by *a*, then the symbol can be used only as in *a is true* (*a means <<a is true>>*). However, the symbol mustn't be used as in *a is false*.

2. The truth predicate, similarly to other predicates that are part of the category of epistemic modality, is a predicate of a higher order (a propositional predicate) of one propositional argument with an inherent argument of the first person. On the grounds of semantics, we express this by saying that the argument of the truth predicate is a proposition (propositional content). In sentences of the type *Snow is white*, only the propositional content is explicitly expressed, which is the argument of non explicit truth predicate.

Sentences with the explication of the truth predicate of the type *It is thus that snow is white / That snow is white is true* (= *a is true*) can in turn be used as exponents of the propositional argument, and thus as exponents of the argument implied by the modal predicate, e.g.:

It is not thus that / It is not true that snow is white is true (= *<<a is true>> is false*).

There is no antinomy in such sentences: they are a rejection (negation) of the proposition made as true, which is expressed in a natural language by means of a reduced form:

It is not thus that snow is white / It is not true that snow is white etc.

The falsity predicate *it is not true that / it is not thus that* refers not to the proposition expressed by the sentence *Snow is white*, but to the propositional argument admittedly expressed by the sentence *Snow is white*, but having the value *It is thus that snow is white*. Obviously, under the convention of a natural language, the sentence *It is not thus that snow is white* stands for a true proposition, namely

(*It is true that*) *it is not thus that snow is white* (*is true*).

Brackets in this notation mark the fact that the truth content is expressed not explicitly. These notations could be simplified if negation were regarded as a predicate separate from the truth predicate and able to co-occur with

it. Here, however, it is not adopted because of logical tradition which treats truth and falsity as two opposite predicates.

3. Sentences which are within the scope of the truth predicate and are exponents of propositional arguments need to be differentiated from sentence names, which refer to other sentences. On account of co-occurrence of either one or the other type of expressions, J. L. Pollock differentiates between the operator use of "truth" and the predicate use. The first is the use with proposition exponents, the other — with "exponents" (names) of sentences. It seems that there are no reasons to differentiate between two variants of "truth". The difference lies not in the predicate (identical in both uses) but in the form of arguments co-occurring with it. In the case of co-occurring with the proposition exponent, the truth predicate is asserted directly about the content of proposition, e.g.:

It is thus that / It is true that snow is white.

It is thus that / It is true that Aristotle was a student of Plato.

It is thus that / It is true that Columbus discovered America etc.

In the case of co-occurring with "exponents" of sentences (names of sentences), the truth predicate cannot refer to the content of these names (have it as an argument) because they are not proposition exponents. For example, in sentences such as:

What I said is true.

What I think / what John thinks is true.

It is thus as I said / as John said.

It is thus as I think / as John thinks.

John's statement is true.

John's opinion is true etc.

the truth predicate about the content of the components *what I said*; *what I think* etc. is not asserted because these components are not sentences, do

not represent the propositional content, and hence cannot have a semantic-syntactic relation with the truth predicate. The relation can occur only between the propositional content expressed by sentences which refer to the content. A superficial co-occurrence of such names of sentences with expressions indicating truth is possible only due to their reference function.

Such names of sentences, as quoted above, can have the reference function because they are names characterized by absorption. Namely, they absorb the position opened by a predicate for a propositional argument, causing a necessity to explicate the position externally, e.g.:

John said that the Prime Minister of Serbia had been killed.

John said p (something).

p, which (what) John said ...

Let's point out again that "truth" in the predicate use (according to Pollock's terminology) is not and cannot be asserted about expressions (more strictly: about the content of expressions) together with which it functions as the grammatical predicate.

On the basis of the above theorems it becomes clear that the liar antinomy is apparent (or illusory in A. Gawroński's words). For illustration let's analyze its simplest version that originated in ancient times.

What I am saying now is not true.

Let's notice by the way that this version is semantically inaccurate — it is not possible to simultaneously say something and say that this something is being said. A more semantically accurate would be a perfective version of the type:

What I have just said is not true.

But let's stick to the original version. The sentence in this version will not tell us what the falsity predicate refers to. However, we know that it does not refer to the name "what I am saying now," but to the propositional content which is external to the sentence and which has just been communicated by the speaker or is going to be communicated in a moment. It is this content that the speaker asserts to be not true. If it is so indeed, then what the

speaker says is true, but truth does not refer to the propositional content to which the name "what I am saying now" refers to. The falsity predicate is asserted about the name, while the truth predicate, which is expressed implicitly in the sentence, is asserted about the speaker, or more strictly: about that the speaker lied asserting a proposition which the speaker knew was not true. Thus, there is no contradiction in sentences of the type, the assumed antinomy is apparent: the truth and falsity predicates have different arguments (are asserted about different propositions), in particular the truth predicate is asserted about the proposition constituted by the falsity predicate (the falsity predicate is within the scope of the truth predicate, and thus has a different syntactic position). The situation can be explicitly illustrated by:

It is thus that what I am saying now is not true.

It is true that what I am saying now is not true.

The same applies to sentences which refer not to one utterance, but to an open series of utterances, that is sentences with a non-actual (time unspecified) verb form of the type that logicians quote e.g. *I am true*, *I am false*. Their semantic structure *mutatis mutandis* is the same as the structure of the sentences analyzed above.

There is no significant difference in structure between one-sentence and multi-sentence versions of "the liar antinomy." Let's use the variant quoted by Herzberger. Let's assume that Socrates says *Plato speaks falsely*, and Plato reacts with *Socrates speaks truly*. Both sentences are obviously true. One asserts truly about Plato's utterance(s) that it is (they are) inconsistent with truth, the other asserts truly that Socrates's utterance about Plato is consistent with truth. Both sentences have the above mentioned zero exponent of affirmative modality, which can be (artificially) shown, e.g.:

It is true that Plato speaks falsely.

It is true that Socrates speaks truly.

Let's follow A. Gawroński's conclusion here that there are no sentences which say that they themselves are not true. Thus there is no semantic reasons to accept the liar antinomy. What can be expressed is only bewilderment that so much effort was put into solving the antinomy which cannot

be solved because it does not exist.

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Marek Magdziak

ON PARADOXES AND SITUATIONAL CONTEXT ANALYSIS[1]

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More and more often one comes across the view that the real source of many interpretational difficulties and obscurities is connected with paying too much attention to sentences, and at the same time neglecting the utterances, the convictions and other objects of this kind, as well as not taking into account the situational contexts of the examined utterances. Such a traditional approach leads to, among others, the antinomy of liar and many other paradoxes.

In a popular book, *Goodbye Descartes,* Keith Devlin (1998: 257) wrote:

> Once you take proper account of the context in which the Liar sentence is uttered, there is no more a paradox than there is a genuine conflict between the American who thinks that June is a summer month and the Australian who thinks June is a winter month. Here, laid bare, is what the Liar Paradox really amounts to.

This opinion after all, although characterised by gross exaggeration, can be considered as showing a certain general direction of the analysis of known paradoxes. In the article we present a discussion of two selected paradoxes: the ancient liar paradox and the contemporary Fitch's paradox. The approach presented herein will thereby take into account the situational contexts of the

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analysed utterances. As it will be demonstrated, both discussed paradoxes result from not taking into account the situational contexts of the analysed utterances, as well as from not discriminating between different situational contexts material for one and the same paradoxical utterance. It will also turn out that a useful turn tool for the performed analysis is a sort of multi-modal logic. We will call it situational modal logic and we will describe it in the last part of the article.

THE LIAR PARADOX

The liar paradox in its simplest form arises together with an utterance (conviction) that everything that it conveys is that and only that it itself is untrue. A reasoning that reveals the paradox is a consequence of two closely intertwined views.

Firstly, that each object with respect whereto we say that it is true or false, such as an utterance, a conviction, thought, sign or even a gesture, is an object which says something, states something or expresses something. Therefore there exists a sentence expressing its entire propositional content, i.e. in other words, everything and only that what this object expresses.

Secondly, the expression "*is true*" is a predicate expression truth in its logical sense. Therefore, finding any expression or conviction to be true is equivalent to the acknowledging of everything that this utterance or conviction expresses. This last view we shall call *a rule of substantive correctness.*

Let letter "T" replace the predicate "*is true*" and "$\sim$," "$\wedge$," "$\rightarrow$ " and "$\equiv$ " will respectively be the symbols of negation, conjunction, and material implication and equivalence. The rule of substantive correctness may be written down as follows:

(T_0) For any freely determined utterance p and any freely determined sentence A:

$$(p \textit{ says that } A) \rightarrow (T(p) \equiv A)$$

The symbol p is here an individual (or specified description) and means an utterance, sign, thought, conviction and even a gesture or any other object, which is about something, expresses something or states something, i.e. of which it is possible to sensibly say whether it is true or false. Such an object will be generally referred to as an *utterance.* On the other hand, letter A represents a sentence expressing full propositional content of utterance p.

A reasoning leading to the Liar Paradox can be therefore presented as follows:

> There is such utterance p, that p *expresses that* $\sim T(p)$. Thanks to the rule of substantive correctness, if p *expresses that* $\sim T(p)$, then $(T(p) \equiv \sim T(p))$. Therefore, finally $T(p) \equiv \sim T(p)$.

Such an approach does not take into account the situational contexts of the examined utterance. It describes nether the situation in which the examined utterance p expresses that it is so and so, nor the situation of which the examined utterance p expresses that in this situation it is so and so.

Utterance in the form *p expresses that A* may be understood as an abbreviation of a more complex utterance. Namely: IN SITUATION S_K UTTERANCE P EXPRESSES THAT IN SITUATION S_L IT IS SO THAT A. Or better: IN SITUATION S_K IT IS SO THAT P EXPRESSES THAT IN SITUATION S_L IT IS SO THAT A.

The fact that in a given situation s_k it is so that A, will be recorded as $[s_k]\ A$. For any freely determined situation s_k the symbol $[s_k]$ plays therefore the role of a modal operator of a specific kind. We will call such symbols *situational modal operators*.

In order to reconstruct the discussed understanding, taking thereby into consideration the situational contexts of the examined utterance, one needs to construct above all the paraphrase of its prerequisite expressing that there exists such utterance p, that *p expresses that* $\sim T(p)$. Let us consider the two following paraphrases:

(P1) There is such utterance p and there exist such situations $s_k$and s_l that $[s_k]$ (p *expresses that* $[s_l] \sim T(p)$)

(P2) There is such utterance p and there exist such situations s_k and s_l that $[s_k]$ (p *expresses that* $\sim [s_l]\ T(p)$)

Both of the above phrases are made different by two situational contexts: (a) a situation where the examined utterance expresses that it is so and so, marked as s_k; (b) a situation where the examined utterance expresses that in its context it is so and so, marked as s_l.

Now we need to formulate a situational version of the rule of substantive correctness. Let us therefore assume that if in a given situation s_k utterance p expresses A, then in this situation taking p to be true is equivalent to acknowledgment of what p expresses, i.e. A. We will formulate this as follows:

(T) For any freely determined situation s_k utterance of a freely determined utterance p and a freely determined utterance A.

$$[s_k]\ (p \textit{ expresses that } \rightarrow\ [s_k]\ (T(p) \equiv\ A).$$

On the basis of prerequisite P1 we may now claim that

(1.1) $[s_k]\ (T(p) \equiv\ [s_l] \sim\ T(p))$.

On the basis of prerequisite P2 we may further claim that

(2.1) $[s_k]\ (T(p) \equiv\ \sim [s_l]\ T(p))$.

In order to conduct this reasoning further, we may however decide, which logical rights govern the situational modal operator, or — in other words, decide, which multimodal logic will be a relevant tool for the analysis of situational contexts of the examined utterances.

Let us firstly assume that

(Z1) Each situational modal operator is subject to the laws, which are the equivalents of the propositions of each normal modal logic. In other words, the logical laws, which govern the modal situational operators, are:

— all tautologies of the classical propositional calculus,

— all sentences in the form $[s_i]\ (A \rightarrow\ B) \rightarrow\ ([s_i]\ A \rightarrow\ [s_i]\ B)$,

and moreover for any freely determined sentences A and B,

— if $A \rightarrow\ B$ is a law and A is a law then B also is a law,

— if A is a law than for any i also $[s_i]\ A$ is a law.

Thanks to this, on the basis of prerequisite P1, we may further claim that

(1.2) $[s_k]\ T(p) \equiv\ [s_k]\ [s_l] \sim\ T(p)$

And on the basis of prerequisite P2 we may claim that

(2.2) $[s_k]\ T(p) \equiv\ [s_k] \sim [s_l]\ T(p)$

Let us assume further that the logical laws which govern the situational modal operators are also all sentences in the following form:

(Z2) $[s_i] \sim A \rightarrow\ \sim [s_i]\ A$ and

(Z3) $[s_i]\ A \equiv\ [s_j]\ [s_i]\ A$ and $\sim [s_i]\ A \equiv\ [s_j] \sim [s_i]\ A$.

On the basis of prerequisite P1 we may finally claim that

(1.3) $[s_k]\ T(p) \equiv\ [s_l] \sim T(p)$,

(1.4)$[s_k]\ T(p) \rightarrow\ \sim [s_l]\ T(p)$.

If therefore there exists such utterance p and there exist such situations s_k and s_l, and $[s_k]$(*p expresses that* $[s_l] \sim T(p)$) then $[s_k]\ T(p) \equiv\ [s_l] \sim T(p)$ and $[s_k]\ T(p) \rightarrow\ \sim [s_l]\ T(p)$.

Further if there exists such utterance p and such situation s_m that $[s_m]$(*p expresses that* $[s_m] \sim T(p)$) then we also have:

(1.5) $[s_m]\ T(p) \equiv\ [s_m] \sim T(p)$ and

(1.6) $[s_m]\ T(p) \rightarrow\ \sim [s_m]\ T(p)$ and

(1.7) $\sim [s_m]\ T(p)$ and

(1.8) $\sim [s_m] \sim T(p)$.

Situational reconstruction of reasoning resulting in the liar paradox on the basis of prerequisite P1 is therefore a proof of the proposition claiming that in certain situational contexts certain utterances are neither true or false.

On the basis of prerequisite P2 it may be claimed that:

(2.3) $[s_k]\ T(p) \equiv\ \sim [s_l]\ T(p)$.

If therefore there exists such utterance p and there exist such situations s_k and s_l, and $[s_k]$(*p expresses that* $\sim [s_l]\ T(p)$) then $[s_k]T(p) \equiv\ \sim [s_l]T(p)$.

In particular there exists such utterance p and such situation s_n that $[s_n]$(*p expresses that* $\sim [s_n]\ T(p)$), then $[s_n]\ T(p) \equiv\ \sim [s_n]\ T(p)$.

The situational reconstruction of the reasoning resulting in the lair paradox on the basis of prerequisite P2 may therefore be considered to be the proof for the claim on non-existence of a certain kind of situational context.

In the discussions concerning the liar paradox one distinguishes two versions of paradoxical utterances. An ordinary liar's utterance claiming that it itself IS false or IS untrue and the reinforced liar's utterance claiming that it itself IS NOT true. The first of the two is an utterance which ascribes something and the second is an utterance which denies something. The known analyses of both of these versions show that although the conviction that the ordinary liar's utterance is neither true nor false, liquidates the contradiction, yet however the conviction that he reinforced the liar's utterance is neither true nor false does not remove the contradiction (cf. Martin 1984).

Reconstruction of the liar's utterance based on prerequisite P1 may be therefore considered to be an equivalent of the ordinary liar's utterance, and the reconstruction based on prerequisite P2 is the equivalent of a reinforced liar's utterance. The former means existence of such utterance p and such situation s_m that $[s_m](p$ *expresses that* $[s_m] \sim T(p))$ and then both $\sim [s_m]T(p)$ and $\sim [s_m] \sim T(p)$. The latter would mean the existence of such utterance p and such situation s_n, that $[s_n](p$ *expresses that* $\sim [s_n]T(p))$, and this under the pain of contradiction is not possible.

The reconstructions of the reasoning resulting in the liar's paradox presented above, which took into account the situational contexts of the examined utterances, were based on three assumptions concerning the logic of the situational modal operators.

Firstly, we have assumed (Z1) that each situation modal operator is subject to laws which are the equivalents of the propositions of each normal modal logic. This assumption does not seem to raise any greater doubts. Sentences expressing that in SITUATION S_I IT IS SO THAT A, and the complex sentences constructed therefrom with the help of logical connectors, are subject to the laws of classical propositional calculus. Each situational modal operator also fulfils the equivalent of the axiom of regularity. If in a DETERMINED SITUATION S_IIT IS SO THAT A IMPLIES B AND IN SITUATION S_IIT IS SO THAT A, than IN SITUATION S_IIT IS SO THAT B. Moreover, if any sentence A is logically true, than it is true in all circumstances, therefore in any situation it is that A. The set of situational modal operators logic propositions is therefore closed with respect to the role equivalent to the rule of necessitation. We will call such equivalent *the rule of situational validity.* In view of the rule of situational validity, all laws of logic are valid in every situation. In particular, the law of excluded middle is valid IN EVERY SITUATION, i.e. for any i and any A in situation s_i it is so that A or $\sim A$. This does not mean, however, that all laws of logic apply to EVERY SITUATION, for example the law of excluded middle. The formula stating that for any i and any A in situation s_i it is so that any A or in situation s_i it is so that $\sim A$, is no longer a thesis of the considered logic. We already demonstrated earlier that there exists such utterance p and such situation s_m that $[s_m](p$ *expresses that* $[s_m] \sim T(p))$, then $\sim [s_m]\ T(p)$ and $\sim [s_m] \sim T(p)$, and therefore, in certain situational contexts some utterances are neither true, nor false.

In view of the assumption above, each situational modal operator is separable with respect to the conjunction connective.

Secondly, we have assumed (Z2) that a thesis of the situational modal operators logic is each sentence in the following form $[s_i] \sim A \rightarrow \ \sim [s_i]\ A$. This assumption states that IT IS IMPOSSIBLE FOR ANY SITUATION THAT IT IS SO THAT A AND SO THAT IT IS NOT TRUE THAT A. We will therefore call it the situational non-contradiction axiom.

Thirdly, we have assumed (Z3) that the theses of the logic of situational modal operators are all sentences in the form $[s_i]\ A \equiv\ [s_j]\ [s_i]\ A$ and $\sim [s_i]\ A \equiv [s_j] \sim [s_i]\ A$. If therefore IN SITUATION S_I IT IS SO THAT A, then IN ANY FREELY DETERMINED SITUATION S_J IT IS SO THAT IN SITUATION S_I IT SO THAT A, and if IN SITUATION S_J IT IS SO THAT IN SITUATION S_I IT IS SO THAT A, THEN IN SITUATION S_IIT IS SO THAT A. Similarly, if it is not true that IN SITUATION S_I IT IS SO THAT A, than IN ANY FREELY DETERMINED SITUATION S_J IT IS NOT TRUE THAT IN SITUATON S_I IT IS SO THAT A, and if IN SITUATION S_J IT IS NOT TRUE THAT IN SITUATON S_I IT IS SO THAT A, then it is not true that IN SITUATON S_I IT IS SO THAT A. Sentences stating that in a certain situation it is so and so, and that it is not true that in a certain situation is so and so are neutral with respect to situational contexts. Situational contexts of the analysed utterances were therefore treated as absolute contexts. We have therefore assumed that the logic of situational modal operators is the logic of absolute situational contexts.

The logic of situational modal operators, which meets the three above assumptions to be referred as to *situational modal logic.*

FITCH'S PARADOX

A situational analysis of Fitch's paradox was presented by Sten Lindstrom (Lindstrom 1997). His approach is in fact close to the above analysis of the liar's paradox. It is based on differentiating between situational contexts, material for an apt interpretation of the examined utterance.

Fitch's paradox (Fitch 1963) is an argument in favour of the thesis that IF THERE IS SUCH TRUE JUDGEMENT OF WHICH NO-ONE KNOWS THAT IT IS TRUE, THEN THERE ALSO IS SUCH TRUE JUDGEMENT, OF WHICH NO-ONE CAN SAY THAT IT IS TRUE. Since, undoubtedly, there are such judgements with respect to which it is unknown that they are true, one needs to reject the *cognizability principle*, according hereto every true judgement is cognizable.

Fitch's reasoning is as follows: Let A be such a true sentence, of which it is not known that it is true. Further, let B be the following sentence: A and it is not known that A. Sentence B is obviously true. What is more, there is no such situation in which it would be known that B. Let us assume that there is such situation s in which it is known that (A and it is not known that A). Since the epistemic operator *it is known that* is separable with respect to conjunction, in situation s (it is known that A and it is known that it is not known that A). Since for any freely determined A, IF IT IS KNOWN THAT A, THEN A, in situation s (it is known that A and it is not known that A). Therefore, there cannot exist such a situation in which it is known that B. Sentence B is therefore uncognizible.

According to Lindstrom, Fitch's understanding is based on equivocation, since it does not distinguish between the two following different situational contexts: (a) THE SITUATION, IN WHICH IT IS KNOWN THAT IT IS SO AND SO and (b) THE SITUATION, OF WHICH IT IS KNOWN THAT IT IS SO AND SO. If one only observes this distinction, then in Lindstrom's opinion the utterance stating that IN A CERTAIN SITUATION IT IS KNOWN THAT IN A CERTAIN (OTHER) SITUATION IT IS SO AND SO AND THAT IN THIS EXACT SITUATION THIS IS NOT KNOWN, ceases to be paradoxical. In order to make this distinction more apparent, Lindstrom provides the following example.

Today John knows that yesterday there was an even number of books in his book cabinet and that then he did not know that.

Let us analyse this example with the use of situational modal logic used earlier for the analysis of the liar's paradox. Let us assume that A means the sentence *There is an even number of book's in John's book cabinet.* Let us further assume that $s_d$means the situation today and s_w means the situation yesterday. Moreover, K_J will mean *John knows that.* The discussed sentence may be then written down as follows:

$$[s_d]\ K_J\ ([s_w]\ A \wedge [s_w] \sim K_J\ [s_w]\ A),$$

or, if only the epistemic operator K_J is subject to the extensionality rule, in the following form, equivalent on the basis of the situational modal logic:

$$[s_d]\ K_J\ [s_w]\ (A \wedge [s_w] \sim K_J\ [s_w]\ A).$$

Let K mean the epistemic operator *it is known that.* Generally, the fact that in situation $s_i$it is known that A, will be written down as $[s_i]\ KA$, the fact that it is known that in situation $s_j$it is so that it is known that A will be written down as $K\ [s_j]\ A$, and the fact that in situation $s_i$it is known that in situation $s_j$it is so that A will be written down as $[s_i]\ K\ [s_j]\ A$.

It may now be demonstrated that the existence of such sentence A and such situation s, that IN SITUATION S IT IS SO THAT A, AND THAT IN SITUATION S IT IS NOT KNOWN THAT IN SITUATION S IT IS SO THAT A, is not at all contradictory with the cognizability principle. We need to, however, formulate a situational paraphrase of the cognizability principle stating that each true judgement is cognizable. Let us namely assume that IF IN ANY FREELY DETERMINED SITUATION S_I IT IS SO THAT A, THAN THERE IS SUCH SITUATION S_J IN WHICH IT IS KNOWN THAT IN SITUATION S_I IT IS SO THAT A. In other words, let us assume that:

(K) For any i, if $[s_i]\ A$, then there exists such j that $[s_j]\ K\ [s_i]\ A$.

Let us also assume that the knowledge operator K is separable with respect to conjunction and that the knowledge logically implies the truth, i.e. that operator K is governed by the following laws:

(K1) $K\ (A \wedge B) \equiv\ K(A) \wedge K(B)$,

(K2) $K(A) \rightarrow\ A$.

Now, let us assume that s_k is such a situation, and A is such a sentence that:

(1.1) $[s_k]\ (A \wedge \sim K\ [s_k]\ A)$.

Thanks to the situational version of the cognizability principle, we may now claim that for certain determined l

(1.2) $[s_l]\ K\ [s_k]\ (A \wedge \sim K\ [s_k]\ A)$.

Thanks to the assumptions concerning the logic of the situational model operators (Z1), (Z2) and (Z3) and the knowledge operator (K1) and (K2) we may in turn claim that

(1.3) $[s_l]\ K\ [s_k]\ A \wedge [s_k] \sim K\ [s_k]\ A$

and that

(1.4) $[s_l]\ K\ [s_k]\ A \wedge \sim [s_k]\ K\ [s_k]\ A$.

This is no contradiction, of course. Simply, in situation $s_l$it is so that A, and in situation $s_k$it is not known that in situation $s_k$it is so that A.

It may be demonstrated, however that there does not exist such situation s_m in which it is known that in situation s_m it is so that A and in situation s_m it is not known that in situation s_m it is so that A. When applying the situational modal logic and laws K1 and K2 it is possible to prove any sentence in the form:

$\sim [s_m]\ K\ [s_m]\ (A \wedge \sim [s_m]\ KA)$.

Let us assume not directly that for a certain m

(2.1) $[s_m]\ K\ [s_m]\ (A \wedge \sim [s_m]\ KA)$

Thanks to (Z1), (Z2) and (Z3) and (K1) and (K2) we now have

(2.2) $[s_m]\ K\ [s_m]\ A \wedge [s_m] \sim K\ [s_m]\ A$

and

(2.3) $[s_m]\ K\ [s_m]\ A \wedge \sim [s_m]\ K\ [s_m]\ A.$

Taking into account the situational contexts with the use of the previously presented situational modal logic makes it therefore possible to demonstrate that Fitch's argument does not at all undermine the moderate version of the cognizability principle, according whereto IF IN A GIVEN SITUATION IT IS SO AND SO, THEN THERE IS ALSO SUCH ANOTHER SITUATION IN WHICH IT IS KNOWN THAT IN THE FIRST SITUATION IT IS SO AND SO.

SITUATIONAL MODAL LOGIC

The discussion presented above concerning the liar's paradox and Fitch's paradox indicates that the situational modal logic used therein is an interesting tool for analysing situational contexts of the examined utterances.

Hereinafter, this logic will have the form of a formalized propositional calculus. First, we will present the symbolic language of this logic, and then its syntactic and semantic characteristic. We will also define a set of propositions of the situational modal logic. Then we will introduce the notions of the situational model and the situational modal tautology. It will finally turn out that each correctly constructed expression of the language of situational modal logic is a proposition if and only if it is a situational modal tautology. The syntactic and semantic approaches therefore characterise the same set of logical theses.

The language of situational modal logic (**SLL**) is obtained by enrichment of the dictionary of the classic propositional calculus by countably many one-argument modal operators: $[s_0]$, $[s_1]$, $[s_2]\ldots$ It therefore contains only the following symbols:

(S1) countably many sentence symbols: P_0, P_1, $P_2\ldots$,

(S2) the connectives of the classic propositional calculus $\sim$, $\wedge$, $\rightarrow$,

(S3) countably many one-argument modal operators: $[s_0]$, $[s_1]$, $[s_2]\ldots$,

(S4) brackets: (,).

A set of **SLL** well-formed formulas, or formulas in short, is defined inductively in the usual way. Letters *A, B, C ...* will mean freely determined correctly constructed formulas. Symbols $[s_i]$ and $[s_j]$ etc. will mean respectively the *i*-th and the *j-th* situational operator, and symbol $P_i$will mean the *i*-th sentence symbol.

The formula in the form of $[s_i]\ A$ should be read: *in situation* s_i *it is so that* A.

The formula in the form $\sim(\sim A \wedge \sim B)$ will also be written down as $A \vee B$, and the formula in the form $(A \rightarrow B) \wedge (B \rightarrow A)$ will be also written down as $A \equiv B$.

The set of propositions of the situational modal logic (**SLA**), or the propositions in short, is the smallest containing:

(A1) all of the tautologies of the classic propositional calculus,

(A2) all of the formulas in the following form $[s_i]\ (A \rightarrow B) \rightarrow ([s_i]\ A \rightarrow [s_i]\ B)$,

(A3) all of the formulas in the following form $[s_i]\ A \rightarrow \sim [s_i] \sim A$,

(A4) all of the formulas in the following form $[s_i]\ A \equiv [s_j]\ [s_i]\ A$ and $\sim [s_i]\ A \equiv [s_j] \sim [s_i]\ A$,

and closed on:

(R1) *modus ponens* $A \rightarrow B,\ A\ /\ B$,

(R2) the rule of situational validity $A\ /\ [s_i]\ A$.

We will say that formulas A and B are equivalent, if formula $A \equiv B$ is a proposition.

Conclusion 1

(1) Each formula in the following form: $[s_i]\ (A_0 \wedge A_1 \wedge ... \wedge A_n) \equiv [s_i]\ A_0 \wedge [s_i]\ A_1 \wedge ... \wedge [s_i]\ A_n$ is a proposition.

(2) A set of propositions is closed for the extensionality rule $A \equiv B\ /\ [s_i]\ A \equiv [s_i]\ B$ and the monotonicity rule $A \rightarrow B\ /\ [s_i]\ A \rightarrow [s_i]\ B$.

Conclusion 2. Each formula in the following form: $F_0F_1...F_n\ [s_i]\ B$ in which $0 \leqslant k \leqslant n$ is a negation connective or a freely determined situational modal operator, is equivalent to the formula in the following form: $[s_i]\ B$ or $\sim [s_i]\ B$.

Let A be a formula in the following form $[s_i]\ B$ or $\sim[s_i]\ B$. If formula A is preceded by the symbol of negation or a situational modal marker then on the basis of A4 we will get a formula equivalent to the formula in the form $[s_i]\ B$ or $\sim\ [s_i]\ B$.

Conclusion 3. If A is a proposition or a counterproposition then each equivalent in the form of $[s_i]\ A \equiv\ A$ is a proposition.

If A is a proposition, then on the basis of the situational applicability rule also $[s_i]\ A$ is a proposition. If A is a counterproposition than $\sim A$ is a proposition, on the basis of the situational applicability rule $[s_i] \sim A$ is a proposition and thanks to A3 $\sim [s_i]\ A$ is a proposition.

Conclusion 4.

(1) If A is a formula in the following form $[s_j]\ B$, then on the basis of A4 each equivalent in the form of $[s_i]\ A \equiv\ A$ is a proposition.

(2) If each equivalent in the form of $[s_i]\ A \equiv\ A$ is a proposition and each equivalent in the form of $[s_i]\ B \equiv\ B$ is a proposition, then each equivalent in the form of $[s_i] \sim A \equiv\ \sim A$, $[s_i]\ (A \wedge B) \equiv\ A \wedge B$ and $[s_i]\ (A \rightarrow\ B) \equiv\ A \rightarrow\ B$ is also a proposition.

Let us assume that each equivalent in the following form $[s_i]\ A \equiv\ A$ is a proposition and each equivalent in the following form $[s_i]\ B \equiv\ B$ is a proposition.

Therefore, each equivalent in the form of $\sim A \equiv\ \sim [s_i]\ A$ is a proposition, moreover each equivalent in the form of $[s_j] \sim A \equiv\ [s_j] \sim [s_i]\ A$ is a proposition and each equivalent in the form of $[s_j] \sim A \equiv\ \sim [s_i]\ A$ is a proposition. Therefore, each equivalent in the form of $[s_j] \sim A \equiv\ \sim A$ is a proposition.

Similarly, each proposition in the form of $(A \wedge B) \equiv\ ([s_i]\ A \wedge [s_i]\ B)$ is a proposition and therefore each equivalent in the form of $(A \wedge B) \equiv\ [s_i]\ (A \wedge B)$ is a proposition.

Finally, since each implication in the form of $[s_i]\ (A \rightarrow\ B) \rightarrow\ ([s_i]\ A \rightarrow\ [s_i]\ B)$ is a proposition, then each implication in the form of $[s_i]\ (A \rightarrow\ B) \rightarrow\ (A \rightarrow\ B)$ is a proposition. Since the implications in the form of $B \rightarrow\ (A \rightarrow\ B)$ and $\sim A \rightarrow\ (A \rightarrow\ B)$ are classical prepositional calculus sentences, then implications in the form of $[s_i]\ B \rightarrow\ [s_i]\ (A \rightarrow\ B)$ and $[s_i] \sim A \rightarrow\ [s_i]\ (A \rightarrow\ B)$ are propositions. Therefore, each implication in the form of $B \rightarrow\ [s_i]\ (A \rightarrow\ B)$ and each implication in the form of $\sim A \rightarrow\ [s_i]\ (A \rightarrow\ B)$ is a proposition, and therefore each implication in the form of $(A \rightarrow\ B) \rightarrow\ [s_i]\ (A \rightarrow\ B)$ is a proposition. Therefore, finally, each equivalent in the form of $[s_i]\ (A \rightarrow\ B) \equiv\ A \rightarrow\ B$ is a proposition.

Let us inductively define property N.

(0) Each proposition and counterproposition has property N.

(1) Each formula in the form of $[s_i]\ A$ has property N.

(2) If formulas A and B have property N, then formulas $\sim A$, $\sim B$, $A \wedge B$ and $A \rightarrow B$ also have property N.

(3) Nothing else has property N.

Conclusion 5. If formula A has property N, then each equivalent in the form of $[s_i]\ A \equiv A$ is a proposition.

The fact that in a certain situation $s_i$it is so that A, will be understood by us in such a manner that in any circumstances in which situation $s_i$takes place, sentence A is true. In other words, we assume that sentence $[s_i]\ A$ is true if and only if sentence A is true in every possible word, of which situation $s_i$is a part. This concept will be the starting point for the semantic description of the situational modal logic.

We will understand a "situational model" as an ordered triple $\langle W, \lambda, V \rangle$, in which W is a not empty set, λ is a sequence of not empty sub-sets of W, and V is a function ascribing each sentence symbol a certain sub-set of set W.

We will call the elements of set W possible worlds and we will mark them with the following symbols, v, w, etc. W_i^λshall mean the *i-th* element in sequence λ. We will call set W_i^λ a set of possible worlds in which situation $s_i$takes place. The assumption that for any freely determined i set W_i^λ is not empty, reflects the conviction that each situation takes place in a certain possible world. For any freely determined i we will call set $V(P_i)$ a set of possible worlds, in which sentence $P_i$is true.

Notation $w \models A$ shall mean that formula A is true in a possible world w.

Let $\langle W, \lambda, V \rangle$ be a determined situational model. For any freely determined world w belonging to W:

$w \models P$ iff $w \in V(P_i)$;

$w \models \sim A$ iff it is not true that $w \models A$;

$w \models A \wedge B$ iff $w \models A$ and $w \models B$;

$w \models A \rightarrow B$ iff $w \models A$ then $w \models B$;

$w \models [s_i]\ A$ iff $\forall v$ if $v \in W_i^\lambda$ then $v \models A$.

Let us say that formula A is valid in situational model $\langle W, \lambda, V \rangle$, if for any w belonging to W, $w \models A$. Let us also say that formula A is a situational modal tautology, if it is valid in every situational model.

Conclusion 6. All propositions of the modal situational logic are situational modal tautologies.

All tautologies of the classic propositional calculus and all formulas in the form: $[s_i]\ (A \rightarrow B) \rightarrow ([s_i]\ A \rightarrow [s_i]\ B)$, $[s_i]\ A \rightarrow \sim [s_i] \sim A$, $[s_i]\ A \equiv [s_j]\ [s_i]\ A$ and $\sim [s_i]\ A \equiv [s_j] \sim [s_i]\ A$ are applicable in every situational model. Moreover, if the formula in the form $A \rightarrow B$ is applicable in every situational model and formula A is applicable in every situational model, then also formula

B is applicable in every situational model. Similarly, if formula A is applicable in every situational model, then each formula in the form $[s_i]\ A$ also applies in every situational model.

In order to more easily see that all formulas in the form $[s_i]\ A \equiv\ [s_j]\ [s_i]\ A$ and $\sim [s_i]\ A \equiv\ [s_j] \sim [s_i]\ A$ are situational modal tautologies, let us notice that in any freely determined situational model any freely determined formula in the form $[s_i]\ A$ is true in a certain possible world, if and only if it is true in all possible worlds.

For a freely determined $\langle W, \lambda, V\rangle$ we therefore have:

(a) $\exists w\ (w \models [s_i]\ A)$ iff $\forall w\ (w \models [s_i]\ A)$.

For a freely determined $\langle W, \lambda, V\rangle$ we also have:

(b) if $\forall w\ (w \models A)$ then $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$,

(c) if $\sim \exists w\ (w \models A)$, then $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$,

(d) $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$ and $\exists w\ (w \models B)$ iff $\forall w\ (w \models B)$, then $\exists w\ (w \models \sim A)$ iff $\forall w\ (w \models \sim A)$, $\exists w\ (w \models A \wedge B)$ iff $\forall w\ (w \models A \wedge B)$ and $\exists w\ (w \models A \rightarrow\ B)$ iff $\forall w\ (w \models A \rightarrow\ B)$,

(e) $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$, iff for any freely determined i $\forall w\ (w \models [s_i]\ A \equiv\ A)$.

Points (a), (b) and (c) obtain on the basis of the definition of truth in the situational model and thanks to the non-emptiness of set W.

Let us now assume that $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$ and $\exists w\ (w \models B)$ iff $\forall w\ (w \models B)$.

Let $\exists w\ (w \models \sim A)$, therefore $\exists w$ (not true that $w \models A$), i.e. that it is not true that $\forall w\ (w \models A)$, and therefore it is not true that $\exists w\ (w \models A)$, and therefore finally $\forall w\ (w \models \sim A)$. Let further $\forall w\ (w \models \sim A)$, therefore not true that $\exists w\ (w \models A)$, and therefore not true that $\forall w\ (w \models A)$, and finally $\exists w\ (w \models \sim A)$.

Let $\exists w\ (w \models A \wedge B)$, therefore $\exists w\ (w \models A)$ and $\exists w\ (w \models B)$, and therefore $\forall w\ (w \models A)$ and $\forall w\ (w \models B)$, i.e. $\forall w\ (w \models A$ and $w \models B)$ and finally $\forall w\ (w \models A \wedge B)$. Further let $\forall w\ (w \models A \wedge B)$, and therefore also $\exists w\ (w \models A \wedge B)$.

Let us further assume that $\exists w\ (w \models A)$ iff $\forall w\ (w \models A)$. Let's now assume that $w_0 \models A$. Therefore $\exists w\ (w \models A)$, and also $\forall w\ (w \models A)$, and therefore for any freely determined i $\forall w$ (if $w \in W_i^{\lambda}$, then $w \models A$), i.e. for any freely determined $w_0 \models [s_i]\ A$. Further let us assume that for any freely determined i $w_0 \models [s_i]\ A$. Therefore, for any freely determined i $\forall w$ (if $w \in W_i^{\lambda}$, then $w \models A$), and since for any freely determined i $W_i^{\lambda} \neq \emptyset$, $\exists w\ (w \models A)$, and therefore also $\forall w\ (w \models A)$, and therefore finally $w_0 \models A$.

Let us further assume that $\exists w\ (w \models A)$ and $\exists w$ (not true that $w \models A$). Therefore there exists such w_1 and w_2 that $w_1 \models A$, and not true that $w_2 \models A$. Since for any freely determined i $\exists w\ (w \models [s_i]\ A)$ iff $\forall w\ (w \models [s_i]\ A)$, we have $w_1 \models A$ and $\sim w_1 \models [s_i]\ A$ or $\sim w_2 \models [s_i]\ A$ and $w_2 \models [s_i]\ A$.

In a freely determined situational model, the formula which is either a

situational modal tautology or a situational modal countertautology, or finally a formula in the form of $[s_i]\ A$, is true in a certain possible world, if and only if it is true in all possible worlds. Furthermore, if both formulas A and B is possible in a certain world, then also the formulas in the following form $\sim A$, $A \wedge B$ and $A \rightarrow B$ are true in a certain possible world, if and only if they are true in all possible worlds. What is more, a freely determined formula A is true in all possible worlds, if and only if, for a freely determined i the following equivalent $[s_i]\ A \equiv\ A$ is a situational modal tautology.

We shall say that formula A is derivable from the set of formulas X, in symbols $X \vdash\ A$, if there exists such finite sub-set of set X $\{B_0, B_1, B_2, ... B_k\}$, that formula $(B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k) \rightarrow\ A$ is a proposition. We shall also say that the set of formulas X is inconsistent, if there is such formula A, that A and $\sim A$ are derivable from set X (or in other words: that formula $A \wedge \sim A$ is derivable from set X). We shall finally say that the set of formulas X is consistent, if it is not inconsistent.

The set of formulas X will be called maximally consistent, if X is consistent and if for any formula A, either A belongs to X or $\sim A$ belongs to X. According to Lindenbaum's lemma, each consistent set of formulas is a sub-set of some maximally consistent set of formulas.

If X is a maximally non-contradictory set of formulas, then for any freely determined formulas A and B,

$\sim A \in\ X$ iff it is not true that $A \in\ X$,
$A \wedge B \in\ X$ iff $A \in\ X$ and $B \in\ X$,
$A \rightarrow\ B \in\ X$ iff $A \in\ X$, then $B \in\ X$.

Conclusion 7. If the set of formulas X is consistent and formula $\sim A$ is not derivable from set X, then the set of formulas $X \cup \{A\}$ is consistent.

Let us assume that X is a consistent set of formulas. Moreover, $X \nvdash\ \sim A$. Let us assume indirectly that set $X \cup \{A\}$ is inconsistent. Thus, there exists such formula C that $X \vdash\ C \wedge \sim C$. Therefore, there exists such finite set $\{B_0, B_1, B_2, ... B_k\}$ that $\{B_0, B_1, B_2, ... B_k\} \subseteq\ X$ and formula $(B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k \wedge A) \rightarrow\ (C \wedge \sim C)$ is a proposition. Thus, formula $\sim (B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k \wedge A)$ and formula $(B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k \wedge A) \rightarrow\ \sim A$ are also propositions. Therefore, $X \vdash\ A$.

Conclusion 8. If the set of formulas X is consistent and formula A is derivable from set X, then set of formulas $X \cup \{A\}$ is consistent.

We shall say that formula A is a situational modal formula, when there exists such set X containing only formulas in the following form $[s_i]\ B$ or $\sim [s_i]\ B$ that A is derivable from X. We note that formula A is a situational modal formula, if and only if there exists such formula C in the form of $[s_i]\ B$ that implication C

$\rightarrow$ A is a proposition.

Let us assume that δ is a determined sequence of formulas in the following form: $[s_i]\ B$. We will use A_n^δ to mark an n-th element in sequence δ. Let us define the following sequence of the sets of formulas

$$[X_0^\delta] = \mathbf{SLA}$$

$$[X_{n+1}^\delta] = \left| \begin{array}{l} X_n^\delta \cup \left\{A_n^\delta\right\},\ if \ \sim A_n^\delta \ is\ not\ derivable\ from\ X_n^\delta, \\ X_n^\delta \cup \left\{\sim A_n^\delta\right\},\ if \ \sim A_n^\delta \ is\ derivable\ from\ X_n^\delta. \end{array} \right.$$

Now let $X^\delta =_{DEF} \cup_n X_n^\delta$.

Let us note that:

(a) $\mathbf{SLA} \subseteq X^\delta$.

(b) For any n $X_n^\delta \subseteq X_{n+1}^\delta$.

(c) For any n set X_n^δ is consistent.

(d) X^δ is consistent.

(e) For any B either $[s_i]\ B \in X^\delta$ or $\sim [s_i]\ B \in X^\delta$.

(f) If A is a formula in the following form: $[s_i]\ B$, but is neither a proposition nor a counterproposition, then for a certain δ_1 formula A, belongs to $X^{\delta 1}$ and for certain δ_2 formula $\sim A$ belongs to $X^{\delta 2}$.

Points (a) — (e) occur on the basis of the definition of the sequence of sets $\{X_n^\delta\}$, the definition of set X^δ and conclusions 7 and 8.

Let us assume that A is a formula in the form $[s_i]\ B$, which is neither a proposition nor a counterproposition. Let us also assume that δ_1 is such a sequence of formulas in the following form $[s_i]\ B$, that $A_0^{\delta 1} = A$. Obviously $A \in X_1^{\delta 1}$ and therefore $A \in X^{\delta 1}$. Further δ_2 shall be such a sequence of formulas in the form $[s_i]\ B$, that $A_0^{\delta 2} = [s_j] \sim A$ and $A_1^{\delta 2} = A$. Since A is not a proposition, it cannot be derived from $X_0^{\delta 2}$. Yet, each equivalent in the form $A \equiv \sim [s_j] \sim A$ is a proposition and therefore also $\sim [s_j] \sim A$ is not derivable from $X_0^{\delta 2}$. Therefore $[s_j] \sim A \in X_1^{\delta 2}$. On the other hand each equivalent in the form of $[s_j] \sim A \equiv \sim A$ is a proposition and therefore $\sim A$ is derivable from $X_1^{\delta 2}$. So $\sim A \in X_1^{\delta 2}$ and therefore $\sim A \in X^{\delta 2}$.

For a determined sequence δ of formulas in the form of $[s_i]\ B$, we shall now construct a situational model $\left\langle W^\delta,\ \lambda^\delta\ ,\ V^\delta \right\rangle$.

W^δ shall be a set of all maximally non-contradictory over-sets of set X^δ. Symbols v^δ , w^δ ,... shall mean the elements of set W^δ. Certainly, $\exists w^\delta\ ([s_i] \in w^\delta)$ if and only if $\forall w^\delta\ ([s_i] \in w^\delta)$. $W_i^{\lambda\delta}$shall mean the i-th element of sequence λ^δ.

For any i let $W_i^{\lambda\delta} = \{v^\delta : \{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\} \subseteq v^\delta\}$. We need to note that for any i set $\{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\}$ is consistent. Let us assume indirectly that set $\{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\}$ is inconsistent. Therefore there exists such finite sub-sets $\{B_0, B_1, B_2, ... B_k\}$ that formulas $B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k \rightarrow A$ and $B_0 \wedge B_1 \wedge B_2 \wedge ... \wedge B_k \rightarrow \sim A$ are propositions. Therefore formulas $[s_i]\ B_0 \wedge$

$[s_i]\ B_1 \wedge ... \wedge [s_i]\ B_k \rightarrow\ [s_i]\ A$ and $[s_i]\ B_0 \wedge [s_i]\ B_1 \wedge ... \wedge [s_i]\ B_k \rightarrow\ [s_i] \sim A$ are also propositions and therefore they belong to every w^δ. Yet formulas $[s_i]\ B_0$, $[s_i]\ B_1$, $[s_i]\ B_2$,..., $[s_i]\ B_k$ also belong to every w^δ. Therefore formulas $[s_i]\ A$ and $[s_i] \sim A$, as well as $[s_i]\ A$ and $\sim [s_i]\ A$ also belong to every w^δ.

For every i set $W_i^{\lambda\delta}$ is therefore not empty.

Let us finally assume that for every i $V^\delta(P_i) = \{w^\delta : P_i \in\ w^\delta\}$.

Conclusion 9. For any freely determined formula A and any w^δ, $w^\delta \models A$ if and only if $A \in\ w^\delta$.

We will only demonstrate that for any freely determined formula A and any freely determined i, if for any w^δ $A \in\ w^\delta$ if and only if $w^\delta \models A$, then for any w^δ $[s_i]\ A \in\ w^\delta$ if and only if $w^\delta \models [s_i]\ A$.

Let us assume that A is such a formula that for any w^δ $A \in\ w^\delta$ if and only if $w^\delta \models A$.

Now, $[s_i]\ A \in\ w_0^\delta$.Therefore A $\in\ \{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\}$. Thus, if $v^\delta \in W_i^{\lambda\delta}$, i.e. $\{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\} \subseteq v^\delta$ then $A \in\ v^\delta$. Thus $\forall v^\delta\ (v^\delta \in W_i^{\lambda\delta} \rightarrow\ A \in\ v^\delta)$. Therefore $\forall v^\delta\ (v^\delta \in W_i^{\lambda\delta} \rightarrow\ v^\delta \models A)$. And so $w_0^\delta \models\ [s_i]\ A$.

Let us further assume that $w_0^\delta \models\ [s_i]\ A$. Therefore, $\forall v^\delta\ (v^\delta \in W_i^{\lambda\delta} \rightarrow\ v^\delta \models A)$, i.e. also $\forall v^\delta\ (v^\delta \in W_i^{\lambda\delta} \rightarrow\ A \in\ v^\delta)$. Therefore $\forall v^\delta\ (\{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\} \subseteq v^\delta) \rightarrow\ A \in\ v^\delta$. Set $X^\delta \cup \{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\} \cup \{\sim A\}$ is therefore contradictory. Therefore its finite subset $\{C_0, C_1, C_2, ... C_k, \sim A\}$ is also contradictory. Therefore formula $(C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k) \rightarrow\ A$ is a proposition. Therefore also formula $[s_i]\ C_0 \wedge [s_i]\ C_1 \wedge [s_i]\ C_2 \wedge ... \wedge [s_i]\ C_k \rightarrow\ [s_i]\ A$ is a proposition and belongs to w_0^δ. Yet, since $\{C_0, C_1, C_2, ... C_k\} \subseteq\ \{B : \exists w^\delta\ ([s_i] \in B\ w^\delta)\}$, each of the formulas $[s_i]\ C_0$, $[s_i]\ C_1$, $[s_i]\ C_2$, ... $[s_i]\ C_k$ belongs to w_0^δ. Therefore finally $[s_i]\ A \in w_0^\delta$.

Conclusion 10. If formula A is not a proposition, then there exists such situational model, in which formula A is not valid. Each situational modal tautology is therefore a proposition.

Let us assume that formula A is not a proposition, We shall demonstrate that for a certain sequence δ_n of formulas in the following form $[s_i]\ B$ formula A does not belong to a certain maximally consistent overset of set $X^{\delta n}$.

If A is a situational modal formula, then there exists such set X containing only formulas in the form of $[s_i]\ B$ or $\sim [s_i]\ B$, that formula A is derivable from X. Therefore, there exists such finite subsets of set X $\{C_0, C_1, C_2, ... C_k\}$, that formula $(C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k) \rightarrow\ A$ is a proposition. Obviously, conjunction $C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k$ is not a proposition. Since each of the formulas C_0, C_1, C_2, ... C_k is in the form $[s_i]\ B$ or $\sim [s_i]\ B$, conjunction $C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k$ is equivalent to every formula in the form $[s_i]\ (C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k)$. Obviously, no such formula is a proposition. Therefore, each formula in the form $\sim [s_i]\ (C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k)$ belongs to a certain set in the form of

$X^{\delta n}$. Therefore formula $\sim (C_0 \wedge C_1 \wedge C_2 \wedge ... \wedge C_k)$ belongs to every maximally consistent overset of set $X^{\delta n}$. Set $X^{\delta n} \cup \{\sim A\}$ is therefore non-contradictory and therefore is a subset of a certain maximally consistent overset of set $X^{\delta n}$.

If formula A is not a situational modal formula, then it is not derivable from any set of formulas in the form of $[s_i]\ B$ or $\sim [s_i]\ B$. Therefore for any δ_n set $X^{\delta n} \cup \{\sim A\}$ is non-contradictory and is a subset of a certain maximally consistent overset of set $X^{\delta n}$.

Therefore, situational modal logic is set by the class of all situational models.

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Anna Pietryga

THE FORMAL PRINCIPLE OF INCONSISTENCY IN LOGIC AND NATURAL LANGUAGE

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The formal principle of inconsistency in logic, in the form in which it comes from Aristotle, asserts that two contradictory judgments are not both true. Since the 20^{th} century logic has progressed towards ever higher formality, it might be more suitable to say that inconsistent sentences, rather than judgments, cannot be both true.[1] The universally accepted and lectured classical calculus of sentences[2] adopts this principle without reservations. Some of the more recent logical systems are limiting the scope of its applicability, and also the natural language in which we daily express our judgments and inferences accepts in some cases a simultaneous occurrence of contradictory sentences. This text sets out to present a brief and simplified outline of this state of affairs. The systems of logic that accept inconsistencies and the related issues concerning natural language will be presented against the (vaguely sketched) background of classical logic.

LOGIC

SENTENTIAL CALCULUS

[1]See Jaśkowski 1948: 60. Jaśkowski stresses, however, that the principle of contradiction that refers to sentences must be appended with a constraint rule that what is meant is the truthfulness "on account of the same language" or "given the meaning of the words appearing in these sentences is the same." These remarks obviously cross the boundaries of purely formal syntagmatics and bring us closer to the original Aristotelian version (Marciszewski 1988: 157).

[2]The term, even though broadly accepted, is inappropriate in the sense that it pertains to systems formed in relatively recent times (late 19^{th} century). Ancient and medieval European logic is distinguished from "classical" and is called traditional.

Let us start with the contradictions in logic. Within its limits, the "natural environment" for the occurrence of the principle of inconsistency (traditionally formulated as a negated conjunction of inconsistent sentences) is the sentential calculus. Classical logic accepts the principle as binding, so any contradictions within the logic must be rejected as false. If the authors of alternative logical concepts want to change that, they must meet rather complex difficulties as the rejection of the principle violates a network of interdependencies it is caught up with. The main technical problem that makes it hard for inconsistency to be introduced into the system of making inferences is the danger of causing the so-called overflow. A logical system is affected by overflow if we are forced to recognize all the sentences that occur in it as true. (It resembles a situation where somebody answers all yes/no questions[3] with "yes"). Such a situation is the case along with classical logical laws, when there occurs within a system a contradiction or any (other) falsity that has been accepted (considered true). This is related to an interpretation of the implication functor, accepted in classical logic: in connecting two clauses, the first (antecedent) being false, the functor results in a true sentence, irrespective of the value of the other component clause (postcedent); in particular, any implication is true, whose antecedent is a conjunction of contradictory sentences. Any logical system admitting one contradiction within its propositions must then modify its laws in such a way as to prevent overflow.

The method of the modification applied allows the classification of these kinds of logics (the so-called paraconsistent logics). One of these is presented by Graham Priest and Richard Routley (1984, 1989)[4]. The three types of paraconsistent logics identified might be tagged: non-adjunctive, positive plus and relevant. The differences between them concern the interpretation and possibilities of using conjunctions, and thus the mechanisms of inference, too. The following notes are brief characteristics of the three types of logic. The so-called dynamic dialectical logic situates itself beyond the classification, and will be briefly discussed later on.

The distinctive feature of the non-adjunctive logic is that a recognition of any two sentences does not entail the recognition of their conjunction. The pioneering discursive logic by Stanisław Jaśkowski (1948) does not undergo overflow if two interlocutors express inconsistent opinions separately. Overflow occurs only when one interlocutor speaks for the conjunction of inconsistent sentences, introducing the so-called conjunctive inconsistency (as opposed to the non-adjunctive one)[5] to the discourse. Thus a possibility of the system overflowing upon the conjunctive law of overflow (which Jaśkowski calls the conjunctive form

[3]That is, settlement/decision questions (see e.g. Szymanek 2001: 260).

[4]See: somewhat different classifications in Priest (1988); *cf.* Marconi (1981).

[5]The occurrence of inconsistent sentences in conjunction is a matter of strong inconsistency, also called collective and conjunctive; if the inconsistent sentences are not in conjunction, we speak of weak inconsistency, also called adjunctive and distributive

of Scotian Law) becomes limited.[6]

All utterances by the participants are appended by discursive assertion, that is, a modal functor of possibility or a note "in the view of one of the participants..." Also, Jaśkowski introduces a non-standard implication appending the antecedent with a discursive assertion and the postcedent with ordinary assertion. This understanding of implication (discursive assertion) allows for the blocking of the implicative form of the law of overflow, and at the same time it allows for the application of the rule of detachment [based on *modus ponens*] to interlocutors' propositions. The downside of Jaśkowski's logic includes its inability to freely create the conjunction of premises, expressed by the interlocutors separately, which considerably limits inference within the logic.

Positive plus logic is a positive fragment of intuitionistic logic that is enriched (contrary to its name) in the functor of specific "negation" (Priest, Routley 1989: 176-177). The theses formulated by Newton da Costa, that define a new functor with an old name, do not allow for an identification of extensional interdependencies between the logical value of a sentence, its negation and the negation of its negation. It is known from the given conditions, however, that a sentence and its negation can both be true, and at least one of those is always true. Therefore, a modified negation does not form an inconsistency with a relevant assertion — it forms subcontraries, and the principle of inconsistency is not a proposition of positive plus logic. These properties make some authors fail to recognize the functor da Costa introduced as negation (Priest, Routley 1989: 163-165). Da Costa's logic is also different from classical logic in that in connection with the changes concerning negation, a number of inference laws, such as *tollendo tollens,* fail within it (Priest, Routley 1989: 165).

The paraconsistent relevant logic retains classical conjunction and negation. Relevant implication, in its approximation of common inferential intuitions, requires that there be a substantive connection between the antecedent and postcedent — the possibility of overflow is largely limited in relevant logic. This logic is also different from the ones mentioned before in its introduction of a novel logical value. A sentence may not be true only, not false only and not only true and false at the same time: it may have the value "paradoxically inconsistent," that is, "true and false at the same time."

Dideric Batens's dynamic dialectical logic is different from the previously discussed static calculi in that it adjusts to the actual discourse situation. Acting upon a consistent set of premises, Batens's logic behaves like classical logic (Batens 1989: 190). Its application to inconsistent data results in no overflow, although

(Poczobut 2000: 335).

[6]The law of Duns Scott (the law of overflow) enables us to infer any sentence from a pair of inconsistent sentences. Its conjunctive form is this: *if* [*P and Not(P)*], *then Q.* The alternative implicational form: *if P then [if simultaneously also Not(P), then Q].*

in a situation like this some inference rules used within it are blocked. Batens divides the sentences appearing in a proof into those that behave consistently at a given stage of proof (either only those with a negation mark or those without it only appeared in it as proposition), as well as those that behave inconsistently (both proposition ad its negation is a proposition in a proof). If there appears an inconsistency in proof (even in the sense of non-adjunctive inconsistency), that is, if it will turn out that sentence p behaves inconsistently, it causes the elimination from the proof of those lines which were only formed because so far sentence p was treated as one that behaves in a consistent manner (the rule of dynamic logic is the "presumption of consistency" — the behavior of a sentence is treated as consistent until the moment it might turn out not to be so). This is facilitated by the modified manner of writing the stages of the proof: the standard four columns of annotation (ordinal number, newly included formula, preceding formulas, used in a given step, respective inference rule) are supplemented by Batens with a fifth column : it lists the sentences whose consistent behavior conditions the validity of the step.

PREDICATE CALCULUS

There is at least one more place in the coursebooks of logic, where there is a talk of contradiction (although no principle of inconsistency is formulated there). This point is the logic square, where sentences in the pairs SaP-SoP and SeP-SiP are determined to be mutually inconsistent. There is no formal interpretation of negation in those, but they are considered contradictory as they describe irreconcilable (as is usually admitted) states of affairs.

In these contradictions, two issues converge, connected with another two or three of the traditional interpretations of logical inconsistency (the first, logical one, was discussed before). On the one hand, the inconsistencies can be explained by making a reference to the ontological principle of inconsistency: the same cannot simultaneously be and not be; on the other hand, one can refer to the psychological version of the same principle which has it that the same thing cannot at the same time have a property and not have it. In the psychological variant I suggest skipping what is psychological and instead to focus on the impossibility of a co-occurrence of a quality and its deficiency. This procedure seems legitimate on several counts. First, it is not known why it is in relation to qualities that the psychological impossibility is supposed to obtain and why, as we can imagine, our imagination has broader skills when it comes to truthfulness and existence (even if special treatment were to pertain to the two as transcendentals, the list of the marked ones needs supplementing). Second, the justification of the psychological proposition arouses doubts.[7] Third, having a conviction can be treated as a mare

[7] A criticism of this proposition can be found as early as Husserl (Husserl 1973).

feature of the cognizing subject (Poczobut 2000: 99). Fourth, one can have justified doubts whether the Polish translation appropriately renders the thinking of the Stagirite (Stuchliński 1994).

If we decide to make a similar change, the interpretations will enable a recognition, in the inconsistencies of the logic square, of the inconsistency of being vs. non-being and it having vs. non-having a given property. Each of the inconsistent pairs, written in the language of quantifiers, will clearly pertain to existence and property and also, using De Morgan's laws, it may be in many ways portrayed as a pair made up of a sentence and its negation.

NATURAL LANGUAGE

One can spitefully say that in the case of natural language the issue of inconsistency is much easier and much more complex than in classical logic. It is simpler because in natural language the issue of overflow does not exist on account of the lack of such rules of inference that might cause it. Discursive inconsistency is ubiquitous in natural language and although we are able to link facts, we know that not all opinions need to be treated seriously. Therefore, we use a selective non-adjunctive logic. The speakers and the scientific theories that get affected by inconsistency do happen and we tend to lend them a ready ear by omission or because better solution, but we do not recognize, and neither does relevant logic, an absolute law of everything being inferred from inconsistencies. Deceived, we attempt to reverse the decisions previously made upon a conviction of somebody being honest, which happens in dynamic dialectical logic. Paradoxes of the sort of the paradox of a liar simply exist and tend to be treated as a kind of harmless joke.[8] Therefore we apply an additional category of judgment: paradoxically inconsistent. Natural language probably betrays all the features thanks to which particular paraconsistent logics avoid overflow. The issue is much more complex because both conjunction and negation, which occur in it, as well as the mechanisms of inference — other than "the same" elements in classical logic — elude a detailed description.

The following part of the sketch will skip a number of issues worth considering within our topic and will focus on some aspects of the conjuncts of negation and conjunction (that build the conjunctive inconsistency) as well as the mechanisms of inference in natural language. It would be more convenient to retain in this part of the paper a division between issues of connecting sentences into compound ones, and smaller syntactic elements into concatenations. However, the boundary that divides a compound sentence from a single clause is far from clear.[9] Also, it is not exactly obvious how to make a distinction between sentential and

[8]K. Ajdukiewicz (1985a) wrote of these paradoxes as jokes in 1931.

[9]Discussion on that issue is beside the topic of this paper; see Saloni, Swidziński (1985), Nagórko (1996).

non-sentential negation (Pietrzak 1999: 9-10, 23-24, 33-34). Further remarks will concern (just as the above on logic) the connectors of conjunction and negation understood as functors, having sentential arguments, and attempts to describe the mechanisms of inference.

Starting from the inter-sentential conjunct "and:" it is apparently identical with the corresponding logical functor, it creates a compound sentence from two component clauses, but the sentence thus formed is true only when both clauses are true (to ignore the issue of difficulty judging the veracity of such figurative sentences as "he is on cloud nine"). However, there are serious differences between these.

A logical conjunctive connector is an extensional connective and therefore can connect any sentences irrespective of the situational context. It is very different regarding natural language[10] — contrary to what is suggested by some misleading terminology[11]. The *Encyclopedia of General Linguistics* says that it is incorrect to connect with a co-ordinating conjunct, such as "and," sentences that are not related to each other in content (Polański 1995: 502-503). One can agree that such a relation need not to be implied by the literal meanings of sentences, but it may originate from the structured situation of discourse, and even the sentence "Robin is a mammal that hunts at night and $2 + 2 = 4$" can imaginably be accepted in some sort of context. Still, the very fact that for any sentence such a peculiar context would be necessary indicates that we are not dealing with an extensional conjunction in the logical sense of the term. The same sentence needs no special context to be accepted in the language of extensional logic.

In the case of logical extensional connectives, one can freely (in any sentence and at any time) replace in the existing complex sentence its particular component sentences with others provided that one replaces a true sentence with another true

[10]The examples will concern Polish, which to my knowledge does not affect the conclusions.

[11]Linguists use the terms "extensional" and "intensional" more readily in relation to sentences than to conjunctions (logicians used those in relation to both these groups and also to whole languages); *cf.* Urbańczyk (1991: 397) (*ibidem* a note stating the existence of a difference between the meaning of the terms as used in linguistics and logic); Nagórko (1996: 205-206); Grzegorczykowa (1998: 98). In the latter, the added difficulty is the fact that the terms "extensional" and "intensional" are only used to denote two in three types of hypotactically connected sentences rather than — which is the case in logic — two complementary wholes. C*f.* usage of these terms in relation to negation (Antas 1991: 26 and next).

The terminological confusion dates back to 1962, when Tadeusz Kotarbiński used both terms of conjunctions, making a poor distinction between conjunction of the Polish language and logical functors. Still, the terms "extensional" and "intensional" are treated as complementary in his text (Kotarbiński 1962: 9-10). The article by Kotarbiński is the oldest source that the encyclopaedia by Urbańczyk mentions when discussing intensional sentences (Urbańczyk 1991: 397).

one and/or a false sentence with another false one, and this has no bearing on the veracity or falsity of the whole formula (the so-called *salva veritate* substitutability). From the point of view of extensional logic, singular sentences do not exist in any other way than as carriers of logical values, so there is no difference between the above sentence about the ~~pussy bird~~ and addition and the sentence "Picasso was a king and painted pictures." This property, too, distinguishes the "and" of classical logic and the "natural 'and'."

It is also worth noting that in the case of the "natural 'and'," in many cases the sequence of the elements connected is not insignificant. It suggests a temporal or logical sequence.[12] If the connector "and" were extensional, there would be no difference between the sentences "he thought and did," and "he did and thought," as well as between "You are a doctor and you should know," and "You should know and you are a doctor." Both this fact and the many functions of the conjunction "and" in Polish, makes it distinct from the respective logical connective.

The conjunction "and" surely is not an extensional conjunction in this term's logical sense. This is why a natural conjunction clearly demonstrates the features of relevance. This also pertains to other conjunctive connectors, such as "neither," "not only... but also...." The complications list is supplemented by the occurrence of a communicative element in the semantic of some connectors of a complex meaning, such as "but" and "since" (Wojtasiewicz 1972) as well as the existence of compound connector-less sentences.

Negation, as a one-argument functor, is not subject to syntactic limitations of relevance. We can negate any sentence. However, some pragmatists argue, it is not always so. Givon notices that negation only happens in some contexts in natural language, especially when it can be thought that it is not negation but the corresponding affirmative statement that is true or when the speaker assumes that the interlocutor wrongly thinks so.[13] (Interesting examples are provided by sentences with the expressions such as "there is no doubt"[14] or "I am positive" used exactly when doubt and hesitation arise). This condition considerably reduces the possibility of using negation, and also sentences in the form of strong inconsistency.

When discussing the issue of negation in natural language, it is worth noting that it has no formal mark that would clearly signal its presence and

[12]Among the cases of non-altering "and," Wojtasiewicz (1972) identifies the sequential "and" (A shot was fired and a boar fell down on the ground), explicative (Smith fell off a horse and broke his leg) and accessory "and" (Smith sings and does accompaniment to himself on the guitar).

[13]After Gazdar (1979: 67) and Antas (1991: 38). In a similarly pragmatic manner, the right usage of the conjunction "if" was described by Kazimierz Ajdukiewicz, noting that it is not used when it is obvious that the antecedent is false or the postcedent — true (Ajdukiewicz 1985b).

[14]For a remark on the English phrase "no doubt" see Jespersen (1935:322).

would be absent in other situations. The word "nie," which in Polish is a clear and sole candidate for this kind of mark,[15] in colloquial and careless speech appears in the function of asking for confirmation, like a question tag in English (You were in the cinema yesterday, nie[Polish]/weren't you[Eng.]?)[16] or as an insertion (We were driving for a long time, nie[Pol.]/well[Eng.], and we were tired). Also, in natural language, a "negation"[17] can be seen as creating an opposition rather than inconsistency, when the negated element along with its negation falls short of making up all thinkable logical possibilities, and it can be that neither corresponds to reality (Jespersen 1935: 322f). In Jespersen's opinion, in the case of predicate denial, the justification for such an approach is the fact that without formulating a decisive assertion or negation, we can qualify a declarative sentence as corresponding to a possible state of affairs (in the argumentation provided, it is hard to separate what concerns an act of assertion and that which concerns the content of the judgment under consideration).

On the other hand, negation can be expressed in a way that does not require the appearance of a negative particle (implied negation) (Jespersen 1935: 336-337). We are dealing with this phenomenon in sentences such as "If this is Mark's handwriting, I am a priest" or "A cactus will grow here on my palm if this is his handwriting." Interestingly, in such cases we are dealing with truly extensional substitutability of false for false, as long as the falsity is obvious enough to be identified (Antas calls such falsity rhetorical) (Antas 1991: 44-45). Providing similar examples from English, Jespersen supplies sentences that include contents which a speaker would naturally disagree with, such as "I am a rogue if...," "I'm dashed if..." (Jespersen 1935: 337).[18]

As can be seen from the above, conjunction and negation in natural language are complicated phenomena and are hard to describe. The fact that despite all these complexities we can still effectively communicate must result from the existence of decoding mechanisms. They allow for the proper interpretation of even those sentences which at the literal level do not have any sense as uttered in that particular moment of the dialogue. As noted by Marek Tokarz, the speaker may "try to provide us with information that has little or nothing to do with the

[15] Another complex issue is the relationship between the Polish "nie" (meaning negation, like English "no[t]") and the logical functor of negation (Dąmbska 1964: 237; Antas 1991: 14 and next; Bogusławski 1975: 27 (see note)).

[16] The German non-negational "oder" placed at the end of a sentence seems more open than the Polish "no" and the English and French question tags. It corresponds to the cases of opposition discussed below.

[17] If one may call thus a functor that creates an opposition, and not a contradiction; a functor that creates an opposition; the situation of the particle "nie" resembles in these terms the situation of the functor of "negation" in the extended positive logic.

[18] Also, Jespersen makes a note of other kinds of implied negation, such as those expressed by a verb form or a question.

meaning of the expression used" (Tokarz 1993: 216).[19] A possibility of decoding such signals, beside the cases of agreed codewords, has long been a marked challenge for linguists and logicians. Tokarz remembers the 1946 proposition by Yoshua Bar-Hillel concerning taking "well corroborated laws of pragmatics" into consideration in drawing conclusions from interlocutor's statements: "if S says sentence x, S believes that x is true" or "if S uses primitive language, S is unnerved" (Tokarz 1993: 217f).

H. P. Grice did some sort of taxonomy of this type of relationship. His popular conversational maxims demand that the statements uttered be true and relevant (!), contain the right amount of communicated content and convey it clearly. All these recommendations are subordinated to the chief principle of collaboration with the interlocutor.

The authors see the issue of transmission differently. It is not always the point to tell the truth; sometimes it is to entertain someone with a story (Wilson, Sperber 2000: 230). Relevance is not a sufficient value to justify discourse for all, either. What constitutes one, to Wilson and Sperber, is such relevance which surpasses the relevance of all alternative discourses that are potentially possible at the same time. Two indexes are relative measures of discourse relevance for a given person at a given time: cognitive results (should be as big as possible) and cognitive effort that is needed for the addressee to achieve these results (ought to be minimal). (It is not known how to compare two utterances, with one having a higher informative power but a lower simplicity.) The following example illustrates the proposition.

Peter is a bit off color and goes to the doctor. The doctor — once he has established what is wrong with the patient — may diagnose the patient in any of the following ways (Wilson, Sperber 2000: 231).

a. You are sick.
b. You have the flu.
c. You have the flu or 29 is a square root of 843.

As argued by the authors of the example, literal meanings of all three versions are relevant for the sick patient. B. is more relevant than version a. as the patient can learn more from it. B and c. are in that respect equivalent, but version c. requires much more effort on the part of the listener.

The proposal by Wilson and Sperber brings to mind the solution put forward in 1910 by Jan Łukasiewicz. In a hypothetical world, where all judgments are considered true "a doctor is summoned to the patient [...] diagnoses high

[19]Tokarz illustrates this thesis with an example of rhetorical falsity being applied instead of explicit negation for attracting attention to a mistake that has been committed by the interlocutor.

temperature [...] and all other symptoms of [...] diphtheria. At the same time he knows that there is no high temperature and nor is there a sore throat [...] etc., but pays no attention to the negations that are always true. He only states what there is and not what there is not." (Łukasiewicz 1987: 97). The selectivity of reception and its reverse, the relevance of the communication, is thus the common denominator of the researchers dealing with information being processed in natural discourse, be it from linguistic or logical positions.

Another example is about the functionality (which I tested) of a strongly inconsistent sentence, (which additionally brings us closer to the essential subject matter of this paper) in the context of a phone call. The answer "yes and no" when asked whether x can come to the phone is definitely recognizable as one that informs us about the difficulties of doing so.[20] Even if we do not have a satisfactory definition of a context or a guarantee that such statements will always be understood, individual cases of successful communication of this kind are an argument against excluding those sentences as incorrect.

What conclusions follow up regarding the principle of inconsistency in natural language? Surely, such a language need not block using strongly inconsistent sentences, as illustrated by Polish. Certainly, in sentences of this shape, a keen listener may understand the intended communication considering the context that is not necessarily internally inconsistent.

To sum up, it ought to be said that neither in logical systems nor in natural language is there a need to exclude strongly inconsistent sentences as unacceptable (i.e. false in logic, incorrect in natural language). The existence of such sentences need neither cause overflow in the system, in the first case, nor a communication paralysis in the other.

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[20] A similar example is given by Antas: "This is and is not red" is interpreted by her as an ascertainment of similarity rather than identicality of colors (Antas 1991: 27). Obviously, in both cases one can speak of a change in the boundaries of the applicability of a given predicate, which does not change the fact of there being inconsistency at the surface structure level.

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Anna Pietryga

ON THE SO CALLED PSYCHOLOGICAL LAW OF NON-CONTRADICTION[1]

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The three definitions of the law of non-contradiction highlighted by Jan Łukasiewicz (1910) in Aristotle's *Metaphysics* included, aside from its ontological and logical versions, also the psychological one. Commentators have not reached a consensus as to its precise character. Below I shall present the existing discrepancies and propose a solution.

The law of non-contradiction, formulated in a manner which Łukasiewicz defines as psychological, can be found in the Book Gamma of *Metaphysics*. Łukasiewicz translates the appropriate fragment of the Greek original[2] in the following manner:

(1) No one can believe that the same thing is and is not (as some would claim Heraclitus said), because the speaker does not have to believe what he says (*Metaph.* Γ3, 1005b).

The Polish logician also proposes his own formulation of the psychological rule:

(2) Two convictions corresponding with two contradicting judgements cannot exist at the same time in one mind.

Józef Maria Bocheński also perceives the same fragment of *Metaphysics* as a version of the law of non-contradiction. He does not, however, agree with those who see it as psychological. He calls it a metalogical formulation of the law (1968:

[1]This analysis was performed as a part of the research project no. 5 H01D 024 21 financed by the Scientific Research Committee (Komitet Badań Naukowych).

[2]Unfortunately, in this case "original" means copies of copies.

39). As Jan Woleński writes in his introduction to Łukasiewicz's book, this is the difference (the one between logic and metalogic) which the young (at the time) author did not acknowledge (Woleński 1987).

Józef Andrzej Stuchliński takes a strong stand against this attribution of psychologism to Aristotle's thought. In his essay *Pragmatyczno-logiczna zasada sprzeczności. W obronie Arystotelesa* he defends the man from Stageira against the reproach of psychologism that he sees in Łukasiewicz's book. Consequently, he proposes to replace the psychological interpretation with a pragmatically logical one. The core factor of the change lies in the translation of the Greek word *ὑπολαμβάνειν*. Łukasiewicz translated it as referring to belief — which is seen by Stuchlinski as the above mentioned psychologism — there are, however, other translation options. These options are made possible by the information on different words provided in dictionaries, as well as the knowledge of how Aristotle uses these particular words. Stuchliński proposes the following solution:

(3) For each X, t, L, R, p, S —

if person X in time t abides by the conventions (that is rules) of language L, which attribute sense (intension) to a sequence of audible sounds R produced by X's speech organs by assigning to these sounds a conviction p and therefore introducing these sounds R as sentence S into the language L,

then: person X in time t does not acknowledge the sentence: S and not-S as true in language L. (Stuchliński 1994: 49)

Stuchliński describes the rule formulated in this manner as pragmatically logical and believes it to be a law of the (meta)language. It reveals itself through "the inability to ever deem a contradicting sentence to be true in view of the semantic rules (...) of language" (Stuchliński 1994: 51).

It is not difficult to notice that, regardless of the phrasing, the formulation cited above uses (similarly to Łukasiewicz's translation) — a so called mental verb. In the above case it is not the verb *believe*, but *accept as true*. Therefore, we can assume that the psychologism of the version presented by Łukasiewicz is also a quality present in the one provided by Stuchliński.

Meanwhile, *ὑπολαμβάνειν* can also be translated as: *comprehend, understand, accept (an offer), grasp, suspect*, as well as *explain to oneself* — such information can be found in the dictionary (nota bene the one used by Stuchliński) edited by Zofia Abramowiczówna (1965). I would like to use the translations listed above to continue the "defence of Aristotle" undertaken by Stuchliński. This task may be facilitated by the works of W. V. O. Quine, H. P. Grice and Roland Barthes as well as certain observations from the field of logic.

In his concept of radical translation, Quine (1960) analyses a situation when one is confronted with a foreign language but cannot fall back on the resemblance of the received message to the language one already knows and can neither use a dictionary nor ask a translator for help. This is a case of what he calls the indeterminacy of translation: there is no single correct answer to the question of what would be the most exact translation of the phrase. We must choose one of many possible solutions based on the foreigner's reaction to our linguistic behaviour (it may either be accepted or not). The role of logic in translation is one of the subjects of *Philosophy of Logic*: "The canon 'Save the obvious' bans any manual of translation that would represent the foreigners as contradicting our logic (apart perhaps from corrigible confusions in complex sentences)" (1970: 83).[3] The above also refers to the interpretation of sentences from our own language: we are prone to suspect terminological ambiguousness rather than intentional contradiction (1960: 59).

Quine's idea found its 'semantic' continuation in the so called 'radical interpretation' concept formulated by Donald Davidson, where the recipient is faced with the interlocutor's statements and their not always straightforward intentions. The recipient co-creates the message by using the available data and assuming that the interlocutor's convictions are not contradictory to the recipient's. If he is not able to uphold this assumption and receive a coherent message, he is forced to abandon his attempts at communication and assume that the interlocutor is not saying anything (1991: 137).

The principles of discourse were also described by Grice in his famous article from 1975; he expected the interlocutors to keep their statements in close relation to the subject of the conversation.[4] Furthermore, the recipient is responsible for finding a way of connecting the words spoken by his interlocutor with the subject of the conversation. The success of such an attempt is dependent on the existence of an appropriate principle and the recipient's adherence to it (as well as other factors, for instance the knowledge of the surrounding world).[5]

Barthes (1970), (following Louis Hjelmslev), proposes the concept of the so called second-order semiotic systems. They are based on "ordinary" sign systems, such as the natural language. The described systems begin a complex semiotic process within which both components of the basic sign — *signifiant* and *signifié* — function as the component that carries meaning. The act of using a particular word or photograph in a certain context MEANS something and it is for the recipient of the given sign to decide what was meant in particular. As a result,

[3]See Haack (1974: 16) for excluding truth functions from this rule. About the differences between other conjunctions of natural language see Quine (1960, §13).

[4]I have discussed Grice's statements more thoroughly in the article *Formalna zasada sprzeczności w logice i języku naturalnym* in the present publication.

[5]A simple example of the above can be seen in the following exchange: "What is the time?" "The bells have just struck".

the levels on which a sign can be interpreted gradually become more narrow. The above resembles a theory formulated by Charles Sanders Peirce, who wrote about the constant process (ending only in death) of one thought being explained and interpreted by the next (1955: 234).

Drawing conclusions from sentences is something different than drawing conclusions from facts. This is also related — in terms of logic — to differentiating between rules and metarules of inference. The first one may be illustrated by the rule of detachment: from two proven sentences, of which one is an implication and the other is identical with its antecedent, we can deduce the consequence of the implication. The second type of rule, i.e. a metarule of inference, is constituted by non-straightforward reasoning. Based on achieving a contradiction, it allows one to conclude that the assumed sentence A is not true.

In the light of the above mentioned comments about the recipient's role in discourse and the classification of inference rules, the following may be observed: a contradicting statement, regardless of its topic, is also interpreted by the (also, if not mainly) AS SUCH i.e. as a contradicting statement. The fact that such a statement occurs is a challenge for the recipient, who may try to decipher its meaning. However, he does not have to be willing to interpret the message in a literal sense. Similarly to Quine (and Aristotle) the recipient may not wish to *comprehend, understand, accept (an offer), grasp, suspect*, or *explain to oneself* that things occur in such a contradictory manner.

Therefore, a modern version of the law of non-contradiction can be formulated as follows:

A contradicting message is not a self-sufficient message, but a piece of meta-communication.

I hope that the above way of formulating the law is in line with Aristotle's way of thinking. I believe that this claim is confirmed by the following translations of the excerpt from the Gamma Book (*Metaph.* Γ3, 1005b). The first one is by Tadeusz Żeleźniak: "Since not carrying one meaning results in not having a meaning at all, and if names have no meaning, the idea of communication between people, or even truthfully speaking the notion of a dialogue with oneself, become void" (Aristotle 1996).

The second one by Kazimierz Leśniak concerns the unity of transferred content: "Not having one meaning is the same as having no meaning, and if words have no meaning, then any exchange of thoughts between people, or even with oneself, is nullified [...]" (Aristotle 1983).

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Tadeusz Szubka

MICHAEL DUMMETT'S RECENT VIEWS ON LANGUAGE AND TRUTH[1]

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Sir Michael Dummett belongs to a small group of the greatest analytical philosophers of the second half of the 20^{th} century, and presumably it would be no exaggeration to consider him the most prominent and influential British philosopher over the last three decades. He has published numerous articles, not only in the field of philosophy. However, a reader willing to learn his recent views is going to face some problems. Although Dummett's most extended monograph — *The Logical Basis of Metaphysics* — being a systematic exposition of his own views, was published (Dummett 1991) relatively not so long ago, large parts of it, presented as The William James Lectures at the Harvard University, originally have even come from 1976. From this earlier material, the reader can hardly separate what Dummett has added when preparing this monograph to publication, at the end of the 1980s. After the publication this monograph, in his articles and lectures, Dummett expressed his philosophical views many times, but only briefly.[2] The more detailed elaboration of these recent views is included in the

[1]The previous version of this text has been presented during the philosophy seminar on "The natural language: thinking – cognition – truth," chaired by Professor Jerzy Pelc, at the Institute of Philosophy of the University in Warsaw, on the 22th November 2002. I am grateful to the participants for their instructive and useful comments, in the first place to Professor Adam Nowaczyk and Professor Jerzy Pelc.

[2]The published articles to be referred to, first of all, are the following: Dummett (1993c), Dummett (1995), Dummett (1997), Dummett (1998a), Dummett (1998b), Dummett (1998c), Dummett (1998d), Dummett (1999), Dummett (2000), Dummett (2002a), Dummett (2002b). One should mention also Dummett (2001b), a short book, published in Italian, in which, in sixteen short chapters, Dummett presents his views on nature, and the future of philosophy, as well as the relation of philosophy to science and religion.

Gifford Lectures held in 1997 at the University of St Andrews in Scotland,[3] as well as in the Dewey Lectures presented at Columbia University in New York City in April 2002.[4]

The aim of this article is to present the crucial elements of a philosophical view presented recently by Dummett — in the first place the ones concerning the nature of language, meaning, and truth — as well as the necessary explanation of these elements.[5] The presentation concentrates neither on the critique nor on the unconditional defense of them. It may, at most, contribute to eliminate some characteristic misunderstandings which have gathered around the philosophy of Dummett, and which might make its right construal almost impossible.

1. THOUGHT AND LANGUAGE

Like many representatives of analytical development, Dummett states that it is the task of philosophy to provide a clear view of the concepts, by means of which we think about the world, for this enables us "to attain a firmer grasp of the way we represent the world in our thought" (Dummett 1991: 1). Developing this idea, Dummett (with reference to G. Frege whom he considers the initiator of analytic philosophy[6]) observes that when we speak of our thoughts about the world, we should identify them not with what the cognizing subject actually experiences consciously (that is, with the processes of thinking such as imagination, comprehending, judging, etc.) but solely with what the content or object of these experiences or processes are, with what is expressed or grasped in these experiences and processes. Identifying thoughts and their structures with thinking processes and their progress is a symptom of the pernicious psychologism, which we, at any price, ought to avoid. But if, nevertheless, thoughts and concepts of which these thoughts consist, as well as their combination constituting propositional structures, are not mental beings located in the mind of the individual cognizing subjects, then the question arises where — from the ontological point of view — are they to be located? As we know, Frege gave a typically platonistic answer to this question:

[3]They have been presented together in *Thought and Reality* which embraces four lectures successively devoted to propositions in the sense of logic, facts, truth and meaning, justificationist semantics, as well as justificationist metaphysics. Unfortunately, these lectures - although circulating in typescript format among a small group of philosophers — still are not prepared by Dummett for publication. The working manuscript of them has 122 pages.

[4]These lectures were originally published as Dummett (2003).

[5]Although this article is thematically related to the subject of my monograph (Szubka 2001), I propose here the other insight into Dummet's philosophy, and I develop ideas merely mentioned there.

[6]The detailed arguments for this view are provided in many publications, i.e. in Dummett (1993b). The recent and the briefest presentation is included in Dummett (2001a), an encyclopedia article on Frege.

"if thoughts are not contents of the mind, they must be located in a compartment of reality distinct both from the physical world and the inner world of private experience" (Dummett 1993b: 131). This compartment, or region, of reality was called by him the "third realm," and he also located in it various abstract, logical and mathematical objects. Is there, if we are to avoid psychologism, nothing left to choose, but to advocate this answer, and to become a victim of what some contemporary philosophers contemptuously call the "platonistic mythology?" Dummett thinks we have another, much more satisfactory, solution, namely, we may regard these thoughts and their constituents as meanings of particular linguistic expressions. In this way, it is reasonable to assume, as many analytic philosophers do, that "the only route to the analysis of thought goes through the analysis of language"[7] (Dummett 1993b: 128). We can carry over this dependence into the area of other cognitive procedures, when we, for instance, say that in the order of explanation language is prior to thought. It is clear that this explanation priority can be, but it ought not to be, connected with the priority in the order of time. Shortly speaking, the view, according to which we are unable not only to explain but also to grasp some thoughts without referring to the language (the priority of language in explanation and in time orders), is a consistent one, although there also exist such elementary thoughts which, even if being explained through referring to language, can be grasped by human beings speaking no language, for instance, by small children (in this case, language has no priority in time order while preserving one in explanation order).

From the perspective of such an analytical and explanation priority, the discipline that becomes a fundamental one in philosophy, is the philosophy of language, or — to use the terminology preferred by Dummett — an appropriately conceived theory of meaning. Is there only a danger of falling back into psychologism or platonism at the philosophical description and explanation of thoughts, without the need to referring to language in a special way, or are there, additionally, some more other reasons that are also called for to make the theory of meaning the main part of the philosophy? Or, in other words, could the philosophy of thought — as for instance G. Evans and C. Peacocke suggest — not become the central branch of philosophy? Dummett calls for some additional reasons, two of which should be at least mentioned,[8] namely the necessity to guarantee the communicability of thoughts, as well as the conceptual and terminological importance of the philosophy of thought.

[7]Dummett regards this assumption as a fundamental axiom of the analytic philosophy, which is believed to be the core of the "linguistic turn," characteristic for this philosophy.

[8]All these reasons, formulated as seven challenges addressed at proponents of the philosophy of thought, which assumes the priority of thought over language in the order of explanation, C. Peacocke comments and criticizes in his article in Peacocke (1997) "Concepts without Words."

Dummett claims (1993b: 143) that communicability becomes highly doubtful if we apply the strategy advised by philosophers of thought, that is, when we assume the priority of thought over language in the explanation order:

> For when the meanings of words are explained in terms of the kind of thought expressed by the speaker, and the kind of thought which is required of the hearer if he is to understand what the speaker says, there is an inevitable concentration upon what goes on within the minds of the individuals concerned. The meaning of an expression of the common language is objective because it is embodied in the use that a competent speaker is required to make of that expression; but when its meaning is described in terms of the thoughts that speaker and hearer need to have in order to be using it, or understanding it, correctly, the connections with publicly observable use is broken unless public criteria are supplied for someone to have a thought of the required kind.

In the last sentence of this quote, Dummett admits that the situation of someone who defends the philosophy of thought is not completely hopeless, because he can try to offer public, thus completely communicable, criteria for having thoughts. Of course, the effectiveness of such attempts is another question. But we must notice that there is, principally, no fundamental reason not to enable the philosopher of thought to defend the thesis that thoughts are NECESSARILY communicable. As Peacocke (1997: 16) writes, "it is wholly consistent for the theorist of thought to insist upon the necessary communicability of thoughts, provided that he can derive its necessity from his own fundamental principles," although he at the same time admits that there may exist such extreme theorists of thought for whom the communicability of thoughts is random. Of course, the theorists defending the necessary communicability of thoughts must refer to another source of this necessity than the one referred to by the proponents of the thesis that the fundamental discipline of philosophy is the theory of linguistic meaning. In the case of many thoughts, this other source may be for instance the fact that grasping and having thoughts manifests itself in publicly observable behaviour, and in reactions to appropriate features of the environment (to make sure about it, one only needs to try to give the necessary and sufficient conditions for having a thought that — for instance — the colour of the given object is green). The necessity to guarantee the communicability of thoughts, then, is not a conclusive argument in favour of the standpoint according to which the analytical and explanation basis of language is assumed.

The argument that categories adopted from the philosophy of language, or these of the meaning theory, are used for the description and explanation of thoughts, is a more promising one. Dummett claims that "the discernment of constituent senses as parts of a thought is parasitic upon the apprehension of the structure of the sentence expressing it," from which it may be concluded that "the

thought is grasped in grasping the semantic properties of the sentence: to speak of the structure of the thought is to speak of the semantic interrelation of the parts of the sentence" (Dummett 1993b: 7-8). Is this really so, that is, do we really have to do this here with such a strong and uni-directional dependence? To answer this question, it must be first and foremost clearly distinguished between the unquestionable and the truistic thesis claiming that, to describe and to explain the thoughts we have and the conditions of having these, we must necessarily use a particular language and its categories, from the controversial and not-truistic thesis that the categories serving as means of description and explanation exclusively are of a linguistic nature. It is obvious that the second thesis does not ensue from the first one, which Dummett does recognize, but not always appropriately stresses. But if we want to prove the second thesis without making it trivial, it should be indicated that they are strictly linguistic categories, that is, the ones which semantically and pragmatically, in an essential way, are not based upon expressing these and other thoughts and their constituents. It is a difficult task to prove something like this, regarding the fact that, when building semantics and pragmatics of a language it is difficult to abstract from linguistic expressions having such and not another character, belonging to this or that category, because they express particular kinds of thought and its parts. It is highly doubtful, after all, if everything connected with the nature of thought, its kinds and possessing condition is possible to be explained through referring to linguistic categories. To prove that this doubt is reasonable, it is sufficient to mention for instance the category of non-conceptual content, at present widely discussed. Reference is made to this category by the authors describing the nature of perception, and its part played in constructing appropriate notions and judgements, among them Evans and Peacocke, who seem to regard this as one of the reasons not to reduce the philosophy of thought to the philosophy of language. Dummett probably would say that this category is not the domain of the philosophy of thought, because in perception non-conceptual contents are connected with at most so-called proto-thoughts, not with thoughts *sensu stricto*. In other words — according to Dummett (1993b: 121) — when speaking of non-conceptual contents, "we are in fact [...] operating at a level below that of thought as expressible in words; at that level, namely, at which animals devoid of language operate." But even if it was so, then if we assume that it is necessary to refer to the category of non-conceptual contents when explaining the nature of certain notions and judgements constructed by means of them (which seems to be a highly plausible assumption), the thesis of the analytical and explanation priority of the philosophy of language over the philosophy of thought will not remain valid, because everything that happens in the sphere of thoughts sometimes requires an explanation by means of not much linguistic categories, but of proto-thoughts, or categories wholly preceding thoughts, that is, clearly pre-linguistic categories.

2. MEANING AND TRUTH

Suppose that all these doubts are not able to remove the philosophy of language, or the theory of meaning, from their first place as the fundamental discipline of philosophy, which — according to Dummett (1993b: 127) — by no means can be seen as "a minor specialised branch of the subject, but as the stem from which all other branches grow." It is not important for the shape of the whole philosophy whether the theory of meaning is absolutely prior to other disciplines of philosophy or not, but, first of all, which form such a theory should have.

A philosophical theory of meaning should, according to Dummett, answer a general and fundamental question about the nature of meaning.[9] This is a question that is completely different from those asked in everyday life when we want to establish the meaning of this or that particular word. The philosophical question about meaning concerns what generally the meaning of any particular expression consists of, that is, in other words, what makes a given expression to have such, and not another, meaning. When answering this question, and when constructing an appropriate theory, we discover nothing new at all, which was not known to us before, we rather make clearer and systematize what we implicitly know by virtue of being competent users of our mother tongue. But as we might be asked by someone, is there a general answer to the question of what the meaning of any particular expression, or word, consists of? Should we not, considering the great diversity of words and their meanings, state, that it at most can be said what the meaning of any particular types or sorts of a word consists of, but should we give up trying to give a general answer to the question about the nature of meaning? According to Dummett, such skepticism is unreasonable; not questioning the great diversity of words and their meanings, we should not forget Frege's fundamental principle that a word has meaning only in a sentence context; thus, the meanings of particular words can be characterized in categories of their contribution to the meanings of the sentences in which they appear. Then, trying to give a general answer to the question about the nature of meaning cannot be given up while regarding it primarily as a question about the nature of the sentence meaning. It is about what the meaning of a sentence uttered in a certain situation consists of, that is, what makes a sequence of sounds articulated in this situation relevant in an essential way going beyond its usual physical features. Therefore, the question about the nature of linguistic meaning is a question about the nature of language, and a philosophical clarification of the linguistic meaning necessarily must appear in the form of a philosophical clarification of language. To be a clarification of a maximalistic, fundamental character, it cannot — Dummett claims — refer to categories acquired when learning a language, such as asserting,

[9]In this part of presentation, I am using mainly ideas included in the second and third Gifford Lectures, sometimes supporting them by quotations from recently published articles by Dummett.

saying something, questioning, denying, etc. In other words, such an explanation should be comprehensible not only for people who speak our language, or who speak a similar one, but also for hypothetical extraterrestrial beings to whom we would be able to give this explanation in an extra-linguistic way.

One might have doubts about the possibility of meeting the requirements of such a maximalistically conceived theory of meaning, and such doubts were raised many times. For the present purpose, let us provisionally assume that Dummett is able to prove that these doubts are unreasonable. But is he able to construct a complete theory of meaning, starting from the analyses of a sentence meaning? If yes, then which distinctions and assumptions does he need to come up with? At first it must be noticed that actually in each language we can construct countless sentences. Thus, if we want to construct an exhaustive description and explanation of their meanings, a few steps are necessary, namely a separation of a finite number of basic sentences, a characterization of their meaning and of the meanings of words constituting the sentence, and finally an explanation in which way new sentences can be formed from these words. According to what Dummett declares, since the sense of individual words is to be conceived in the categories of their contribution to the meaning of the whole sentence, it becomes essential to know which sentences are to be regarded as basic sentences, and how it is possible that words retain their meanings, in spite of appearing in various sentence types: affirmative, interrogative, imperative sentences, etc. For instance, how come that the word 'brother' has the same meaning in the following sentences: 'Peter is my brother', 'Introduce me to your brother, please' and 'Leave my brother alone!', etc.? Dummett says that this problem is solved when using the distinction once introduced by Frege, the distinction of meaning into sense, force and tone, as being its three various parts. A sense of a sentence is a thought, or a propositional content, expressed by the sentence. This thought, or content, may be ascribed a various force in various sentences; we sometimes assert that it is true, another time we ask whether it is true or not, or some other time we command that it should be made true. A tone is a category embracing the remaining elements of linguistic meaning. It corresponds to what Frege calls *F'arbung* (colouring), and it is distinguished from sense "in that it cannot affect the truth or falsity of what is said" (Dummett 2001a: 13).

First of all, but not exclusively, the theory of meaning is a theory of the sense of sentences used to assert something, that is, a theory of the sense of sentences having an assertoric force. A detailed analysis of thoughts or propositional contents, expressed in sentences used in such a way, leads to the conclusion that these thoughts as well as their parts are ascribed to appropriate semantic values (referents in the case of proper names, functions taking place in a given domain — in the case of function expressions, logical values, i.e., truth and falsehood, in the case of complete sentences, etc.), and thoughts or propositional contents cannot be

explained without reference to their semantic value. What underlies the theory of meaning, must be then the semantic theory making the ascriptions mentioned. However, the theory of meaning cannot be reduced to mere semantics. As Dummett (2002a: 256-257) writes:

> A semantic theory is only the nucleus of a theory of meaning. It does not in itself constitute a theory of meaning, or even that component of a whole theory of meaning for a language which specifies the meanings of particular sentences and expressions. It does not do so because it is inadequate to explain in what the understanding of such expressions and sentences consists which is possessed by the speakers of the language. It is because they mutually understand those expressions that the speakers can communicate with one another by means of the language: if a theory of meaning for the language is to explain how the language functions, it must be able to explain what it is for a speaker to understand an expression, that is, to know what it means. A bare semantic theory cannot explain this because it can never be a complete account of what a speaker knows concerning an expression that he knows its semantic value. We can never think or conceive of an object, or a function, or of anything that can be the semantic value of an expression, just as that object, or that function, etc.: the object, function or whatever must be given to us in some particular way. An object, for instance, may be given as the object presently perceived, or as the one previously perceived, or as that which plays a certain role in events, or as that which stands in a certain relation to some other object, or in any of a multitude of other particular ways.

This passage contains two implicit theses. According to the first one, the theory of meaning based upon a semantic theory has to be a theory of understanding, i.e. its task is to describe and to explain the knowledge of competent language-users, which is necessary and sufficient to understand a given language and to communicate by means of it effectively. According to the second thesis, thoughts or propositional contents constituting the senses of sentences uttered by us are reduced to the ways in which their semantic values and the semantic values of their parts are given to us. Dummett emphasises that the semantic values are never given in a straightforward way, i.e. completely and in themselves, but they are always given to us in a particular way. While developing this thesis, however, he makes it clear that such a standpoint should not lead to weakening the tight connection between the semantic value of an expression and the sense of it (which is common in the contemporary philosophy of language), the connection consisting in that the expression's sense defines or determines its semantic value. This connection is not to be questioned because, by doing so, we would not know where such and not other semantic values of expressions come from.

Various theories of meaning are often united in that they respect a deep-rooted intuition of the interconnection and interdependence between meaning and truth. Dummett expounds this intuition in a form of the following constraint:

> The concepts of truth and meaning must [...] be explained together, as part of a

comprehensive description of the practice of speaking a language. We cannot take the meanings of statements as given before stipulating what it is for them, or the propositions they express, to be true: nor can we take the notion of truth as given and use it to explain what it is for the words and sentences of a language to have the meanings that they have. (Dummett 2002a: 260)

This constraint is to some extent respected by the most widespread theory of meaning, which is called the truth-conditional theory. Its proponents are G. Frege, the early L. Wittgenstein, and D. Davidson. Its principal idea was concisely expressed in the thesis 4.024 of L. Wittgenstein's *Tractatus Logico-Philosophicus*: "To understand a proposition means to know what is the case if it is true."(1961: 40-41)[10] Wittgenstein seems therefore to claim that the meaning of a sentence are the conditions in which it is true, and to understand a sentence means to know what these conditions are. Of course, these conditions must be satisfied for a given sentence for it to be true. We might not know if these conditions are fulfilled (because of lacking access to the information about the current state of the world), and, at the same time, very well realise what these conditions are, and thus to know the meaning of a sentence under consideration. Proponents of the truth-conditional theories of meaning, starting from Frege, generally understand these conditions in a way that it is defined or determined whether they are fulfilled or not. So if the meaning of a sentence reduces itself to its truth conditions, and if these conditions are fulfilled, then the sentence is true, and if they are not fulfilled, then it is false, so there is nothing left to choose but to declare that all such sentences are either true or false, that is, the principle of bivalence is obligatory for the language. The meaning of individual words in this kind of theory is characterised in categories of their contribution to constituting truth conditions for the appropriate sentences they appear in. For instance, the meanings of expressions acting as predicates in sentences will be characterised in categories of the domain of their use and the features of this domain. In order to apply the principle of bivalence for the truth conditions characterizing the meaning of sentences, the meaning of each predicate must be defined or determined in relation to each object, whether the predicate applies to this object or not.

There is an objection often addressed to the proponents of truth-conditional theories, namely, while explaining meaning in categories of truth conditions, and then characterising what these truth conditions are, they use the notion of truth without any attempt to define it, or to make it clear. They simply consider the notion of truth primitive and self-evident without usually trying to justify this

[10]In the Polish language, this passage sounds as follows: "Rozumieć zdanie, znaczy wiedzieć, co jest faktem, gdy jest prawdziwe" (To understand a sentence means to know what is the fact, if it is true) (Wittgenstein 1997: 23). It is worth adding that neither in the original German text nor in its English translation there is an implicit reference to the category of fact. Dummett, in the Gifford Lectures, instead of the term "proposition" introduces the word "sentence."

relevant theoretical decision. Dummett believes that even though in some articles of the proponents of truth-conditional theories there is sometimes a reason to raise such an objection, this objection can be refuted. To do this, we must observe that the notion of truth plays an important role in the process of a complete description and clarification of language use. Even if this notion is used in a category of truth conditions without having been clarified appropriately, it is to keep in mind that the conception of sentence meaning, or, more precisely speaking, the conception of its sense is only part of a complete theory of meaning, whose task is to describe and to clarify language and its functioning, including the force in which the sentences formulated within this functioning are used. In such a complete theory of meaning, the notion of truth will appear at many places, and on the grounds of a role played by this notion it will be possible to define its content. It is clearly another question whether this finally leads us to the classical conception of truth, that is, to the one implying validity of the principle of bivalence. Dummett's standpoint is that it rather will not be the case, unless we have to deal with some specific parts of language.

There is yet another, much more serious charge that can be leveled against truth-conditional accounts. That is namely the charge of circularity that must not be tolerated in any way if the theory of linguistic meaning is to carry out its set explanatory tasks. Every truth-conditional account — as Dummett suggests in one of his last works:

> must either sweep aside the notion of the speaker's understanding of his own language altogether, which is absurd, or explain it in terms of an inner conception that the speaker is supposed to possess. For any statement that he understands, a speaker is presumed, on such an account, to know what it is for that statement to be true. The presumption is harmless when the speaker knows how to decide the statement, that is, knows how to get himself into a position in which he can recognise the statement either as true or as false. But he undoubtedly understands many statements which he cannot so decide; a truth-conditional theorist nevertheless credits him with knowing what it is for the statement to be true. What kind of knowledge can this be? It cannot be verbalised knowledge, since such an account of linguistic understanding would plainly be circular. Can it be knowledge of a kind that can be attributed to a human being in advance of this being able to express it in words? Well, can a dog expect his master to come home next week, or an infant expect his mother to come in about two hours? There may be some dispute about what thoughts can plausibly be attributed to one who has no language in which to express them: but all must agree that their range is very narrow in comparison with that of the thoughts he can grasp once he has language. (Dummett 2002b: 17)

As far as this charge is concerned, Dummett argues that the theory of meaning is supposed to be the theory of understanding, i.e. it is supposed to not only

explain why the expressions of a given language have certain meanings, but also to determine how the users of that particular language understand those meanings; in other words — what does it mean to understand a language. The theory of understanding, as defined by Dummett, must not be based on the theory of thought, which describes the ideas and beliefs the users might have prior to mastering a language. If a supporter of the truth-conditional account respects these two key premises, they must confront the following dilemma: either they explain the grasping of the conditions of a sentence's truthfulness by referring to language users' ability to recognise the conditions, which means that grasping the conditions of truth of a undecidable sentence cannot be explained, or they state simply that knowing the truth conditions means the recognising and understanding of a sentence which assigns certain truth conditions to another sentence, which means that they accept the circularity of the proposed theory. According to Dummett, the supporters of the truth-conditional theories of meaning usually silently accept the second option of the above dilemma, which makes the theories they propose unacceptable, particularly if we want to explain how competent users understand their language.

We are therefore faced with the necessity of developing theories alternative to the truth-conditional accounts. These theories will form two groups — justificationist and pragmatic — depending on the main notion in the description of the meaning — it is either "what justifies our treating the statement as true" or "what is involved in accepting the statement as true" (Dummett 2002a: 253). It seems that both of these notions will be of a great significance in a full description and explanation of the meaning, so the most appropriate theory of meaning would probably be some version of the justificationist-pragmatic theory. According to Dummett, while embarking upon building the theory of meaning, we will naturally turn to some sort of a justificationist theory. If we begin with the observation of the linguistic behavior and its description, we will first describe the utterances of the language users and the circumstances in which they are delivered and accepted. It is also the core of the process of learning a language, in which a given person gains the ability of delivering and accepting certain utterances or statements in specific observable or recognisable situations. Assuming that in this process we primarily deal with declarative sentences and only secondarily with other types of sentences, like interrogative or imperative sentences, the accepting of the utterances or statements might be defined as considering them true or recognising them as true. Nonetheless, to avoid misunderstandings, Dummett admonishes us that while talking about considering an utterance or a sentence, the expression "to recognise as true" should be seen — from the semantic perspective — as a uniform and an indivisible expression (it can be presented graphically by means of hyphens as "recognise-as-true"). Therefore, it can be by no means equated to the aspect of meaning with a similar expression "recognise to be true." In brief, to

recognise a sentence as true means not only to consider it but also to "accept it as subject to no threat that its acceptance may have to be withdrawn" (Dummett 2002b: 15). As far is the recognition is concerned, the author does not speak about any possible recognition that is stable enough, but about a legitimate recognition that is made in certain circumstances i.e. such circumstances that authorize the correct approval or assertion of a sentence. The meaning of the sentence and, indirectly, of the words that make up that sentence, is determined precisely in terms of the circumstances of the approval or assertion of that sentence. However, are all conditions of a correct sentence approval constitutive for its meaning? Not at all, as Dummett suggests. Constitutive for the meaning of a sentence are only those conditions that can be considered DIRECT foundations of its recognition, i.e. the conditions that reflect the structure of the sentence and the meaning of its components. In other words

> for every statement, there will be what we may call the canonical or typical means of recognising it as true. It is this which is given with its sense; an understanding of the statement demands only an ability to recognise its truth in this canonical or typical manner. (Dummett 1998b: 20)

For example, a direct or standard method of recognising the truth of a sentence about the number of plates in a dresser or of the one about the number of child's toys is simply counting them. The meaning of those sentences and the way the language users understand that meaning comes down to the knowledge of the items in the sentence and the method of counting them. Of course, besides those direct methods of recognising the truth of a sentence, there are always various indirect methods. For example, we can determine the number of plates in the dresser if we remember how many guests there were at yesterday's party (knowing that all plates had to be used at the party) and if we take the number of the plates borrowed from a neighbour from the number of party guests. The number of toys a child has bought can be determined if we know their unit price, the amount of money a child has been given to buy the toys and the change a child was given back. Irrespective of how useful those indirect methods are in everyday life and in science, it is not necessary to be familiar with them in order to grasp the meaning of the sentences, the truth of which is determined by means of those methods.

The examples given by Dummett as well as the description of distinguishing direct or canonical methods of establishing the truth of a sentence from indirect or uncanonical methods (only the first ones constitute the meaning of given sentences) suggest that those direct methods are simple observation or experience, and the indirect methods are reasoning as well as everything that considerably depends upon reasoning. Dummett neither accepts this suggestion nor the inter-

pretation of the distinction in question. Direct, standard or canonical methods of recognising the truth of sentences, i.e. their legitimate and unshaken acceptance, do not have to be based on sheer observation that is not infected by inferential elements — contrary to subsequent generations of positivists. Usually they contain an inferential component, and so we cannot grasp the meaning of the sentence unless we know that component. Similarly to W.V. Quine, Dummett (1998b: 20, cf. also Dummett 1991: 211) claims that

> our statements cannot be divided into two classes, empirical and *a priori*, the truth of the one to be decided by raw observation and the truth of the other by unaided ratiocination. Rather, they lie on a scale, at one end of which stand the purely observational statements and at the other mathematical ones arrived at by pure deduction. Most statements occupy some intermediate position; their truth is to be established by a mixture of observation and of reasoning, deductive or otherwise. To have the capacity to recognise a statement as true or as false [...] requires being able so to recognise it when informed of the relevant observations and presented with the relevant reasoning.

Such a position would imply some version of holism. If the recognising a sentence as true depends on an inferential component, and thereby on reasoning, then it will be dependent upon other sentences. Since the understanding of meaning of a given sentence is tantamount to the ability to recognise the sentence as true, and since this ability requires the capability of using other sentences, and therefore the understanding of their meaning, then we cannot avoid the conclusion that the understanding of the meanings of sentences and meanings themselves are closely connected. It would be therefore difficult to disagree with Wittgenstein, who claimed in the second period of his philosophy that to understand a sentence i.e. to grasp its meaning, means to understand a certain language. This statement can be seen as an expression of the radical holism, according to which one has to understand a whole ethnic language (Polish, English, Italian, and the like) in order to fully understand its one sentence. Dummett thinks that such a radical holism is not acceptable, just as unacceptable is the thesis closely related to holism, which claims that the theory of meaning that describes and explains the tendency of a language user to recognise some sentences as true will be incomplete as long as it does not spread over recognising all sentences that the user understands. We should embrace MODERATE HOLISM instead, according to which one cannot grasp the meaning of a given sentence without understanding the meaning of many other sentences that are related to it, i.e. without knowing some parts of that language. Therefore, the theory of meaning which explains the knowledge of the meaning of the sentence will be incomplete until it explains the importance of grasping the meanings of related sentences (it can of course become complete without spreading over absolutely all sentences that a given language user is able

to understand).

Describing and explaining the meaning of sentences, as well as grasping the meaning, in terms of conditions that authorize the users to stably and definitely recognise the sentences as true, suggests that the conditions must always be conclusive. Nonetheless, things are not like that, and no theory of meaning which respects the fundamental features of our actual language practice can ignore that the conditions which induce us to recognise a given sentence as true are very often inconclusive and can be invalidated. For example, if we talk about a conditional expressed as "if A, then B," then the conditions that let us accept it will be connected with the possibility to legitimately recognise B assuming that A. This legitimate recognition does not have to be deductive, though; in many cases it will be the result of inductive reasoning, the conclusion of which is after all revocable. It can be therefore said that the grasping of the meaning of such a sentence will "consist of an ability to recognise evidence for the statement when presented with it, and to judge correctly whether or not it is outweighed by any given piece of counter-evidence" (Dummett 1998b: 19). Nonetheless, one must remember that this inconclusive evidence does not constitute directly and entirely the meaning of such sentences because if it did, we would not be able to define that it is inconclusive and revocable. The meanings can only be constituted by evidence that is conclusive and irrevocable.

A detailed development of the indicated ideas will lead to some version of justificationist theories of meaning. These theories, even if not so imperfect and unsatisfactory as the truth-conditional accounts, do disregard, according to Dummett, a certain very crucial aspect of the language practice. The user of a language is not only somebody who utters sentences in given situations and recognises the sentences uttered by others. They are also a person who acts based on sentences recognised as true, and such an action is connected with the ability to derive appropriate consequences from the sentences. It can be seen in the following example: a full grasp of meaning of the sentence "There are ten different pieces of cake on the tray" will be attributed to a child who not only knows how to count them but also realizes that there will be enough cake for everybody if they invite ten people to their party, given that every person will settle for one piece of cake. We can state that the child uses the sentence with understanding and that they not only communicate something but also speak in a specific language. Dummett (1998b: 22) describes it vividly:

> We are not mere instruments for registering states of affairs that we can observe or infer to obtain. If a dog were trained to give various different signals in particular observable circumstances, such as the post's arriving, the front door's remaining open when nobody is on the porch, etc., we might say, "He's telling us that the post has arrived," but we could not rightly say, "HE'S SAYING THAT the post has arrived." The aspect of

the matter would be entirely altered if the dog proved capable of spontaneously and intelligently reacting to another dog's giving any of these signals. And that, of course, is what we learn to do when we learn language: to accept the assertions of others as true, and to act on their truth. A child can be said to be SAYING THAT something is so only if he has not only learned to tell, by his own capacities, when it is so, but will, when occasion presents itself, act on its being so when he has been told by others that it is. Only if he does this has he entered into the communal practice of using language.

If all these factors are indispensible for the correct use of a language, there is probably nothing else to do but to admit that the full theory of meaning "must attribute two independent features to every statement: what is required for it to be recognised as true, and what constitutes acting on its truth" (Dummett 2002b: 16). The full theory of meaning — as it was suggested before — should take the form of a justificationist-pragmatic theory.

Nevertheless, one should never overestimate the theoretical significance of this statement because these two features of every sentence that constitute its meaning, and namely the conditions of recognising it as true, as well as the resulting consequences, are not all completely independent from each other. They should be connected and harmonized in such a way that "what we take as the consequences of accepting a statement as true ought not to exceed what is called for by what would justify asserting it in the first place; correspondingly, anything called for by what establishes the statement as true ought to be admitted as an appropriate response to it" (Dummett 2002b: 16). If such a harmony exists, then both features constitutive for the meaning of a sentence — legitimate grounds that authorize the recognition of a sentence as well as direct consequences that results from the acceptance of a sentence — are mutually derivable. Therefore, nothing stands in the way of developing the theory of meaning for one feature of a sentence as well as the words that make up that sentence and assuming that it will be possible to describe and explain the other feature by means of this theory. Usually it is the feature of recognising a sentence as true, i.e. the justificationist theory, which is exemplified well by saying that "the intuitionist theory of meaning for mathematical statements is framed in terms of what is needed for the proof of a given statement, and not also in terms of what could be proved from it" (Dummett 2003: 11). It has to be emphasized that the principle of harmony (or equilibrium) is a requirement that the actual language practice does not always abide by.[11] Dummett (2002b: 16) gives two distinctive examples of the lack of that equilibrium, one of them is trivial and the other one is dangerous. In

[11] According to Dummett, even the language of classical logic, with its typical introduction and elimination rules for negation, does not abide by this principle. Cf. the appropriate passages in Dummett (1991), especially chapter XIII, as well as Dummett's discussion with Ian Rumfitt (Dummett 2002c).

the first example the language user legitimately states that "Someone is coming down the stairs" and based on that comes to a conclusion that it is already a good reason not to go up the stairs. In the second example, another language user legitimately states that "The person who applies for a job at my company is Jewish" and thinks it is a good reason not to hire that person. In both cases we can observe a patent disturbance of equilibrium because the consequences derived from the stated sentences do not match the grounds that authorize its legitimate recognition. Such a disturbance of equilibrium or harmony of the language practice, as well as its other instances, entitle us to criticize it from a point of view of the theory of meaning. Thus, even though this theory of meaning is supposed to describe and explain our language practice, this practice is by no means something that must not be altered. In other words "if the best fully coherent theory of meaning for a language fails to fit completely with the conventional practices of its speakers, the language is in need of reform; and the theory will show in which respects it needs to be reformed" (Dummett 2003: 12).

The justificationist theory of meaning (similarly to the pragmatic theory of meaning which complements it and the truth-conditional theory which competes with both aforementioned theories) is first of all the theory of meaning of the whole category of the most diverse simple sentences of a language. Nonetheless, the theory cannot treat sentences as indivisible units if its aim is to satisfactorily explain the users' ability to create more and more simple sentences and understand the sentences, the use of which they have not been taught beforehand. The theory must also describe the structure of the sentences and define the meaning of individual words, i.e. the components that make up a sentence. Ultimately we strive to develop such a theory of meaning which would explain, based on the use of these words in different sentences, why a language speaker is ready "in appropriate situations to recognise as true statements expressed by means of them, even though he has not been in those situations" (Dummett 2002b: 14). This way we will be able to explain how the language users understand new sentences.

However, one has to take into consideration that simple sentences — which are in the range of interest of meaning theorists — make up various compound sentences. What is more, the meanings of simple sentences, which have been used independently to state something, are not always exactly the same as their meanings when they are components of other sentences. By describing this issue it is helpful to differentiate between assertoric content of a sentence and its ingredient sense. On the one hand, as Dummett (2002b: 18) writes, in order to understand a given sentence

> we must [...] know what is conveyed by a speaker who on any occasion uses it on its own to make a statement: how we must expect things to be if he spoke correctly. We may call this its ASSERTORIC CONTENT. But in addition, if we are fully to understand the

meaning of the sentence, we must grasp the contribution it makes to determining the assertoric content of any more complex sentence of which it is a subsentence: we may call this its INGREDIENT SENSE.[12]

A simple example that illustrates this distinction are the two sentences: "It is raining here" and "It is raining where I am." Those sentences uttered to someone over the phone or added to regards on a post card convey exactly the same message to the recipient; thus, they do not differ from one another in terms of the assertoric content. They are nonetheless different in terms of the ingredient sense, which is visible if we insert the temporal quantifier "always" in both sentences. We will then obtain two logical compound sentences that have different assertoric contents: "It is always raining here" and "It is always raining where I am." It is because of the fact that the adverb "here" is temporally rigid, i.e. it refers to a specific place in a given temporal moment, whereas the expression "where I am" — quite the opposite — is characterized by temporal flexibility, i.e. its reference changes according to the place, where the person who uses this expression currently is.

The justificationist theories of meaning (and pragmatic theories that are related to them) undoubtedly avoid typical charges that are made against the truth-conditional theories, such as using the term of truth without explaining it or lack of a satisfying uncircular explanation of how language users know the conditions of the truth of a sentence (which are allegedly supposed to constitute the meaning). There are rather other charges made against the justificationist theories, such as the elimination of the notion of truth or replacing it with other categories, which then turn out to be inapposite for their role or assume in a more or less implicit way the existence of the notion of truth. Even though some early works of Dummett warrant such charges against the justificationist and pragmatic theories, his newest writings (especially the Dewey Lectures 2002) suggest simply that it is a mistake to claim that the justificationist-pragmatic theory can completely go without the notion of BEING true because it settles for the idea of discerning the truth or recognising something as true (Dummett 2003: 14, see also Dummett 2002b: 17). It has nothing to do with a simple observation that in the justificationist theory of meaning the knowledge of the meaning of a given sentence consists in knowing the conditions that authorize recognising a sentence as true, which then requires the grasping of the notion of truth or at least of some of its aspects. It has either nothing to do with the fact that in the pragmatic theory of meaning the grasping of the meaning of a sentence is

[12]For more information about this distinction- to which Dummett attaches a great significance — see also Dummett (1991: 47-50), Dummett (2002a: 259) and Dummett (2003: 16-18). The problems, that are connected with this distinction in the context of requirements Dummett imposes on the theory of meaning, are indicated in Weiss (2002: 117-118).

tantamount to the ability of deriving appropriate consequences from recognising the sentences as true and to the readiness to act based on its truth, which then requires the understanding of the notion of truth. The thing is that the notion of being true with reference to a sentence, i.e. its truth that is something separate (but not entirely independent) from an actual or real acknowledgment of truth is necessary for the justificationist and pragmatic theory of meaning for three reasons.

First of all, while developing a theory of meaning we must, as a part of this theory, describe and explain the practice of putting forward arguments that are supposed to authorize the recognition of a sentence or to persuade the recipients to recognise it. One of the key elements of this practice is the deductive reasoning. It is conclusive, i.e. it guarantees that a distinctive feature of the premises is also reserved for the conclusion, or, in other words, it is transferred from premises to conclusion. It is usually assumed that this feature is simply the truth. There are strong arguments that support such a position because e.g. the assumption that the feature is the recognition a sentence as true, i.e. that the sentence is recognised as true, would trivialize the deductive reasoning, because under such an interpretation deduction would not provide us with new knowledge, but instead it would lead us from sentences recognised as true to other sentences also recognised as true. Second of all, the notion of truth seems to be indispensable for the explanation of what is the assertoric content and assertion. Our statements or assertions are divided into correct and incorrect ones. We can also assume that a true sentence is a sentence, a recognition of which would be correct, and more precisely "an assertion of it would be justified, whether or not a particular speaker would have been justified in making it" (Dummett 2003: 18). In this case we talk about a legitimate recognition of a sentence that is treated separately and not as a component of another sentence, and because of that the assertoric content and not its ingredient sense is of a great importance. Therefore it can be assumed that the assertoric content of a sentence is defined by the condition of truth of a separate utterance of this sentence. Thirdly, the notion of truth is crucial in the transition from the theory of meaning to metaphysics, i.e. to a general conception of the world's nature and reality. To put it simply, "the world is the totality of facts, and facts are true propositions: on what propositions are true depends how reality is constituted" (Dummett 2002b: 17, see also Dummett 2003: 18).[13]

We should then agree with the proponents of the truth-conditional theories that the notion of truth is indispensible in the theory of meaning (Dummett 2003: 18). Nevertheless, such an agreement should not be identified with accepting

[13]The concept of propositional contents or propositions as well as considering them equivalent with the facts are very important for this short remark. The question of this identification and problems connected with it are raised by Dummett in the first Gifford Lecture.

their conviction that the notion of truth must be the notion of classical truth. There is namely another, non-classical notion of truth, that is appropriate for the justificationist-pragmatic theories of meaning supported by Dummett. Nonetheless, these claims should not be interpreted — for we tend to assess things too hastily — in a way that Dummett therefore acts against our deep-rooted intuition which says that the truth depends in general on the objectively existing world, which would mean that a sentence is true only when it coincides or corresponds with the actual state of affairs. By saying that our notion of truth does not have to be the notion of classical truth, Dummett (2002a: 256) means only that "the notion of truth may be said to be classically conceived if it is regarded as subject to the principle of bivalence, namely that every meaningful statement is determinately either true or not true, independently of our knowledge."[14] If the notion of truth does not respect the principle of bivalence, it does not mean that it cannot incorporate the correspondence and objectivity intuitions. It is attested e.g. by the non-classical notion of truth that is favored by Dummett and which harmonizes well with the justificationist-pragmatic theory of meaning. According to this notion "the truth of a statement must consist of there being an effective means for someone suitably placed in time and space to come to recognise it as true", but, as Dummett (2002b: 17) adds, we have to recall that "recognition of a statement as true will not in general consist of unaided observation, but may extensively involve inference."[15] Even though in the view of such a conception of truth — as emphasised by Dummett[16] — it cannot be claimed that BECAUSE a sentence is true, its truth can be recognised, but it can only be indicated that its truth follows from the possibility to recognise it as true, yet such a position does not disturb the objective character of this conception of truth. The possibility to recognise the truth is here an appropriately idealized possibility (that does not come down to the actual truth recognition) which also leaves aside our casual cognitive limitations, our space-time location, and the like. Therefore, such a conception of truth lets us preserve e.g. our deep-rooted conviction that many sentences concerning the past are true, even though at present we do not have any methods at our disposal of recognising their truth and, most probably, we will never have them. In the view of the conception of truth supported by Dummett these sentences are true because someone who is properly situated in time and space could recognise their truth, albeit the real possibility of such a situation is irretrievably gone.

[14]The adverb "determinately" is not only a weirdly sounding embellishment in the definition of this principle. Cf. the appropriate explanatory notes in Szubka (2001: 71-72).

[15]At some point Dummett calls it the epistemic concept of truth and defines it as follows: "any statement A is true only if someone who is rightly placed could know or could know later that A" (Dummett 2001c: 1).

[16]Dummett states it explicitly in the fourth Gifford Lecture.

3. CONCLUSION

From the perspective of the justificationist-pragmatic theories of meaning it can be said that the world is formed by what we know about it or by what we could know about it. Our knowledge reaches so far, as far as the — properly idealized — effective ways of gaining it extend. Nonetheless, it would be a mistake to claim, as Dummett suggests, that we CONSTRUCT the world because, as a matter of fact, we do not have control over what we learn about it.[17] The reality is after all largely independent from what we know about it and from the methods we use in order to get that knowledge. It is the reality that makes our sentences true when they are true and makes them false, when they are false. We should all be in large measure realists when we describe the realism in such highly vague and minimalistic way. The philosophers — as Dummett writes — should not question this fundamental recognition of objectivity and independence of reality.[18] They should however distinguish between this minimal realism and various forms of maximal and extravagant realism, i.e. such forms which claim that the reality is not only objective and independent from our knowledge, but also formed in such a way that it makes every meaningful sentence either true or false. Dummett, who does not accept such forms of realism, describes himself as a proponent of anti-realism. However, such an anti-realism is far from the views popular among some philosophers that are also called anti-realistic and which claim that the reality is constructed by our cognitive processes in a more or less arbitrary way.

4. APPENDIX (2015)

The paper on Michael Dummett's recent views on language and truth was written several years ago, at the very beginning of the present century. At that time the most up-to-date systematic exposition of Dummett's philosophy were his Gifford Lectures given at the University of St Andrews in 1997, circulated in typescript among a handful of scholars. I was fortunate to have access to them while working on my paper, but did not have the permission to quote from them at length. For some time Dummett was hoping to revise and expand them considerably. Eventually he gave up this hope, amended them only lightly, and published as a book (2006). He did the same with his 2002 Dewey Lectures (2004). In addition, the original English version of his 2001 Italian book on nature and future of philosophy was made available in print (2010), although it was poorly edited and contains a number of linguistic flaws and small errors. These three short books (unusually short, give the daunting size of Dummett's earlier publications) constitute the best introduction to his later philosophy. Here and there they may be usefully supplemented by Dummett's extensive replies to papers included in a

[17] Cf. e.g. appropriate passages from the fourth Gifford Lecture.

[18] It is a paraphrase of a disquisition argument from the third Gifford Lecture.

volume on his philosophy which appeared in 'The Library of Living Philosophers' (Auxier, Hahn 2007).

Writing on Dummett's philosophical views and interpreting them is a challenging and difficult task. Any endeavor to put together various threads from his scattered publications always carries with it a risk of distortion and misinterpretation. Dummett himself insisted more than once that his publications should not be taken as parts of one comprehensive philosophical system, and explicitly wrote that for him "every article and essay is a separate attempt to arrive at the truth, to be judged on its own" (Dummett 2004: x). Nevertheless, the same or closely similar themes and arguments in his publications tempts one into merging them into one concise account. This has been the primary aim of my paper. For that reason I have not focused properly on various objections to Dummett's theoretical proposals, including the stringent constraints imposed on drawing the distinction between direct and indirect ways of establishing the truth of a statement, the epistemic, yet fully objectivist conception of truth, and the puzzling relationship between justificationist and pragmatic facets of the theory of meaning, Objections of this kind have contributed to some extent to the demise of the Dummett's philosophical program, and his ambitious philosophy of language, conceived as the foundational philosophical discipline. However, perhaps the prevailing major reason of this demise have been the growing doubts about the legitimacy and fruitfulness of the linguistic turn.

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PROBLEMS WITH LOGICAL FORM

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0. Introduction. Problem formulation

The examination of quantifiers plays an essential role in modern linguistic theories. One of the most important issues in this respect was raised by Jaakko Hintikka (1973: 350), who proposed the following thesis:

(H) Certain natural language sentences require essential non-linear quantification[1] to adequately express their logical form.

In order to prove this kind of thesis one needs to provide examples and show that their adequate logical form can be expressed in elementary logic. Hintikka (1973: 344) believes the following sentence to be the simplest example in terms of syntax:

(1) Some relative of each villager and some relative of each townsman hate each other.[2]

The thesis proposed by Hintikka has sparked lively controversy (cf. Gabbay and Moravcsik 1974, Guenthner and Hoepelman 1976, Stenius 1976, Hintikka 1976, Mostowski, Wojtyniak 2004). The two articles most relevant for this discussion, Barwise 1979 and Mostowski 1994, attempt to order and summarise the results of the discussions.[3]

[1] Non-linear (branching) quantifiers have been introduced by Henkin (1961).

[2] It is assumed here that the sets of villagers and townsmen are mutually exclusive and that each townsman and each villager is his own relative.

[3] The author's most recent paper on the topic (Gierasimczuk and Szymanik 2009) contains a more elaborate discussion additionally supported by experimental evidence.

This paper is devoted to the logical form of sentence (1), which I will also refer to as the Hintikka sentence. Although the analysis presented below leads to the conclusion that nothing can determine the nonlinear nature of sentence (1), I am not attempting to undermine the (H) thesis. Despite considering sentence (1) as an unconvincing example, I believe that better examples have been provided in the debate. A particularly interesting example was formulated by Barwise (1979: 60):

(2) Most relatives of each villager and most relatives of each townsman hate each other.

In other words, the subject of a critical analysis will be the following thesis:

(H') In order to adequately express the logical form of (1) it is necessary to use non-linear quantifiers.

Below I will discuss the arguments formulated to support (H') and I will explain why I consider them insufficient.

1. Hintikka's arguments

Hintikka's reasoning was as follows. The phrase "some relative of each villager..." should have the following logical form: $\forall x \exists y[\mathrm{V}(x) \rightarrow (\mathrm{R}(x,y) \wedge ...)]$. Similarly, the phrase "some relative of each townsman" should have the following form: $\forall z \exists w[\mathrm{T}(z) \rightarrow (\mathrm{R}(z,w) \wedge ...)]$. If we join these two sequences in the following way:

(3) $\forall x \exists y \forall z \exists w[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,y) \wedge \mathrm{R}(z,w) \wedge \mathrm{H}(y,w))]$

(For each x, there exists a y and for each z there exists a w, such that if x is a villager, and z is a townsman, then y is a relative of x, w is a relative of z, and y and w hate each other.)

the choice of the relative of villager, y, will depend only on villager x, while the choice of the relative of townsman, w, will be determined both by villager x and by townsman z, which is clearly illustrated by the translation of this sentence into second-order language, where f and g are Skolem functions:

(4) $\exists f \ \exists g \forall x \forall z[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,f(x)) \wedge \mathrm{R}(z,g(x,z)) \wedge \mathrm{H}(f(x),g(x,z)))]$

(There exist functions f and g, such that for each x and z, if x is a villager, and z is a townsman, then $f(x)$ is a relative of x, $g(x, z)$ is a relative of z, and $f(x)$ and

$g(x, z)$ hate each other.)

However, this interpretation of sentence (1) cannot be considered valid, as it suggests that (1) is not true in the same situations as the equivalent sentence:

(5) Some relative of each townsman and some relative of each villager hate each other.

For if we proceeded analogously to (1), we would assign the following logical form to (5):

(6) $\forall z \exists w \forall x \exists y[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,y) \wedge \mathrm{R}(z,w) \wedge \mathrm{H}(y,w))]$

which is equivalent to:

(7) $\exists g \exists f \forall z \forall x[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,f(z,x)) \wedge \mathrm{R}(z,g(z)) \wedge \mathrm{H}(f(z, x),g(z)))]$

Now the choice of the relative of townsman, w, depends only on townsman z, and the choice of the relative of villager, y, depends both on townsman z and on villager x. Hintikka claims that the linear-quantifier reading of (1) and (5) is inconsistent with the fact that both sentences have identical truth conditions. However, (3) is not equivalent to (6). Hintikka concludes that (3) is not an adequate logical form of (1). Up to this point, I agree with the Finnish philosopher.

Yet Hintikka goes further and claims that consequently we need a formula in which neither the prefix "$\forall x \exists y$" precedes "$\forall z \exists w$" nor the other way round, and proposes to ascribe the following logical form to sentence (1):

(8) $\quad \forall x \exists y$[4]

$[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,y) \wedge \mathrm{R}(z,w) \wedge \mathrm{H}(y,w))]$

$\forall z \exists w$

(For each x, there exists a y, and independently, for each z there exists a w, such that...)

which takes the following form after applying the Skolem function:

[4]In this formula, each existential variable depends on all the universal variables that occur earlier in the same branch and only on them.

(9) $\exists f \exists g \forall x \forall z[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,f(x)) \wedge \mathrm{R}(z,g(z)) \wedge \mathrm{H}(f(x),g(z)))]$.

(There exist functions f and g, such that for each x and z, if x is a villager and z is a townsman, then $f(x)$ is a relative of x, $g(z)$ is a relative of z, and $f(x)$ and $g(z)$ hate each other.)

In other words, the choice of the relative of villager, y, depends only on villager x, and the choice of the relative of townsman, w, depends only on townsman z. The logical form of (8) meets the condition of equivalence of sentences (1) and (5) (Hintikka 1973: 345). Formula (8) is not equivalent to any formula of elementary logic (Barwise 1979: 71) and thus we would say that it is essentially non-linear. I will refer to (8) as a 'strong reading' of (1).

But is Hintikka's reasoning a sufficient argument for (H')? Absolutely not. Hintikka tries to convince us that formula (3) is most certainly not the logical form of sentence (1) because (1) and (5) should have the same truth conditions. However, he does not take into account any alternative formula for (8), although there exist elementary logic formulae which could serve as the logical form of both (1) and (5), for instance the following:

(10) $\forall x \forall z \exists y \exists w[(\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,y) \wedge \mathrm{R}(z,w) \wedge \mathrm{H}(y,w))]$

Formula (10) represents a 'weak reading' of sentences (1) and (5).

We might want to ask why Hintikka failed to notice this possibility. Barwise suggests that this is due to the fact that (10) 'violates' the syntax of (1) by the unnatural (ad hoc) juxtaposition of the two "some of each" phrases (Barwise 1979: 53). However, this argument is unjustified, since the logical form — which we treat as the deep structure of the sentence — is almost always characterised by this kind of syntactic 'unnaturalness'. Let us consider for example the following sentences and their logical forms:

(11) Each human is mortal.

(12) $\forall x[\mathrm{H}(x) \rightarrow \mathrm{M}(x)]$

(For each x, if x is human, x is mortal.)

(13) 15ptAll books of a certain philosopher are worthless.

(14) $\exists x \forall y[\mathrm{P}(x) \wedge \mathrm{B}(y) \wedge \mathrm{A}(x,y) \rightarrow \mathrm{W}(y)]$

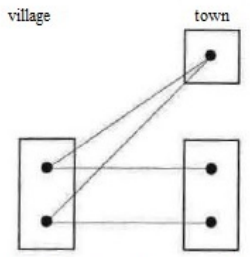
(There exist such x, that for each y, if x is a philosopher, and y is a book, and x

is the author of y, y is worthless.)

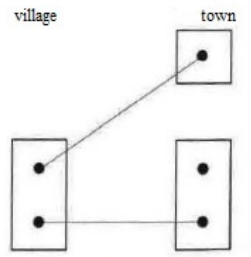
The logical forms ascribed to the above sentences do not seem controversial, although each of them violates the syntax in some way. In (11) there is no logical operator "if, then", while in (12) there is "→ ". In (13) the universal quantifier precedes the existential quantifier, but in (14) it is the other way round.

This illustrates the pointlessness of discussing the 'naturalness' of the logical form of a sentence. The most obvious criterion of adequacy of a logical form here is the conformity of truth conditions, i.e. we would say that the logical form of a natural language sentence is adequate if it is true only in the models in which this sentence is true. Thus, the problem analysed in this paper takes the form of the following question: are the truth conditions of sentence (1) reflected by formula (8) or (10)? These formulas are not equivalent; (8) implies (10), but there is no reverse implication.

This relation can be illustrated by diagrams, with the village on the left and the town on the right; the dots within a given rectangle symbolise relatives, while the lines mean the relation of hatred.



Diag 1. Diagram for the strong reading

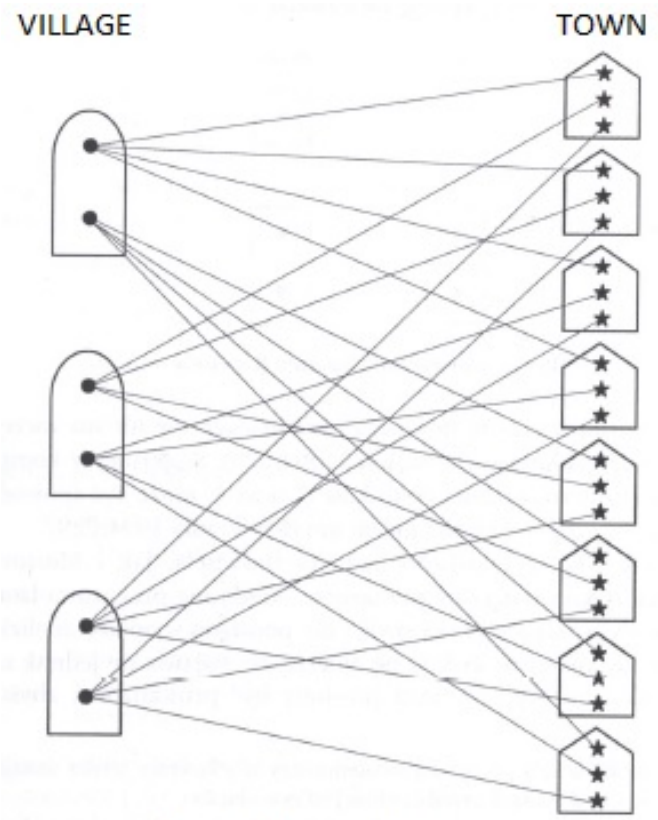


Diag 2. Diagram for the weak reading

2. Barwise's test

Barwise (1979) presents two arguments for assigning a linear logical form[5] to sentence (1). The first is based on an empirical test of perceiving sentence (1) in a diagram. Barwise analyses a diagram in which the relations between townsmen and villagers are in a terrible state: every townsman hates every villager, except one, the one to whom he is connected by a line in Figure 3. In total, out of 144 (6×24) pairs of townsmen and villagers in Figure 3, 120 pairs hate each other, and only 24 do not hate each other. In the experiment, the subjects were asked the following question: in this diagram, is it or is it not the case that some relative of each villager and some relative of each townsman hate each other? In other words, is it or is it not the case that some dot in each hut and some star in each house are not connected by a line? I encourage the reader to try to answer this question.

[5]i.e. a logical form with a linear quantifier.

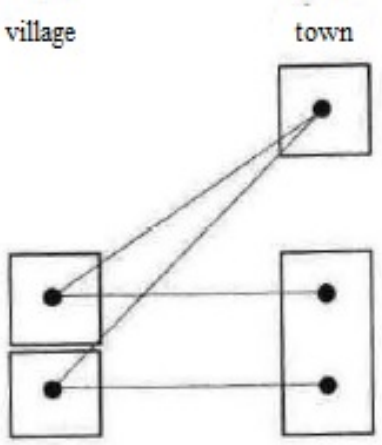


Diag. 3. Barwise's diagram

The reader who agrees that sentence (1) is true in the above illustration is rejecting the strong reading. The branching reading asserts that we can choose one villager (dot) out of each hut, once and for all, and one townsman (star) out of each house, again once and for all, and choose their relatives, and as a result the selected relatives (three dots and eight stars) will hate each other (will not be connected with a line). This is obviously impossible, as the readers may see for themselves. Barwise states: "In our experience, there is almost universal agreement that some dot in each hut and some star in each house are not connected by a line." (Barwise 1979: 51). Thus, Barwise's experiments[6]indicate that the language users would consider the weak reading as referentially true.

The first doubt that comes to mind regarding the experiment is whether the graphical complexity of the diagram might have influenced the result. This issue was raised by Mostowski, who later proposed a modified diagram. In Figure 4, lines signify the relations of hatred.

[6]Barwise's experiment aims at determining whether language users would consider the Hintikka sentence true in the situation presented in Figure 3.



Diag 4. Simpliefied Barwise's diagram

Mostowski also states that this significant simplification rather does not affect the answers of the subjects (Mostowski 1994: 223). He suggests that the complexity experienced when examining Figures 3 and 4 may be caused by high algorithmical complexity of the problem itself (Mostowski 1994: 229).[7]

We should stress that both Barwise's and Mostowski's tests were only pilot questionnaires. Such experiments have never been conducted on a broader scale and the results have never been analysed by statistical methods. The attempts seem promising. There is, however, the essential question of how this type of research should be conducted in order for the results to be acceptable to us. What should the method of empirical experiments on the interpretation of certain sentences by language users look like, taking into account the computational complexity of the problems?[8] Can such experiments be conclusive? Is statistical data on how people understand some sentences valid for research of the logical form? These questions require a separate paper, which should be devoted in large part to the notion of 'logical form' and the criteria of its adequacy.[9]

3. Inferential relations

[7]Using as their starting point the observation that a natural area of interpretation of the Hintikka sentence is a finite universe, Mostowski and Wojtyniak argue that the problem whether the strong reading of the Hintikka sentence is true in finite models is an NP-complete problem (Mostowski and Wojtyniak 2002: 6).

[8]A general introduction to computational complexity can be found in, e.g., (Papadimitriou 1993). A discussion on the relation between branching quantifiers and computational complexity can be found in (Blass and Gurevich 1986).

[9]For a paper attempting to settle those issues, see Gierasimczuk and Szymanik 2009.

Mostowski points out (Mostowski 1994: 219) that from (1) we are inclined to infer that:

(15) Each villager has a relative.

This observation is an argument for introducing a modification to the considered logical forms. Indeed, it does not follow from (8) and (10) that:

(16) $\forall x[\mathrm{V}(x) \rightarrow \exists y \mathrm{R}(x,y)]$

(For each x, if x is a villager, there exists a y who is a relative of x.)

while it is already implied by the corrected formulae (Mostowski 1994: 219—222). The strong version takes the form:

(17) $(\forall x{:}\mathrm{V}(x))(\exists y{:}\mathrm{R}(x,y))$

$$[\mathrm{H}(y,w)]$$

$(\forall z{:}\mathrm{T}(z))(\exists w{:}\mathrm{R}(z,w))$

(For each x who is a villager there exists a y who is a relative of x, and, independently, for each z who is a townsman there exists a w who is a relative of z, such that y and w hate each other.)

An analogous correction for the weak version results in the following formula:

(18) $\forall x(\mathrm{V}(x) \rightarrow \exists y \mathrm{R}(x,y)) \wedge \forall z(\mathrm{T}(z) \rightarrow \exists w \mathrm{R}(z,w)) \wedge \forall x \forall z \exists y \exists w((\mathrm{V}(x) \wedge \mathrm{T}(z)) \rightarrow (\mathrm{R}(x,y) \wedge \mathrm{R}(z,w) \wedge \mathrm{H}(y,w)))$

(For each x, if x is a villager, there exists a y who is a relative of x, and for each z, if z is a townsman, there exists a w who is a relative of z, and, additionally, for any x, y, z, w, if x is a villager and z is a townsman, then y is a relative of x, w is a relative of z, and y and w hate each other.)

Instead of strengthening the logical form of (8) and (10) to (17) and (18) respectively, we can maintain that the logical form of (1) is (10) or (8), and the tendency to infer (15) from (1) can be explained by pragmatics — namely, by the fact that we are used to infer conclusions enthymematically from sentences on the basis of our entire knowledge — in this case, of the knowledge that the predicates "villager" and "townsman" are not empty.

The fact that (15) is a consequence of (1) is, however, not an argument for either the strong nor the weak reading of the Hintikka sentence, since in this context both forms (branched and linear) behave in the same way. Before the correction, there was no implication, whereas both (8) and (10) can easily be corrected to ensure this implication.

When referring to the inferential characteristics of (1), Mostowski challenges the weak reading in yet another way. From (1) and the sentence:

(19) John is a villager.

a competent language user will draw the following conclusion:

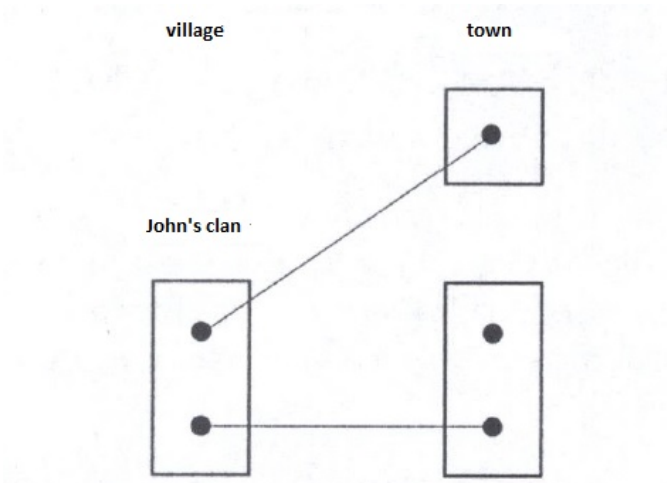
(20) Some relative of John and some relative of each townsman hate each other.

If we adopt the weak reading of (1), we will consider that (20) is true in Figure 5 presented below. Mostowski implicitly ascribes to sentence (20) the following logical form:

(21) $\exists x[\mathrm{R}(\mathrm{John},x)\wedge\forall y(\mathrm{T}(y)\rightarrow \exists z(\mathrm{R}(y,z)\wedge\mathrm{H}(x,z))]$

(There exists an x who is a relative of John, such that for any y, if y is a townsman, there exists a z who is a relative of y, and in addition x and z hate each other.)

Formula (21) is false in the model presented in Figure 5, while (18) is true and (17) is false. In other words, (21) follows from the strong reading of (1), but not from the weak reading. This argument indicates that in order to retain the natural inferential characteristics of (1) we should adopt the strong reading (17) rather than the weak reading (18).



Diag. 5. Does the picture represent the situation described in (20)?

However, this argument does not solve the problem, as it seems to be based on an arbitrary logical form assigned to (1). (21) states the existence of such a relative of John who hates a relative of each townsman, while — in my opinion — (20) does not determine any such thing. Sentence (20) merely says that each townsman has a relative who hates and is hated by a relative of John (i.e. each townsman may hate and be hated by a different relative of John). Therefore, (20) should rather be read as follows:

(22) $\forall y[\mathrm{T}(y) \rightarrow \exists x(\mathrm{R}(\mathrm{John},x) \wedge \exists z(\mathrm{R}(y,z) \wedge \mathrm{H}(x,\ z)))]$

(For any y, if y is a townsman, there exists an x who is a relative of John, and for some z, y is a relative of z, and x and z hate each other)

(22) is true in the model presented above and follows from the weak reading of the Hintikka sentence.

4. Barwise's test of negation normality

Jon Barwise proposes yet another test to determine whether a natural language sentence indeed has a non-linear logical form. His idea is based on the observation that for a non-linear quantifier it is impossible to construct a dual prefix by reorganising the relations within this prefix and dualizing the elementary quantifiers (cf. Krynicki and Mostowski 1995). We can prove even more: that for any branching quantifiers Q and Q', if Q and Q' are dual,[10] they are linear (Barwise 1979: 73).

[10]Quantifier Q is dual to Q' if for any formula ϕ, formulae $\neg Q \neg \phi$ and $Q'\phi$ are equivalent. For example, the prefix $\forall x \exists y \forall z$ is dual to the prefix $\exists x \forall y \exists z$.

Let us consider sentence (23) and its negation, which can be formulated in two ways — either by preceding the sentence with the "it is not the case that" operator, as in (24), or by changing the pronoun "every" to "some" and by reorganising the structure of the part of the sentence which is directly affected by these pronouns, as in (26). Let us assume after Barwise the practice of calling negations like (26) normal negations, and negations like (25), which refer to functions, not normal. If a sentence has a normal negation, we will call it a negation normal sentence, if not, then it is not negation normal. Naturally, in our example, sentence (23) is negation normal.

(23) Everyone owns a car.

(24) It is not the case that everyone owns a car.

(25) Not everyone has a car.

(26) Some people do not own a car.

Barwise suggests that there is an analogy between natural language and the language of elementary logic with branching quantifiers, which consists in the fact that natural language sentences having an essentially non-linear logical form cannot be negated normally, that is without referring to abstract objects: 'functions', 'assignments', 'choices', etc. According to Barwise, this makes it possible to formulate reasonable test criteria to check if a natural language sentence is truly non-linear (Barwise 1979: 56—57).

Barwise applies this test to sentence (1). He formulates two negations of (1), namely (28) and (29), which do not start with the words 'it is not the case that'. Sentence (28) does not refer to abstract objects and therefore Barwise considers it a normal negation, while sentence (29) is formulated by using the words "choose" and "assign", and thus — in Barwise's opinion — it is not negation normal. Then he asks proficient language users which of the sentences, (28) or rather (29), is equivalent to (27):

(27) It is not the case that some relative of each villager and some relative of each townsman hate each other.

(28) There is a villager and a townsman that have no relatives that hate each other.

(29) Any way of assigning relatives to each villager and to each townsman will result in some villager and some townsman being assigned relatives that do not hate each other.

If you prefer sentence (28), then it confirms Barwise's observations: "Again, in our experience, there is almost universal preference for" (28) (Barwise 1979: 58). Sentence (28) is equivalent to the negation of the weak reading of the Hintikka sentence. In other words, another 'empirical' argument proposed by Barwise is contradictory to Hintikka's suggestion concerning the logical form of sentence (1).

The division of natural language sentences with respect to their negation normality is, to put it mildly, rather imprecise. As opposed to formal languages, in natural language it is difficult to make an explicit reorganisation within the quantifier prefix, or to refer to the notion of function and other similar mathematical concepts. The complexity (difficulty) of negation is also not a good criterion (Barwise 1979: 60). For instance, formulating a logically correct negation of the following sentence:

(30) I solved all tests and managed to watch the film.

is a rather difficult task for many language users. A negation of such a sentence seems puzzling to them, although no reasonable person will argue that this sentence has a logical form impossible to express in elementary logic.

5. Sentences with the quantifier "most"

Barwise states: "The better a paper on branching quantification is, the more convincing is some example it contains." (Barwise 1979: 58). Above I have tried to show that the Hintikka sentence is not a convincing example to support the thesis that in order to make a logical analysis of natural language, we need a tool using branching quantifiers. At the same time, I have said that other works propose some better examples employing not only the quantifiers "$\forall$" and "$\exists$", but also quantifying pronouns such as "most", "quite a few", "several", "many". The quantifier "most x such that $\varphi(x)$ fulfil $\psi(x)$", marked as MOST$x(\varphi(x),\psi(x))$, involves the least ambiguity. Elementary logic with an additional quantifier MOST is marked as L(MOST). The truth conditions for this quantifier are as follows:

$$\mathrm{M}\models \mathrm{MOST}x(\varphi,\psi)[\bar{u}] \text{ when } \mathrm{card}((\varphi \wedge \psi^{M,\bar{u},x}) > \mathrm{card}((\varphi \wedge \neg\psi)^{M,\bar{u},x}),$$
$$\text{where: } \zeta^{M,\bar{u},x} = \{\mathrm{b}\in \ | \ M \mid\!: M \models \zeta[\bar{u}(x/b)]\}$$

(Formula MOST$x(\varphi,\psi)$ is true in a model M at quantification $\bar{\mathrm{u}}$ if and only if the cardinality of the set of objects fulfilling the conjunction $(\varphi\wedge\psi)$ is greater than the cardinality of the set of objects fulfilling the conjunction $(\varphi\wedge\neg\psi)$).

The branching sentences with the quantifier "most" are for example:

(2) Most relatives of each villager and most relatives of each townsman hate each other.

(31) Most townsmen and most villagers hate each other.

(32) Most philosophers and most linguists agree with each other about branching quantification.

(33) Most footballers of FC Barcelona and most footballers of Manchester United exchanged shirts with each other.

(34) Most mobile phones and most chargers do not fit each other.

Examples (2) and (32) come from Barwise's paper (Barwise 1979: 60). (31) is a simplified version of (2), taken from an article by Mostowski (Mostowski 1994: 224). The remaining examples are my own and are meant to convince the readers that these discussion concerns actual situations in communication, and not only artificial linguistic contexts made up solely for the purpose of logic.

Let us remain within the relation village—town and let us take a closer look at sentence (31), which is of course equivalent to the sentence:

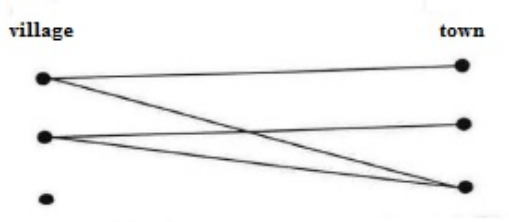
(35) Most villagers and most townsmen hate each other.

Let us consider two linear formulas which are possible candidates for the logical form of (31) and (35):

(36) MOSTx(V(x),MOSTy(T(y),H(x,y)))

(37) MOSTy(T(y),MOSTx(V(x),H(x,y)))

(36) is not equivalent to (37). In order to prove that, it is enough to construct a model (see Figure 6) in which (36) is true and (37) is false (Mostowski 1994: 225).



Diag 6. Model of the sentence (36) is not a moel for a sentence (37).

In this case, we do not have at our disposal any equivalent of the weak reading, and therefore a natural candidate for the logical form of (30) is the following formula:

(38) $\mathrm{MOST}x\mathrm{V}(x)$

$[\mathrm{H}(y,w)]$

$\mathrm{MOST}y\mathrm{T}(y)$

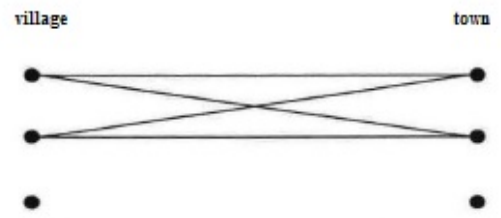
(38) is an essentially non-linear formula L(MOST) (cf. Mostowski 1994: 225).[11] The semantics of (38) will be expressed like this:

(39) $\exists A\exists B(\mathrm{MOST}x(\mathrm{V}(x),A(x))\wedge\mathrm{MOST}y(\mathrm{T}(y),B(y))\wedge\forall x\forall y(A(x)\wedge B(y))\rightarrow \mathrm{H}(x,y)))$

(There exist predicates A and B, such that most x who are villagers are A, and most y who are townsmen are B, and in addition for any x and y, if $A(x)$ and $B(y)$, then x and y hate each other.)

This time even arguments *á la* Barwise speak for the non-linear reading. Can the readers construct in a natural way a negation of (31) without referring to 'assignments' or 'functions'? Will the readers consider Figure 6 or rather Figure 7 the adequate model for (31)? It is a shame that the methods proposed by Barwise have never been further specified and that, consequently, they cannot be applied to definite testing of the linearity of natural language sentences. Creating such precise tests would help us solve the dispute about the logical form of the Hintikka sentence.

[11] Actually, in (Gierasimczuk and Szymanik 2009) another reading, the so called two-way quantification, has been proposed. This reading is weaker than the branching reading, and still seems to be empirically adequate.



Diag. 7. A model for the braching reading of (31)

Generally, I think that sentences like (31)—(34) are convincing examples to support the stronger thesis of Hintikka, i.e. that the logic of natural language is stronger than elementary logic.

6. Summary

The aim of this article was to point out that the arguments put forward in favour of (H') are not conclusive. On the other hand, one argument for the weak reading is certainly its simplicity. Furthermore, it might be possible to support it by some empirical experiments which would follow Barwise's guidelines.

Many interesting arguments have been used in the debate on the logical form of the Hintikka sentence, and they deserve attention on their own. First of all, Barwise has proposed methods of empirical testing of such problems — methods which, if properly systematised, may bring many interesting results. It seems particularly interesting to examine how people understand certain sentences by using schematic diagrams. Secondly, in the dispute on the reading of (1), we can clearly see the role of inferential relations in the research on the logical form of sentences and their links with the aspects of language studied by pragmatics. And finally, the participants of the debate have noticed the problem of computational complexity of semantic constructions of natural language.

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Tadeusz Ciecierski, Jakub Szymanik
ON BAR-HILLEL HYPOTHESIS

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> Not in every actual communicative situation could every indexical sentence be replaced, without loss of information, by a non-indexical sentence; but there is, on the other hand, no indexical sentence which could not be replaced by a non-indexical sentence, without loss of information, in some suitable communicative situation (Bar-Hillel 1954: 369).

The statement is a conjunction of the following sentences:

(BH) There is a communicative situation and an indexical sentence, such that the sentence cannot be replaced, without loss of information, by any non-indexical sentence.

(1) There is no indexical sentence that could not be adequately replaced by a non-indexical sentence in some suitable communicative situation.

We call (BH) 'Bar-Hillel's Hypothesis'. In his article, Bar-Hillel considers some other semiotic issues as well, but – in our view – it is (BH) that deserves the title of a distinct and theoretically appealing hypothesis.

The aim of our paper is to expound (BH) and to consider arguments for and against it. In particular, we shall refine the notion of indexical expression and sketch a modest research project in connection with (BH).

1. The analysis of (BH) should begin with its precise formulation. To this end, we shall employ the concept of *substitutional set* introduced by Barbara Stanosz (1974). By "the substitutional set of an indexical sentence p" we mean the set of non-indexical sentences obtained by using the following method:

– We transform p into a sentential function by replacing the indexical expressions, occurring explicitly or implicitly in p, with variables.

– We transform the sentential function back into a sentence by substituting the variables with constants, or by binding the variables with existential quantifiers.

For instance, the substitutional set of the indexical sentence "He does not love her" will contain the following elements:

(2) Caesar does not love Cleopatra.
(3) Caesar does not love someone.
(4) Someone does not love someone.

The problem of eliminability of indexical expressions can be intuitively framed as follows: does the substitutional set of an arbitrary indexical sentence p, uttered in a situation s, contain a sentence that carries the same information as p? So formulated, however, the problem has a trivial negative solution. Imagine a situation in which someone utters the sentence "Look at this". As it happens, there is no constant term (no proper name) in the language that would stand for the demonstrated object. If we suppose that the sentence was uttered in a non-empty context, then no member of its substitutional set will contain a sentence carrying the same information as the indexical sentence did. For the indicated thing has no proper name in our language.[1]

Many things we talk about in ordinary language lack distinct names – we refer to them with the help of descriptions. Thus our specification of the ways of obtaining the elements of a substitutional set should be supplied with a method of obtaining a sentence synonymous to the initial indexical sentence via substituting definite descriptions for variables.

Let us call this new research tool a quasi-substitutional set of an indexical sentence p. Generally speaking, it is a set of (non-indexical) sentences obtained from p by means of the following method:

– We transform p into a sentential function by replacing the indexical expressions, occurring explicitly or implicitly in p, with variables.

– We transform the sentential function back into a sentence by substituting the variables with constants or definite descriptions, or by binding the variables with existential quantifiers.

For example, the quasi-substitutional set of the sentence "He does not love her" contains the following sentences:

(5) Caesar does not love Cleopatra.
(6) Caesar does not love the last queen of Egypt.
(7) The author of *The Gallic Wars* does not love the last queen of Egypt.

The notion of quasi-substitutional set allows us to reformulate (BH) as follows:

[1] We regard general names taken in personal supposition as indexical expressions.

(BH') There is a communicative situation s and an indexical sentence p, such that the information carried by p in the context of s differs from the information carried by any sentence q belonging to the quasi-substitutional set of p.

2. For a complete analysis of (BH) it is not enough to translate Bar-Hillel's original formulation to a language containing the term "quasi-substitutional set": in addition, one must explain the nature of indexical expressions, communicative situations, and the information carried by a sentence. So long as these terms are not given a clear meaning, any attempt to determine the truth value of (BH) will be futile. In what follows, we shall limit ourselves to the task of elucidating the first of these concepts.

3. In this paper, we accept the following characterization of an indexical expression:

E is an indexical expression when some semiotic function of E depends on the context of use of E.

This definition differs from textbook formulations, which do not speak of contextual dependence of an arbitrary semiotic function, but of the dependence of the *extension* function. Such definitions are too narrow, since it is not only extension that can be determined by context. Let us consider the following utterances:

(8) "I am right, you are wrong" (uttered by Jakub Szymanik in a conversation with Tadeusz Ciecierski) means the same as "Jakub Szymanik is right, Tadeusz Ciecierski is wrong".

(9) "I am right, you are wrong" (uttered by Tadeusz Ciecierski in a conversation with Jakub Szymanik) means the same as "Tadeusz Ciecierski is right, Jakub Szymanik is wrong".

The shift of context (the speaker, the recipient, and the time) entails a change in the situation described by the sentence (the semantic correlate of the sentence).[2]

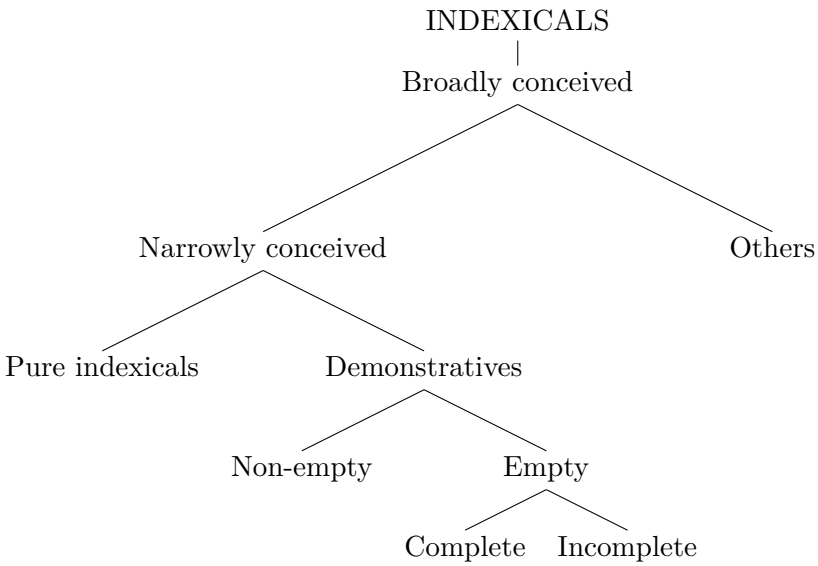
The above-mentioned definition is in accord with dividing indexical expressions into narrowly and broadly understood indexicals. According to the narrow sense, one may call 'indexical' any expression whose semiotic functions depend on context in a *regular* way, e.g. "I", "now", "here".[3] Indexicality in the broader sense includes,

[2] We distinguish extensions of sentences from semantic correlates of sentences: the former are truth values, the latter – situations described by sentences. Also other semiotic functions, especially pragmatic ones, can depend on context. Furthermore, such definitions ascribe the property of indexicality only to names and sentences while denying it, e.g., to functors, which lack extension. Yet, if verbs are not the paradigm case of indexical expressions, then what is?

[3] That is to say, there is a rule linking the value of a semiotic function of an expression to the context, e.g. "I" always refers to the speaker (producer).

apart from the indexicals in the narrower sense, all expressions whose semiotic functions depend on the circumstances in an irregular manner.[4] Indexicals in the broader sense include, e.g., the proper name "Socrates", which could be used to refer to various people (consider the well-known Brazilian footballer from the eighties), whereas it is rather difficult to provide a rule associating the reference of "Socrates" with a context.

The class of narrowly understood indexical expressions can be divided in various ways – we have decided to employ David Kaplan's classification put forward in "Demonstratives" (Kaplan 1989). We shall distinguish, therefore, between pure indexicals, whose semiotic functions are dependent on the contextual parameters (the speaker, the addressee, the time, etc.) and demonstratives, whose semiotic functions depend on the accompanying demonstration. Demonstratives, in turn, divide into empty and the non-empty ones. The empty demonstratives have no referents, either due to the lack of an associated demonstration or due to the referent's non-existence (e.g. "this Pegasus"). Following Kaplan, we call the former 'incomplete' and the latter 'complete' (but vacuous) demonstratives. The classification can be illustrated by the graph:



[4] Our understanding of the phrases "broad indexical" and "narrow indexical" differs from what is customary in the literature, see Perry 1979.

The discussion so far has shown that we deal, in fact, with at least two versions of (BH) – the broader one and the narrower one:

(BHB) There is a broadly understood indexical sentence p, and a context s, such that the information carried by p in s differs from the information carried by any sentence q belonging to the quasi-substitutional set of p.

(BHN) There is a narrowly understood indexical sentence p, and a context s, such that the information carried by p in s differs from the information carried by any member of the quasi-substitutional set of p.

It is worth stressing that if the narrower version of Bar-Hillel's hypothesis is true, then also the broader one is true (and falsity of (BHB) entails falsity of (BHN)).

4. The rules determining the dependence of semiotic functions on the context must involve a variety of elements that affect those functions: the time and place of the utterance, the object demonstrated by the speaker, and so on. These elements constitute what may be called 'the maximal pragmatic context'. We reserve this label for a somewhat artificial entity – the set of all parameters which affect the semiotic functions of a narrowly understood indexical utterance. In accordance with tradition such contexts may be represented by sequences of parameters. For instance, the sentence "You bought a Porsche, not a Mercedes" is associated with a context consisting of the sequence of parameters:

(10) <the speaker: x_1, the recipient: x_2, the time of utterance: $x_3 \ldots$ >

The ellipsis represents all remaining parameters which describe the communicative situation but have no impact on the semiotic functions of the utterance in question. The maximal pragmatic context is an abstract entity that enables the analysis of any narrowly conceived indexical utterance.

A context is, briefly, the material circumstance of an utterance from which a participant of the communicative situation decodes semiotic properties of the utterance which are relevant to communication. Of course, the context is not identical with the material circumstance of the utterance – in particular, two identical utterances used in different material circumstances may take place in the same context, e.g. when we point at John during a football match and say "he", the context is the same as in the case of indicating John during a basketball game. Hence the crucial meaning of the concept of *the language user selecting relevant elements of the material circumstance of an utterance* for the notion of context. The context of the two utterances in our example is identical, since the same element is isolated from different material circumstances.

The idea according to which a language user creates a context by picking out certain elements from the material circumstance of the utterance might suggest

that the context is constituted by some proper part of information available to the participants of communication.[5] This hypothesis calls for some clarifications. First, among the context-dependent expressions one may discern those which select their reference automatically and those which fix it intentionally. The first class includes all expressions whose reference does not depend on intentions or beliefs of the speaker,[6] e.g. if for some reason we are convinced that today is the 19th of February, while in fact it is February the 18th, the word "today" uttered by us refers, despite our conviction, to the 18th, not to the 19th of February. The semiotic functions of intentional expressions are dependent on our attitudes.[7] If I point at an object and say "This picture is beautiful", it is easy to tell which picture I have in mind. It is the object which *I intended to indicate* that should always be considered the proper referent of my demonstration.[8]

The existence of expressions automatically dependent on the context seems to be a strong argument against the hypothesis identifying contexts with information. For, if the context's operation is sometimes independent from our beliefs, it cannot be identified with a certain fragment of those beliefs. The problem could be solved by introducing the notion of *an ideal observer of a communicative situation*, namely, an individual whose knowledge of the parameters of the context is complete. The actual participants of a communicative situation have contextual beliefs; however, they need not be either true or relevant to the semantic features of the expressions constituting the utterance. Thus we can easily define intentional indexicals as those affected only by parameters whose value must be agreed upon by the actual and the ideal participants of the communicative situation.

This approach has several advantages. First, it allows us to regard contexts as something independent from the language user – our ideal observer together

[5] Such a set of beliefs (information) would contain sentences about identity of certain objects with values of context parameters; e.g. "The current speaker = John Smith", "The time of utterance = 7.45 p.m.", etc. Below, we shall call the set of such beliefs 'contextual knowledge' or 'contextual beliefs'.

[6] The class of those beliefs is not easy to determine; it should certainly include those mentioned in the previous footnote. But not all of them: for instance, when I use the intentional expression "he", I denote an object which I have somehow pointed at, even if the indicated person is not the person I believe I have pointed at. In such situations intentions must be distinguished from the above-mentioned contextual beliefs.

[7] With the qualification mentioned in the previous footnote.

[8] It may be objected that by making the reference dependent on intention, i.e., by saying: "A refers to O by means of E", rather than "E refers to O", we give up talking about the truth conditions of a sentence. That does not seem right to us – the intention determines only what is talked about (in the case of names) and what is said (as regards sentences), the two latter elements constitute (in the first case) the truth conditions of sentences (i.e. situations that would make the sentences true if they occurred) or are simply sets of such conditions.

with all his knowledge is an entity isomorphic to the set of the parameters of the context. Second, representing context as a set of propositional attitudesallows us to easily compare the knowledge of users to the actual state of the world. By giving autonomy to the context, we free ourselves from the problem of the automatic indexicals, and, furthermore, we are able to compare the actual and the ideal sets of contextual beliefs.

5. Arguments for (BH):

The existence of essential indexicals. Let us consider the sentences:

(11) It is 4.30 p.m. now.
(12) The entrance to the museum is here.

(13) 4.30 p.m. is 4.30 p.m.
(14) The entrance to the museum is the entrance to the museum.

Are (13) and (14) adequate paraphrases of (11) and (12), respectively? We intuitively object to such a solution. In certain situations a person who accepts (11) or (12) will behave quite differently than a person accepting (13) and (14). The simplest explanation of this fact is that the informational content of (11) and (12) substantially differs from the content of their eternal[9] translations – in particular, it contains information about the spatiotemporal location of the language user.

Indexicality of many seemingly non-indexical expressions. If we consider the broadly understood indexicality, it turns out that a lot of expressions commonly regarded as non-indexical, e.g. proper names, are indexical in character. If that is the case, the possibility of any procedure translating indexical sentences into the non-indexical ones becomes dubious.

Language acquisition. Plenty of words we use were explained to us by means of ostensive definitions. Each ostensive definition is an indexical sentence, so the ability to employ certain non-indexical expressions depends on our ability to use indexicals.

The knowledge of language users. Consider the sentence:

(15) It is raining now.

and its 'eternal' counterparts:

(16) It is raining in Warsaw on the 10th of January 2003, at 5.30 p.m.
(17) It is raining in the city at the geographical coordinates (21E, 52N) on the 10th of January 2003, at 5.30 p.m.

[9] In Quine's sense (1986: 13–14).

First, if the user does not know the date, she might ascribe a different truth value to the sentences. Second, the eternal sentences, e.g. (16), sometimes contain pieces of information which do not belong to the content of indexical sentences.

Impossibility of selecting the adequate translation. When we replace indexical sentences with non-indexical ones we can substitute an indexical name with various non-synonymous, yet coextensive, descriptions, as we did in (16) and (17). We have no criteria for determining which one forms the accurate translation of (15).

6. The arguments listed above do not seem decisive to us, so we shall put forward some remarks that may become a point of departure for a critique of (BH). They are tips for declared opponents of (BH): sketches of possible lines of argumentation rather than solid objections. Naturally, all the following remarks apply only to the narrowly accepted (BH).

Obscurity of formulations. The notions crucial to formulating Bar-Hillel's hypothesis: *the communicative situation* and *the information* carried by a sentence, have not been sufficiently examined. As mentioned above, context can be conceived in two ways: as a material circumstance of the utterance (the external context) or as the beliefs of the language users (the internal context). It remains unclear how to interpret the concept of a communicative situation in (BH), although – as we have pointed out – context rather always is a mixed entity.

The notion of information carried by a sentence, though it has been given a great deal of attention, is not the clearest one as well. The classic studies trying to define the concept of information were written by Bar-Hillel and Carnap (1953), Dretske (1982), Barwise and Perry (1983), and Devlin (1991). These conceptions differ from each other with respect to, among other things, the degree of sensitivity to the phenomenon of intensionality. According to the simplest extensional account, the semantic information carried by a given sentence can be identified with a class of models in which it is true.[10] Of course, if a concept of information is to be plausible from the point of view of pragmatics, it must take into account the intensional aspects of natural language.

Examples. As we have noted at the very beginning, (BH) is an existential sentence, which means that, to justify it, it is sufficient to give at least one example of an indexical utterance which cannot be translated to an informatively equivalent eternal sentence. The onus of proof, then, lies with the advocates of (BH), while the skeptics can merely criticize the offered examples and wait for better ones.

Unfortunately, it is difficult to find decisive examples in the works devoted to indexicality. Instead, in the studies on pragmatics, one can encounter remarks similar to those by Marek Tokarz (1993: 116):

> criticisms of the universal translatability view seldom appear now.

[10] Or, in a nonequivalent formulation, with a class of possible worlds in which the sentence is true, or with the class of state descriptions to which it belongs.

> Apparently, the students of pragmatics believe that this position is fundamentally mistaken.

In our opinion, the most interesting examples in support of (BH) are sentences containing essential indexicals, but even they do not settle the matter. The sentences can be paired with eternal counterparts that apparently carry the same information. The procedure of this assignment is based on the method of describing contexts which has been propounded by Bar-Hillel. The method reveals that the following are informatively equivalent:

(18) I am here.

(19) The person who utters a token of the sentence "I am here" on the 10th of January, at 5 p.m., at the geographical coordinates (21E, 52N), is at the Institute of Philosophy of the University of Warsaw.

(20) <the token of a sentence: "I am here", the speaker: Jakub Szymanik, the location: the Institute of Philosophy of the University of Warsaw, the time: January 10th 2003, 5 p.m.>.

as well as:

(21) It is 4.30 p.m now.

(22) <the token of the sentence: "It is 4.30 p.m. now", the speaker: Tadeusz Ciecierski, the location: Warsaw, the time: January 10th 2003, 1.30 p.m.>.

Admittedly, such choices for the eternal translation may be criticized as artificial and arbitrary, but, until the notion of *informational equivalence of sentences in a communicative situation* is not precisely defined, the method should not be dismissed. On certain construal of (BH), the method could probably form a good counterargument against Bar-Hillel's intuitions, yet, on the other hand, it might not be the case with regard to all interpretations.

Seeming indexicality. Each opposition to (BH) lies on the assumption that there are non-indexical expressions. Otherwise (BH) would be trivially true. The assumption seems justified at least in the case of the narrowly understood indexicality. There is a difference between general names, such as "dog", and indexical expressions, such as "I". The reference of the former consists of the set of objects satisfying given conditions, whereas the reference of the latter depends on the context (is a function from the contexts to the universe of discourse). We may treat names as logical constants and the narrowly accepted indexicals as variables.

Language acquisition. Although using ostensive definitions involves employing indexicals, this fact alone does not bear evidence to the truth of (BH). On the contrary, infallible use of indexical expressions in order to indicate objects we talk

about may be regarded as evidence for the thesis that in a specific situation we are able to 'de-indexicalize' those expressions. When I point at a dog and say "This is a dog", I know that the indexical expression "this" in this particular situation corresponds to the noun "dog". If an English-speaking person points at a dog and utters the sentence "This is a dog", nobody doubts that in this particular situation she identifies the reference of "this" with the reference of "dog".

It would be interesting to carry out psychological research into the capabilities of using indexicals among infants, children, and adults, and to compare the results. Such a research might prove stimulating for the logical theory of indexicals and, consequently, would help verify (BH). One can also regard (BH) itself as an empirical thesis and conduct psycholinguistic research into the ways of understanding indexical sentences and their eternal translations in certain situational contexts. Nevertheless, in order to do this research reliably, a precise conceptual analysis is in order that will clarify the meaning of (BH).

The beliefs of language users. Knowledge (including logical knowledge) of language users is never perfect, but this fact does not seem particularly significant for the theory of language. It is important that the eternal translation of an indexical sentence should be informatively equivalent. Some language users do not regard the following sentences as equivalent:

(23) It is not the case that I both passed the exam and wrote the program.
(24) I failed the exam or I did not write the program.

Similarly, the majority of language users do not consider the following as equivalent:

(25) For every family of non-empty and mutually exclusive sets, there is a set which shares precisely one element with each member of the family.
(26) The Cartesian product of any family of non-empty sets is non-empty itself.

However, we know that from the logical point of view (25) and (26) carry the same semantic information, namely, they are true exactly in the same situations. The beliefs of language users have no impact on the logical relations between sentences and, likewise, they should not affect their informational content. In light of this fact, the arguments invoking knowledge of language users appear unconvincing.

Translation. What weighs in favour of (BH) is the lack of exact and unambiguous rules for translating the indexical sentences into the language of eternal expressions: the last word belongs to a competent language user, who decides whether two sentences are equivalent. Yet a situation of this kind is characteristic of all investigations within the framework of the theory of language. A linguist

does not have a choice: the only way to assess her theories is to confront them with the communicative behaviour of members of the linguistic community. This situation is forced by the object of linguistic study, which, to a considerable extent, is a social entity. Consequently, the problems with translating indexical sentences do not fundamentally differ from the problems of arbitrariness, which we encounter in other fields of linguistic theory, for instance in the analysis of propositional expressions or in the conversational logic.

7. In this paper we have tried to analyse Bar-Hillel's Hypothesis. The conclusions we have reached can be summarized as follows:

– It is possible to translate Bar-Hillel's Hypothesis into a formula involving the notion of a quasi-substitutional set; such a translation shows that there are two (interesting) techniques of translating indexical sentences into non-indexical ones: the first one consists in substituting the indexicals with names, and the second one – in substituting them with descriptions.

– The concept of *indexical expression* can be understood broadly or narrowly; accordingly, Bar-Hillel's Hypothesis has two versions.

– A communicative situation (pragmatic context) has an external and an internal component: both can be coherently represented by introducing the notion of *an ideal participant of a communicative situation*. By means of this notion one can define other useful pragmatic concepts: *an intentional indexical* and *a communicative misunderstanding*.

– The arguments cited in favour of Bar-Hillel's Hypothesis, in our view, do not settle the controversy regarding its truth. Among them, one can find very weak reasons, such as those invoking the knowledge of language users, but there are also several appealing arguments such as the ones invoking essential indexicals or language acquisition with the help of ostensive explanations. The final verdict, however, should be postponed until the concept of information carried by a sentence is sufficiently elucidated.

The less important results of this paper include the following:

– We have shown the inadequacy of the definition of indexicals which assumes that the extension of an expression is the only semiotic function that is determined by context.

– We have offered a classification of indexicals.

– We have put forward a simple modification of the concept of *substitutional set*.

In the future, we would like to propose a refinement to the notion of semantic information. Let us hope that if this project succeeds, then pairing its results with the theory of indexicality and context sketched above will allow us to determine the truth value of Bar-Hillel's Hypothesis.

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THE SECRET LANGUAGE OF THE RITUAL AS AN ATTEMPT TO DEFINE CONCEPTS IN ANCIENT INDIAN TEXTS (THE BRĀHNAÒAS)

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The concept of a secret language dates back to the Indo-European era. Researchers dealing with the reconstruction of Indo-European poetic tradition compared the oldest literary texts (such as *the Illiad* and *Edda*) and noticed two planes of discourse, which they called "the language of men" and "the language of gods." (Watkins 1970). The language of men constitutes the lower level — the level of everyday conversation. The language of gods belongs to the sphere of formalised poetic statements. As Cavert Watkins puts it, in the archaic lexis there was an opposition between semantically unmarked expressions used every day and rarer, more "weighty" phrases that were semantically marked (Watkins 1970: 2; Watkins 1987: 270-299). The principles of creating and distinguishing the language of gods from the language of men are very precise; a detailed analysis would not fit into the spatial constraints of the present article. In general terms, the polarity between the language of gods and the language of men consists in differentiating between the commonplace and the ancient or traditional, between ordinary poetic expressions and a higher poetry which may be described as prophetic, and finally, between the explicit and the vague and implicit (Watkins 1970: 13-16).

The oldest Indian literary text, deeply rooted within the Indo-European tradition, is *The Ågveda*. It is generally assumed to have been composed around the 13^{th} century B.C. (Gonda 1975: 22).[1] and taken its final form around the 7^{th}

[1]According to Jamison and Witzel (1992) the hymns of *The Rig Veda* were created between 1900 and 1100 B.C. and constitute a collective work of several generations of poets and kings living at the end of this period. See: Witzel 1995: 97-98.

century B.C. (Gonda 1975: 15) Although *The Ågveda* is a collection of hymns addressed to the gods, it had more than just religious functions. The authors of the hymns used them to express their metaphysical views. Moreover, they tried to create a language capable of conveying these beliefs. This is another issue too broad to be discussed in the present article. In general terms, the authors of *The Ågveda* used a metaphorical language with a distinct, multi-layered structure that evoked many associations and allowed poets to express many levels of meaning (Jurewicz 2010). The metaphors in *The Ågveda* may be treated as conceptual metaphors, i.e. not merely literary figures of speech, but ways of arranging and expressing thoughts. Cognitive linguistics, as defined by Lakoff, offers methods which are particularly useful in analysing such metaphors (Lakoff 1987; Lakoff, Johnson 1980; Lakoff, Turner 1989; Jurewicz 2010).

The poetics of *The Ågveda* is a continuation of the Indo-European tradition (Watkins 1982: 104-120; Watkins 1997). The very idea of a poet who is both a prophet and a priest preserving and continuing the oral tradition derives from the Indo-European culture — and the authors of *The Rig Veda* perceived themselves in such a way (Watkins 1987). Texts which are composed, memorised and passed on orally must be suitably structured. Their language is highly synthetic, consisting of short, conventional phrases. Viewed outside of their cultural and ideological context, such works of literature often seem incomprehensible. However, these phrases are constructed and arranged in a pattern that refers to the original context, so that the knowledgeable reader may understand the whole meaning of the phrases. According to Watkins, such phrases may be treated as different realisations or different depictions of the same text. Synchronously, the text can be perceived as a kind of thematic "deep structure"; diachronically, it may be regarded as a "proto-text". Such texts are defined, firstly, by means of determining its specific semantic features. Secondly, it is defined through momentary pronouncement of those features (Watkins 1982: 118). Indo-European poetic tradition stipulates a close cooperation between the author of the text and the reader (listener), who is equally important in assigning meaning to the words. Such ideology is present in *The Ågveda* as well as in later Indian texts.[2] I am of the opinion that the oral transition of texts had a significant influence on the Indian worldview. It may be assumed that it necessitated the emergence of two cognitive skills: the ability to move past the detail to the abstract and to generalise, as well as the propensity for deep analysis. The first of these skills was used in constructing synthetic and conventional phrases, whereas the second was necessary in understanding them.

The Ågveda may be perceived as an example of constructing the language of gods. A prominent Russian expert on *The Ågveda*, Professor Yelizarenkova,

[2]Including the classic works of Indian *belles lettres*, that present the events of the plot in a very concise form, focusing on elaborate descriptions of the characters, the setting and the era in which the story takes place; see: Trynkowska 2003.

emphasizes that the text is composed primarily in the language of gods — the everyday speech of men is not reflected in this work (Yelizarenkova 1993: 83-85). Returning to Watkins' description of the language of gods, one may say that the entire *Ågveda* consists of what is ancient, traditional, prophetic, vague and hidden (Watkins 1970: 13-16).

It is therefore understandable that writing comments to *The Rig Veda* became the driving force of Indian thought in later centuries. The oldest group of commentaries is the *Brāhmaòas*, a huge collection of prose (written around 10^{th} — 7^{th} century B.C.) (Gonda 1975: 360). The *Brāhmaòas* are, in their most evident syntactic layer, a guide to rituals, especially offerings made during public rituals (*śrauta*), which are not described in *The Ågveda.*[3] Rituals portrayed in the *Brāhmaòs* included public recitations of fragments from *The Ågveda* (and other *Vedas*), and one of the purposes of writing commentaries was to explain why a particular extract is read at a given moment. The *Brāhmaòas* also describe the processes of making different kinds of offerings, dispersing various doubts and disputing with other prescriptive texts.

I hold the view that the commenting nature of the *Brāhmaòas* manifests itself not only in the description of the rituals. These texts constitute a commentary to *The Ågveda* not least because they continue the tradition of creating a language of gods. Once again, what is meant is more than a linguistic exercise, but also an attempt at specifying the worldview and ways of expressing it. There is, however, one crucial difference between the *Ågveda* and the *Brāhmaòas.* The former text does not explicitly state how the language of gods is to be created, even though it gives some clues allowing us to reconstruct the process, whereas the *Brāhmaòas* — at least partially — offer a direct prescription.

One example of these direct statements that reveal the methods used by the authors to construct the secret language of gods can be found in the so-called etymologies.[4] In its most evident layer of meaning the etymologies in the *Brāhmaòs* are fragments describing the origins of various terms. From a linguistic perspective, they are, frankly speaking, of very little use.[5] This is why the first scholars interested in ancient India voiced highly critical opinions on the etymologies found in the *Brāhmaòs* (Gonda 1975: 377 n. 63). However, it was soon discovered that these etymologies resulted not only from the need to trace the origins of words. Gonda claims that the authors of the etymologies aimed at revealing the mysterious connections between the world and the domain of the invisible. The effort had practical results, as Indian philosophers believed that

[3]For information on rituals in *The Rig Veda* see: Potdar (1953), Kuiper (1960), Falk (1997).

[4]The Sanskrit term for "etymology" is *nirukta*; see: *The Chāndogya Upanišad* 8.3.3.

[5]As it is in the case of the so-called folk etymologies, they are based on semantic transposition (interpreting the meaning of a given term by associating it with a similar word)

language has the power to influence the world — knowing the name of a given phenomenon was tantamount to gaining control over it. As Gonda puts it, the ability to describe the origin of a term made it possible to penetrate the hitherto unknown nature of the object or person and to hold power over it (Gonda 1975: 377).

It is therefore apparent that behind creating the mentioned etymologies lay the need to explain the workings of the world and to gain control over them. There is, however, one more supplementary aspect of this process of creation. In the *Brāhmaòas* the effort of coming up with etymologies of different terms was aimed at systematising information about the world and methods of effective conduct. It was also meant to systematise the language that expresses this knowledge. In other words, creating etymologies meant creating a system of terms and concepts. The present article shall focus on describing this last aspect of creating etymologies.

The system of terms constructed in the etymologies is based on the language of gods. The principal aim of writing etymologies was to reconstruct this tongue. The second objective was to determine the relations between the languages of gods and men. The etymologies are created under the assumption (never explicitly stated) that the name of an object refers to its essence and emphasises the feature that is decisive. The lack of this feature means that the given object stops being what it is. This stipulation is expressed in the language of gods.

Etymologies based on such an assumption may be seen as definitions, although it must be emphasised that in this case definition taxonomies grounded in European logic are not applicable. Even the distinction between stipulative and persuasive definition seems inadequate here. On the one hand, the etymologies from the *Brāhmaòas* are persuasive definitions: in seeking the nature of phenomena and explaining it, they transcend the domain of linguistics (Adjukiewicz 1965: 83). On the other hand, there can be no doubt that they aim at creating not only the definitions of objects and phenomena, but also definitions of terms, which is the characteristic feature of stipulative definitions.

The fact that the etymologies from the *Brāhmaòas* cannot be classified as either stipulative or persuasive definitions, may be explained by the following: the mentioned view that language has an actual influence on the world is based on the concept of direct relation between the language and its referents, which is characteristic for ancient India. In this view, the language of gods *is* the world. In other words, when the gods express something in words, they "utter objects".[6] This is why etymologies appear in descriptions of the beginning of the world, a

[6]This relation between the words and the outside world is particularly visible in the description of creation in *Śatapathabrāhmaòa* 2.2.4. The Creator throws milk mixed with hair into the fire, saying "drink, while burning" (*ošhaô dhaya*), thus creating plants whose Sanskrit name (in plural) is *ošhadhayas*. Uttering the name of the plant changes the hair into *ošhadayas*. In other words, what the Creator said is willed into being.

time when the language of gods must have been used. "Uttering objects" may also be done by people who know the language of gods (not everyone was privy to its secrets).[7]

In the *Brāhmaòas* the process of creating the world is described as the process of making the first offering by the gods. This ritual act is the means to express the nature of divine words and objects. The sacrifice — meticulously described in the *Brāhmaòas* — is a microcosm, a model of the world enacted on the altar. All necessary utensils and actions correspond to various aspects of the world and the processes taking place in it.[8] The model is complete — the world contains nothing that would not be a part of an offering. As it is in the case of the language of gods: the sacrifice *is* the world.

It is therefore apparent that, from the point of view of the authors of the *Brāhmaòas*, the order of description and the order of actions are one and the same thing. In my personal opinion, this is the reason why the definitions constructed in the etymologies are both stipulative and persuasive. This fact influences the choice of terms interpreted in the etymologies pertaining to the ritual order. It must be emphasised, however, that the *Brāhmaòas* describe not only the ritual process itself, but also — through describing the model — explain the workings of the world. Defining the ritual terms makes an opening into the world and allows a better understanding.[9]

To analyse the etymologies from the *Brāhmaòas*, I shall divide them in two groups, according to the way they are explained. In both cases the search for the origins of a given term is at the same time a quest to find its hidden nature. In the first group, the etymology is created directly on the basis of an everyday word, phonetically similar to the one being defined. This type may be explained by the model: "X" therefore "X"' [he "saw" (*apaśyat*), therefore "an animal" (*paśu*)]. The second group of etymologies is more complex. The supposed origin of the word has a slightly different pronunciation than the term being defined. What is

[7]A person who had such knowledge was called "one who knows thus" (*evaôvid*).

[8]For example, the necessity of placing a lotus leaf at the centre of the altar of fire is explained in the following manner: "He then puts down a lotus-leaf. The lotus-leaf is a womb: he hereby puts a womb to it [for Fire to be born from]. And, again, why he puts down a lotus-leaf; the lotus means the waters, and this earth is a leaf thereof: even as the lotus-leaf here lies spread on the water, so this earth lies spread on the waters. Now this same earth is [Fire's] womb, for [Fire] is this earth, since thereof the whole [Fire] is built up: it is this earth he thus lays down"(*Śatapathabrāhmaòa* 7.4.1.7 — 8). The model of the world on the altar has an even broader scope. The Creator manifests Himself in the world, and so the offering is also a manifestation of the Creator, while the feelings experienced by people taking part in the rite reflect the experiences of the gods.

[9]It was also believed that the rites performed at the altarpiece influence the state of the world and the processes therein.

more, the original word is often entirely artificial, created solely for the purpose of explaining a given term. This meta-name is based on a word used in everyday speech and is created directly from this term. Thus, the etymology is created in three stages: "X", therefore "X"', therefore "X"" [he "was at the lead" (*agre*), therefore "leading" (*agri*), therefore "fire" (*agni*)]. The first type shall be called "two-stage etymology", whereas the second will be referred to as "three-stage etymology."[10]

Although European taxonomies are not appropriate for Indian thought, for the sake of clarity we may divide the etymologies in the *Brāhmaòas* into conventional categories. The two-stage etymologies seem to have more in common with persuasive definitions. The three-stage etymologies contain some features of stipulative definitions, as the term that is being defined is written in quotation marks. It must be emphasised that this distinction takes into account the tendencies within the two types of etymologies that may only be considered important from our point of view. In the *Brāhmaòas* they are of no consequence.

Apart from analysing several examples of the etymologies and presenting arguments to confirm the thesis that they are in fact attempts at creating definitions, I would like to describe the most important cognitive techniques used in constructing etymologies and the relations between these etymologies and Indo-European poetic tradition. The present research is based on the Sanskrit version of the *Brāhmaòas*. Sanskrit words are transcribed according to the International Alphabet of Sanskrit Transliteration.

I. TWO-STAGE ETYMOLOGIES

The first example is the etymology explaining the names of earth (the Sanskrit terms *bhūmi, påthivī, gayatrī*). The general concept of earth is expressed through periphrasis: "this" (*iyam*),[11] which reminds us that these texts were meant for oral distribution, where the performer could always point to the ground and say "this":

> 'This (earth) has indeed become (*abhūd*) a foundation!'. Hence it became the earth (*bhūmi*). He spread it out (*aprathayat*), and it became the earth, (*påthivī*). And she (the earth), thinking herself

[10] In come cases of three-stage etymologies the term being explained and the meta-name are one and the same word (e.g. *Gopatha Brahmana* 1.1), but they are defined in a three-stage fashion nonetheless.

[11] My interpretation of the periphrasis differs here from the one presented by professor Pelc (1971), in whose opinion the personal pronoun "he" is not descriptive and therefore cannot be considered a periphrasis. In the *Brahmanas* the pronouns "he", "she" and "it" (*ayam/iyam/ayam*) are used both as pronouns and in the mentioned function of the substitute for the name of a given object (e.g. earth).

> quite perfect, sang; and inasmuch as she sang (*āgāyat*), therefore she is *Gāyatrī*. [...] And hence whosoever thinks himself quite perfect, either sings or delights in song. (6.1.1.15)[12]

The names of the earth reflect its nature. The term *bhūmi* captures the nature of the earth as the basis of all creation. The word *påthivī* emphasises the vastness that lies in the nature of the earth (the literal meaning of the word is "vast, broad"). Being broad and being a basis are essential features of earth: what is unsteady and narrow cannot be earth.[13] Thus, it may be assumed that the earth is defined as this which is broad and constitutes the basis.

The reason for calling the earth *gāyatrī* is analogous. This name expresses the nature of the earth as something perfect and complete. It is to mean not only that the earth is a perfect creation of the gods. The perfection or completeness of the earth also results from the fact that it is the basis for all things.

This notion is reinforced through conceptual metonymy, i.e. the mental operation which gives access to a concept *via* a concept belonging to the same conceptual domain.[14] This cognitive technique is very common throughout the *Brāhmaòas*. In the case of the etymology for "earth" the authors use a type of metonymy that allows for identification of the offspring with the parent. The earth is the basis for all things not only in the physical sense, but also due to the fact that it is the mother of all that covers her. Being the mother of all things, it *is* everything.[15] This is why the earth is called perfect and complete. The quality is expressed by the term *gāyatrī*.

Metonymy has been a valid, naturally used conceptual strategy since Indo-European times. Figures of speech used in Indo-European poetic tradition include merism, i.e. a combination of two nouns which are very near synonyms. The semantic scope of this figure of speech extends the meaning of each of its components, e.g. the phrase "barley and spelt" is used to denote all cereals. As pointed out by Watkins, merism is based on the relation of closeness and metonymical thinking (Watkins 1982: 107-18, 117). By knowing this cognitive strategy and its usage, the reader (listener) is able to decipher the meaning of the figures of

[12]Translation by Eggeling (1993-1994).

[13]See: *The ågveda* 6.47.20. The fragment expresses horror at the sudden narrowness of the earth, which is usually broad. Cosmogonies in the *Brahmaòas* mention pre-creation earth as floating freely on the waters — the act of creation is the act of stopping the earth's movement (*Śatapathabrāhmaòa* 2.1.1.8 — 9, *Taittrīya Brāhmaòa* 1.1.3.5).

[14]E.g. a specific part of an object gives mental access to the whole, the concept of cause gives conceptual access to the concept of effect. For more on conceptual metonymy see: Lakoff (1987), Lakoff and Johnson (1980).

[15]See: *Shatapatha Brahmana* 7.4.1.7 — 8, (quoted in footnote no. 23), 6.1.1.14, 6.1.2.33, 6.2.2.32. *Shatapata* 6.1.3.11 states that: "[everything] is the waters, inasmuch as from the water everything here is produced".

speech created by the author. This linguistic figure of speech has its roots in the conceptual metonymy. I hold the view that the composers of the etymologies in the *Brāhmaòas* referred to this poetic tradition and assumed that their audience would be familiar with conceptual metonymy and its linguistic realisation.

Coming back to the etymology of the term *gāyatrī*, it differs from the previously discussed ones in the fact that the term being explained does not stem directly from the words expressing wholeness *sarva* and completeness *kåtsna*). The authors of the *Brāhmaòas* refer to the everyday experience of joy that results from feeling complete and is expressed through singing: "And hence whosoever thinks himself quite perfect, either sings (*gāyati*) or delights in song (*gīte ramate*)." The song that conveys the feeling of perfection becomes the experiential basis that makes it justified to call the earth *gāyatrī*. This is the second human cognitive strategy, characteristic also for the *Brāhmaòas*, namely metaphorisation.[16] The description *gāyatrī* is based on the metaphor of THE EARTH AS A PERSON (A WOMAN).[17] When a person feels complete, they sing, and so the earth sings too . In other words, singing is a conceptual bridge between the general concept of the earth (*iyam*) and the concept of the earth expressed in the name *gāyatrī*. The verb "to sing" (*gā*) forms a linguistic bridge between the concept of the earth (*iyam*) and the name *gāyatrī*.

The roots of metaphorisation can also be traced back to Indo-European times. Another significant figure of speech used in Indo-European poetic tradition is the kenning, i.e. a combination of two nouns in subordinate relation, which denote some other concept; e.g. the phrase "descendant of the waters" is a kenning for "fire". According to Watkins, this figure of speech is based on similarity and metaphorical thinking (Watkins 1982: 106-108, 117-118). As it is with the case of merism, we can say that kenning is motivated by metaphoric conceptual operations which allow for understanding one thing in terms of another. We can also assume that the recipients of the *Ågveda* were familiar with these mechanisms and their linguistic expressions.

It must be added that in the case of the etymology of the term *gāyatrī*, there is one more conceptual bridge between the general concept of the earth and the notion expressed by the word *gāyatrī*. This Sanskrit term primarily denotes a specific poetic metre used for composing Vedic hymns.[18] It may therefore be assumed that the earth sang in the *gāyatrī* metre. Thus, the basis for the name of the earth becomes clearer: by means of metonymy the earth is described as a "metre" in which it expresses its perfection and completeness. The name *gāyatrī* in reference to the earth is justified not only by the fact that the earth sings,

[16]For more on conceptual metaphor see: Lakoff (1987: 288, passim); Lakoff and Johnson (1980); Lakoff and Turner (1989: 57ff).

[17]My presentation of metaphors is based on Lakoff and Johnson (1980).

[18]A stanza in this metre consists of three verses, each eight syllables long.

but also by how it sings. It must be added that the term *gāyatrī* was not used everyday, but only in the ritual context.

The fragment of the *Śatapathabrāhmaòa* quoted above reveals a characteristic feature of Indian definitions. The name that expresses the essence of a given phenomenon is constructed on the basis of its influence. An Indian thinker does not ask "what is this thing?" but "what does this thing do?" The term that expresses the vastness of the earth (*prithivī*) derives from the verb "to stretch, to spread out" (*prath*). This tendency to classify things according to their effect is even more apparent in the other two terms denoting earth. The word that expresses 'being the basis' is not, as one might expect, derived from the noun "basis" (*pratišthā*), but from the verb "to become" (*bhū-*) a basis. The term expressing the wholeness of the earth is not derived from the adjectives "whole" (*sarva*) and "complete" (*kåtsna*), but form the verb "to sing" (*ga*), which describes the inner feeling of completeness.

Another example of etymology that clearly depicts the essence of the object being defined and a dynamic understanding of its nature is the etymology of the word "brick" (*ištakā*):

> And inasmuch as [the Creator] saw them after offering (*štvā*) the animal, therefore they are bricks (*štakā*). Hence one must make the bricks (*štakā*) only after performing an animal sacrifice (*štvā*); for those which are made before an animal sacrifice are [without bricks]. (6.2.1.10)[19]

This is an excerpt from a description of a great fire offering called the *Agnicayana* (literally "arranging the fire").[20] Generally speaking, the ritual involved building a fire altar of clay bricks. The process was accompanied by many animal sacrifices and plant offerings. The term "brick" (*štakā*) is derived from the verb "to make an offering" (*yaj-*) in its participle form "having made an offering" (*štvā*). It should be noted that the nature of the brick is portrayed in a very dynamic way — as the object that emerges after the offering is made (the dynamism is difficult to translate into other languages). The essence of the features specified in the definition is clearly visible: those who contradict the nature of the brick by firing them before making an animal sacrifice simply do not create bricks. The practical function of making etymologies becomes apparent: by getting to know the etymology of the word "brick," we begin to comprehend its nature and thus we know when to fire bricks.

The *Brāhmaòas* also contain the etymology of the term "animal" (*paśu*). This example allows us to understand the significance of context, which is crucial for

[19]See: *Śatapathabrāhmaòa* 6.3.1.2.

[20]An *Agnicayana* made in India in 1974 was filmed and described in detail by Staal (1983).

deciphering the intended meaning of the etymology. It also reveals the methods of constructing general concepts in the *Brāhmaòas*:

> He saw (*apaśyat*) those five animals, the man, the horse, the bull, the ram, and the he-goat. Inasmuch as he saw (*apaśyat*) them, they are cattle (*paśu*). (6.2.1.2)

> He saw (*apaśyat*) those five animals (*paśu*). Because he saw (*apaśyat*) them, therefore they are animals (*paśu*); or rather, because he saw (*apaśyat*) him in them, therefore they are animals (*paśu*). (6.1.1.4)

This etymology derives the word "animal" (*paśu*) frome the verb "to see" (*paś-*). This association may at first seem utterly groundless — it may be assumed that it was due to such etymologies that Max Müller, a prominent 19^{th} century expert on Indian studies, considered the *Brahmanas* equivalent to "the twaddle of idiots and raving of mad men" that could only be of interest to psychiatrists (after: Bekkun 1997: 69). To see whether he was right, we need to look at the context in which the mentioned etymology appears.

The etymology is included in a description of the *Agnicayana*, the great fire offering. As it has already been mentioned, the creation of the world is presented in the *Brāhmaòas* as the first sacrifice. In their attempt to explain various aspects of specific rites, the authors make references to this very first offering. The myth behind the origins of the *Agnicayana* is about the Creator giving birth to a son — the Fire (Agni). Agni flees from his father and hides, taking the guise of five animals (*paśu*) mentioned in the quoted passage (a man, a horse, a bull, a ram and a he-goat). The Creator sees these five animals and thinks:

> They are Fire [...] Even as Fire, when kindled, glares, so their eye glares; even as Fire's smoke rises upwards, so vapour rises from them; even as Fire consumes what is put in him, so they devour; even as Fire's ashes fall down, so do their faeces: they are indeed Fire! (6.2.1.5)

Looking at the five animals, the Creator sees the hidden Agni — the Fire. The fragment includes a construction of the general concept of fire, as something that glares, emits smoke, burns and produces ash. The starting point for this abstract thinking are the actions related to fire, deduced from the actions of the animals, that are perceived also as general and abstract concepts of living things — seeing, existing, eating and defecating. In a different fragment of the *Śatapthabrāhmaòa* animals are called "Fire's forms (*rūpa*)."[21] A form is something which is usually

[21] *Śatapthabrāhmaòa* 6.2.1.1—3.

perceived by sight.[22] Calling animals "Fire's form" implicates a view that the fire within the animals assumes a visible form. That is why the term "animal" (*paśu*) is derived from the word "to see" (*paś-*). The word *paśu* conveys the nature of the animal as the visible form of fire. Set within its context, the etymology also reveals the views on the concept of fire, whose actions manifest themselves in the actions of animals. The fire is portrayed as the essence of life, invisible without its animal form.[23]

It should be added that the seemingly shocking semantic gap between the term being explained ("animal") and its supposed origins ("to see") is likely to be deliberate. The relations between the languages of gods and men cannot always be obvious and easy to trace, lest the group of chosen individuals, gifted with the skill to understand and seek out etymologies, become too large. The apparent absurdity of the etymology will quickly deter unsuitable people from trying to uncover mysteries not meant for them. Such an idea of the author of etymologies and their recipients is also rooted in Indo-European tradition, where poets were accorded special status within society (Watkins 1982: 105-106; Yelizarenkova 1993: 24f).

II. THREE-STAGE ETYMOLOGIES

As it has already been mentioned, within etymologies of this second type there is a slight phonetic difference between the source word and the term which is being derived from it. The former is often an artificially created word, a meta-name based on a term used in everyday speech. It may be assumed that these meta-names are considered to come from the language of gods.

It may be shown using the example of the etymology of the word "fire" — *agni*:

> Now the embryo which was inside [the egg] was created as the foremost (*agri*): inasmuch as it was created foremost (*agram*) of this all, therefore it is *Agri*: foremost (*agri*), indeed, is he whom they mystically call "Agni"; for the gods love the mystic. (6.1.1.11)

According to this etymology the term "fire" (*agni*) conveys the nature of fire as something first and foremost. This primacy is expressed by the Sanskrit term *agra*. Establishing and giving a name to the essence of a phenomenon or object is the first step in creating its etymology. The word *agra* becomes the basis for

[22] In later texts, both Hinduist and Buddhist, the form (*rūpa*) is considered the subject of the sense of sight.

[23] Strictly speaking, the animal that is fire's form is the visible part of the Creator, as he shares his essence with Agni. Actually it is the Creator who takes on the form of fire and its animal manifestations, in which he is able to see himself.

a term reconstructed from the language of gods — *agri* — which is otherwise nonexistent. The second stage involves creating a meta-name, whereas the third is completed when the meta-name is used to demystify the term that is being defined (in this case: *agni*).

It should be emphasised that the *Śatapathabrāhmaòa* describes the defined term, which belongs to everyday language, as "mystic". This reveals how the language of the gods was perceived. According to Watkins, the language of gods was made of what was extraordinary, special, poetic, hidden and mystic. He quotes a fragment of *Śatapathabrāhmaòa* which, in his opinion, confirms this view: the common word "horse" (*aśva*) is juxtaposed with terms taken from the language of gods (*haya*, *vājin*, *arvan*).[24] However, many etymologies from the *Brāhmaòas* contain the view that it is the everyday terms that describe phenomena in a secret way. This assumption manifests itself in the expression that follows three-stage etymologies: "for the gods love the mystic and are enemies of the explicit."

Charles Malamoud, a French expert on Indian studies interested in this issue, claims that the language of gods in the *Brāhmaòas* is semantically transparent: the terms are understandable and convey the meaning of their designates perfectly(Malamoud 1996: 197). It results from the already mentioned fact that in the speech of gods there is no difference between the language and the objects described by it. As Malamoud puts it, "the gods have no shadow." By creating the world and the language that expresses it, one creates a shadow — obscuring the original clarity (Malamoud 1996: 200). This departure from the clarity of the world and the language of gods manifests itself in the "secrecy" of the words used in everyday speech. The terms taken from the language of gods are secret only because they are not accessible to us. In fact, it is the words of the language of men that are truly secret, as they do not reveal the nature of the objects or phenomena, so explicitly stated in the language of gods. Luckily for us, the gods, who keep their perfect world concealed from us, left us a clue as to how their language can be reconstructed. We can infer about it from the phonetic similarities between everyday terms and the words taken from the language of gods.

The etymology of the term "fire" (*agni*) has special significance, as its analysis reveals another cognitive process crucial for constructing etymologies — namely the inclusion of a broader context of earlier philosophy. In this case, this mostly means the philosophy of *The Ågveda*. The etymology of the term "fire" appears also in a different passage of the *Śatapathabrāhmaòa*:

> He thus generated him first (*agre*) of the gods; and therefore [he is called] Agni, ["The foremost" is the name of the one we call Agni]. He, being generated, went forth as the first; for of him who goes first

[24] *Śatapathabrāhmaòa* 10.4.6.1, quoted after Watkins (1970: 5).

> (*pūrva eti*), they say that he goes at the head (*agra eri*). Such, then, is the [fieriness] of that fire. (2.2.4.2)

This fragment explicitly states that the aim of etymology is to convey the essence of a given object or phenomenon. The primacy of the fire is called its "fieriness" (*agnitā*) — its essence the feature that determines that fire is fire. The authors attempt to explain this primacy not only by referring to the act of creation (as it was in the previously analysed passage), but also to the everyday experience of marching at the head of a column.

Such an explanation does not seem convincing if considered solely in the context of *Shatapatha Brahmana*, but becomes clearer when one looks to *The Ågveda*. The etymology refers to the concept of fire as described in *The Ågveda* — walking in the vanguard of Aryan tribes.[25] Such descriptions are likely to be based on facts, such as burning down forests and enemy dwellings.[26] Fire also appears in descriptions of the morning, walking at the head of the aurora.[27] These images are taken from everyday experience. Fire was kindled just before the dawn, so its coming preceded the appearance of the morning light. The descriptions of fire walking at the head of the aurora may also be considered a manifestation of a specific perception of the fire — in *The Ågveda* fire was identified with the rising sun.[28]

It is therefore apparent that in *The Ågveda* fire had much to do with primacy — both spatial and temporal. This concept defines the essence of nature as fire, as do images of glaring, heating, burning and producing smoke.[29] This concept of spatial and temporal primacy also contains the ideas of the east and the dawn. Once again, the basis for the association comes from real-life experience. Aryan expansion was directed towards the east, therefore the fire that lead the way was turned towards the east (Heestermann 1983: 76-94; Malamoud 1996: 198). People

[25] *The åfveda* 3.11.5, 8.84.8, 1.31.5. Passage 10.110.11 depicts fire walking at the head of the procession of gods.

[26] The destructive nature of fire as a weapon against enemies is described in: Blair (1961), Kaelber (1979); see: *TheÅgvVeda* 6.22.8. On fire destroying stone barriers see: e.g. *The Rig Veda* 8.60.16, 10.45.6, 4.3.14.

[27] See: *The Rig Veda* 4.13.1, 7.8.1, 7.9.3, 10.1.1, 10.8.4, 10.45.5.

[28] On identifying fire and soma juice with the rising sun see: Macdonell (1987: 93), Oldenberg (1993: 63—64), Jurewicz (2010: 134ff, 157 ff).

[29] See: *Śatapathabrāhmaòa* 6.2.1.5. I am of the opinion that the nature of fire as the phenomenon that glares, heats and burns, belongs to common knowledge that transcends culture. *The Ågveda* conveys that message e.g. by calling fire "the bright signal" (*ketu*) that appears in the darkness of the night as a harbinger of light and as an offering (e.g. 5.7.4, 3.29.5, 10.88.12). Passage 10.16.4 mentions the destructive (burning) and benevolent (heating, cooking) properties of fire, calling it *tanu*, which may mean "the nature, the essence" . Smoke in *The Rig Veda* is called "the sign of fire" (10.12.2), which also suggests that fumes constitute a part of the fire's nature.

kindled the fire with their faces turned towards the east, and therefore *to* the east.[30] Fire was always kindled at dawn — also associated with the east.

It should also be observed that the spatial primacy of the fire refers not only to "the front" and "the east", but also to "the top". This tendency manifests itself in various descriptions of fire in *The Ågveda*. The flames are depicted as going up to the sky.[31] The fire is identified with the rising sun, in whose nature it is to ascend.

This multi-dimensional primacy of the fire is expressed in *The Ågveda* by the term *agra*, meaning "first, foremost, the best" as well as "the head, the front, the beginning, the dawn, perfection, the top, the surface." (Grassmann 1873: 10-11). It is also conveyed by other terms with a similar meaning of "being at the vanguard, being first, being in the east" (mostly by the term *puras* and its derivatives).[32] It may therefore be concluded that *The Ågveda* creates a general concept of the primacy of fire (both spatial and temporal), expressed with the use of various terms.

In explaining the origins of the term *agni*, *Śatapathabrāhmaòa* refers to the concept of fire known from *The Ågveda*, narrowing its scope to spatial supremacy — it is in the nature of fire to take the lead (2.2.4.2). Passage 6.1.1.11 of the *Śatapathabrāhmaòa* constructs the notion of temporal precedence on the basis of spatial primacy: by stating that fire was created foremost, it declares its spatial and temporal precedence over everything else. To name this primacy, the *Śatapathabrāhmaòa* creates the term *agri*, choosing from among several terms used in *The Ågveda* the root that is phonetically closest to the word *agni*. It is clear that the reference to *The Ågveda* allows us to see the rational grounds for the etymologies form from the *Brāhmaòas*, both on the conceptual and the lexical level.

III. SUMMARY

1. The etymologies in the *Brāhmaòas* are in fact definitions aimed at describing the nature of a given object.

[30] This may be deduced from the use of the adjective *pratyañc* which originally meant "walking from the opposite side". It was most often used in relation to the aurora, which reinforces the meaning of "the east" by presenting an image of a man looking in the direction of the rising sun, standing "opposite" to it (*The Ågveda* 1.92.9, 1.124.7, 5.80.6, 7.76.2). The word *pratyañc* appears in relation to fire in passage 10.141.1.

[31] See e.g. *The Ågveda* 1.59.5, 3.5.10, 3,27.12, 7.16.3, 10.8.6, 10.45.7.

[32] See: e.g. *The Ågveda* 1.170.4, 7.1.3 (*puras*). "Preceder": *The Rig Veda* 1.188.11, 10.110.11, 10.124.1 (*purogā*), 3.11.5 (*puraetå*), 8.84.8 (*puroyāvan*). This precedence of Agni is expressed by the name *purohita* (literally: "placed in front"), which also has the figurative meaning of "priest": see *The Ågveda* 1.44.10, 1.94.6, 3.11.1, 8.27.1.

2. The nature of the object is determined on the basis of its effects and activity.
3. The creation of an etymology involves metonymy, metaphor, abstraction and generalisation.
4. The context, both synchronic (the text in its entirety) and diachronic (references to earlier texts, in this case to *The Ågveda*), plays a crucial role in understanding the etymologies.
5. The etymologies belong to the poetic tradition that can be traced back to Indo-European times.

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A SURVEY OF MEDIEVAL CONCEPTS OF CONGRUITY AND COMPLETENESS *AD SENSUM* AND *AD INTELLECTUM*

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As far as the subject of this paper is concerned, early medieval grammarians started with the definition of a sentence — *oratio* — proposed by Priscian (6th c. AD):

Oratio est ordinatio dictionum congrua perfectam sententiam demonstrans. (Priscianus 1855: 53, 2.15)

A sentence is a congruous ordering of words which expresses a complete thought.

Clearly, the crucial parts of this definition are *congruitas* — congruence, and *perfectio* — completeness.[1] Apart from *oratio*, an important role in medieval grammar was played by the notion of construction — *constructio*. This concept was also taken from Priscian's *Institutiones Grammaticae*, even though the Roman grammarian did not elaborate on it systematically. Many grammarians employed the terms *constructio* and *oratio* as synonyms, which applies especially to the early medieval grammarians (11th—12th c.), as well as to various later, more didactically inclined writers. By contrast, the *modistae* gradually developed a definition of construction that sharply distinguishes it from the definition of sentence cited above. A standard example comes from Thomas of Erfurt:

[1] *Congruitas*, *perfectio* — gr. *katallelotes*, *autoteles logos* in the grammar of Apollonius Discolus; cf. Kneepkens 1985: 116, 118.

> The construction is a combination of constructibles, made up of the modes of signifying, created by the intellect, and devised for the purpose of expressing a compound concept of the mind.[2] (Thomas Erfordiensis 1972: 279, 46.90)

One of the early authors whose definition of construction refers to Priscian's definition of sentence was Peter Helias, a twelfth-century grammarian who became, for the next generations of grammarians, an authority cited on par with Priscian (Petrus Helias 1978: 1):

Constructio est ordinatio dictionum congrua.

A construction is a congruous ordering of words.

In contrast to his predecessors, commentators on Priscian (the authors of so called *Glossulae*), who completely equated both notions,[3] Peter Helias only uses the first part of the phrase cited above and proceeds to the problem of kinds of congruity (*congruitas*) pertaining to construction. Namely, construction could be congruent *secundum vocem* and *secundum sensum*:

> "Congruous" should be understood both with respect to terms [*voce*] and with respect to sense [*sensu*]. An ordering of words is congruent in respect of terms if the accidents of words are combined coherently, for instance, masculine gender with masculine, feminine one with feminine, neuter with neuter, plural with plural. [...] An ordering of words is congruous in respect of sense when — on the basis of words ordered according to the above-mentioned example — the hearer is able to grasp rationally something true or false, e.g. when it is said "A man runs" or "Socrates is a stone". For, although the latter sentence is false, the hearer rationally grasps something.[4] (Petrus Helias 1978: 1)

[2] "Constructio est constructibilium unio, ex modis significandi, et intellectus causata, ad exprimendum mentis conceptum compositum finaliter adinventa." (Thomas Erfordiensis 1972: 279, 46.90). Polish translation can be found in Tomasz z Erfurtu 1999: 177.

[3] "Est autem perfecta oratio sive constructio, in qua plures dictiones positae insimul faciunt perfectum sensum."; cited after Kneepkens 1990: 146—147; cf. Kelly 2002: 167.

[4] The distinction *congruitas ad vocem* / *ad sensum* could be translated simply as 'syntactic / semantic correctness'. In the English-language literature it is rendered, depending on the author's theoretical predilections, as 'grammaticality / meaningfulness', 'grammaticality / semantic well-formedness', or 'cohesion / coherence'.

The example of a sentence congruous *ad vocem* but not *ad sensum* is "Socrates has hypothetical sandals with categorical straps" (Petrus Helias 1978: 1), in which elements of language and metalanguage are mixed. Similarly, we can compare "a categorical eye" to "a white man" (Petrus Helias 1978: 2). The former is congruent only with respect to terms, the latter — both in respect of terms and sense. In Helias's view, discrepancy *secundum sensum* makes the words "useless for a hearer that would like to rationally understand something"; which is the purpose of construction, in compliance with the authority of Priscian:

> He [i.e. Priscian] says: "each construction, called *syntaxis* by the Greeks, must relate to understanding [*intellectus vocis*]", because it will not be a construction unless it generates some intellectual comprehension in the hearer. (Petrus Helias 1978: 51; cf. Priscianus 1859: 201, 18.155)

Peter's was one of the earliest voices in the discussion that can be traced in grammar texts throughout the Middle Ages. In general, the discussion concerns the problem of whether and, if so, to what degree a grammarian should care about the semantic component of expressions. This issue was connected to the question of how to draw a clear line of demarcation between grammar and logic.

Namely, dialecticians often blended the concepts of truth (*veritas*) and congruity (*congruitas*). In this regard, a significant distinction was drawn before Peter Helias by Peter Abelard — between grammaticality and truth. Truth lies in an actual state of affairs and not in the utterance itself, even if we regard it as meaningful. This is proved by the fact that we can produce such meaningful and comprehensible sentences as "A man is a stone". Expressions like this were called *congrua ad sensum* by Abelard; their comprehensibility consists in intersubjectivity, since it is uttered in order to share a thought (*ad manifestandum intellectum*). Peter Helias believes that truth and falsity are characteristics of sentences, so he does not endorse Abelard's view which ascribed truth to states of affairs. He does use, however, his conceptual apparatus. As has been pointed out, it is grammarian's task, according to Helias, to relate an expression to understanding (*intellectus*), and therefore to evaluate it with respect to *congruitas sensu*, which, in the case of sentences, constitutes a necessary condition for ascribing a truth value. Yet the result of fixing the value is important only for a logician, not for a grammarian.

For Peter Helias and Peter of Spain — a grammarian from the late 12th century, the author of the *Summa "Absoluta ciuislibet"*[5] — meaningfulness of an expression (which, in the case of sentences, amounts to the possibility of

[5] Not to be confused with other figures of the same name: Peter of Spain, the author of famous *Summulae logicales* (*Tractatus*), and Peter of Spain, the later Pope John XXI (traditionally identified with the former).

ascribing a truth value) is a precondition of grammarian's endeavour. Thus only an expression which is congruous *ad sensum* could be 'grammatical'. Nevertheless, Radulf of Beauvais (2nd half of the 12th c.) and immediate students of Peter Helias held that grammatically correct expressions should be characterized at least by congruence *secundum vocem* (Kneepkens 1985: 117—118).

Already in the beginning of the discussion of construction, another problem came up which absorbed grammarians — the problem of figurative expressions. Such expressions are intelligible, so they satisfy the condition of "generating some intellectual comprehension in the soul". However, they do not meet the *congruitas secundum vocem* criterion. One example is Ovid's *turba ruunt* (*Heroides* 12.143), "the mob are rushing":

> Note that sometimes there is an arrangement of words congruous in sense but incongruous when it comes to terms. For, when one says "the mob are rushing", the words are not coherently conjoined with respect to accidents. The arrangement is incongruent because "mob" is singular and "are rushing" — plural. Wherever the sense is sound, even though the terms do not agree, we deal with a 'figure'; and such a construction is acceptable to grammarians. (Petrus Helias 1978: 1; cf. Priscianus 1859: 184, 17.156)

While considering constructions congruous *secundum sensum* Peter Helias does not use examples of 'ordinary' syntactic mistake — he is only interested with figures present in poetic texts or in the works of 'authorities', which are used in a justified manner.[6]

The second part of Priscian's definition of *oratio*, as has been seen above, employs the concept of completeness — *perfectio*. As Helias asserts, completeness requires that an expression have a subject and a predicate (Petrus Helias 1978: 15).[7] Thus a complete construction is a sentence in which "something is said of something" (*dicitur aliquid de aliquo*) and whose purpose, as Abelard would put it, is to constitute an understanding (*intellectus*) in the mind of the hearer. "A running man" is a congruous expression but not a complete one, since it keeps the hearer's mind in suspense, expecting a continuation. "A man runs" meets this expectation (Kelly 2002: 192). Here, as well as for other grammarians and

[6] In medieval grammar, it is said that there is a *ratio excusans*, an idea that comes from Priscian; see our remarks on complete and incomplete constructions below.

[7] „Words have been invented due to a need of complete sense, which is achieved only through a complete utterance. A complete utterance cannot exist without a name and a verb, although it can dispense with any other part of speech. It is apparent in any utterance containing almost every part of speech. The utterance will remain complete after subtracting all parts of speech other than a name and a verb. But if you remove a name or a verb, the utterance will turn out to be incomplete."

logicians in the 12th century, considerations of completeness have its origin not only in commentaries on Priscian but also in Boethius's commentary on Aristotle's *De Interpretatione* (3, 16b20), which implies that an expression is complete when it lets the hearer's soul rest and does not make him look for the sense outside of the expression (cf. Rosier 1994: 24).

Again, the following distinction dates back to Peter Helias: a construction can be complete with respect to the terms and with respect to the sense. He says:

> For there are two kinds of sentences. Some are sentences in respect of terms and sense, namely, when the words are conjoined appropriately so that they form some intellectual apprehension, like "Socrates is reading". Others are sentences with respect to sense, but not to terms, when one word has a meaning of a complete sentence, as is the case with imperative words and those in vocative case, e.g. "Virgil!". For, by it, the hearer understands the sense of a complete sentence, namely "I call you". The same applies to the first and second persons of the present indicative, e.g. "am reading" [*lego*] — the sense of the complete sentence is apparent. (Petrus Helias 1978: 13)

To conclude the remarks on the early conception of congruity and completeness, let us stress once more that, in accordance with Priscian's idea, congruence and completeness with respect to the sense serve to produce and communicate a certain intellectual apprehension (*intellectus*) connected with the meaningful layer of expressions.

Medieval grammarians associated Priscian's postulate concerning the effective way of transmitting a complete sense (*perfectam sententiam demonstrans*) with the general purpose of language. This purpose, expressed by a quote from *Timaios* (47C—D) in Chalcidius's translation: "We have been given speech (*sermo*) in order to transmit to each other signs of our wills" (Plato 1962: 44—45),[8] was formulated in the 13th century in the following way:

> But speech was invented to express to others what is in us. The purpose, then, of a sentence is to generate understanding in the mind of the hearer. Therefore the sentence which attains that end is said to be perfect.[9]

This aim was frequently achieved by ungrammatical or non-semantic utterances, most clearly represented by figures of construction and figures of speech.

[8] "ad hoc nobis est datus sermo ut mutuae voluntatis presto fiant indicia."

[9] Pseudo-Albertus Magnus 1977: 84: "Sed sermones sunt inventi ut exprimamus aliis quod apud nos est. Finis ergo sermonis est generare intellectum in animo auditoris. Sermo ergo qui potest in illum finem dicitur perfectus."

Which of them could be defended as congruous and complete expressions in the grammatical framework? In the 13th century the answer depended on the sort of justification or reason (*ratio*) that a given group of grammarians was inclined to adopt. Some regarded as justified such incomplete and faulty constructions that could be reconstructed *de virtute sermonis*, i.e. on the basis of the elements present in the expression.[10] Others — called intentionalists today[11] — justified, by appealing to speaker's intention (*intentio proferentis*), the acceptability of expressions that were not included in the set of tools used by people speaking in an 'ordinary way' (*instrumentum communiter loquentium*). This way of thinking led in the first half of the 13th century to the theory of the so called double *intellectus*. Elements of the theory can be found in Roger Bacon, Master Jordanus,[12] and Robert Kliwardby. In their view, a figurative construction is defective (*vitium*) but justifiable.

Let us begin with the way of justifying the incongruence of a construction. It is 'simply' (*simpliciter*) incongruous and, at the same time, 'relatively' (*secundum quid*) congruous, that is, it articulates speaker's intention in a sufficiently clear way. Incongruity *simpliciter* is realized at the syntactic level and is equivalent to Helias's *incongruitas voce*. Where Helias spoke of accidents of terms, the thirteenth-century authors employed the notion of modes of signifying.[13] Thus congruence *simpliciter* consists in concordance of *modi significandi*.

The three authors discuss the problem of *perfectio* and invoke two levels of *intellectus*, willing to endorse the aforementioned Priscian's principle (that every construction must be referred to understanding, *intellectus vocis*), so that it should really apply to all constructions, including the figurative ones.[14] Presence

[10] Completeness reconstructed 'in virtue of speech' may be understood in the Middle Ages both as grammatical and contextual completeness; cf. e.g. Lyons 1968: 174—175.

[11] They attributed a greater role to the intention of the speaker (*intentio proferentis*) than to formal conditions of forming a grammatically correct utterance, which in turn will be much more important for the *modistae* (belonging to the younger generation).

[12] Formerly identified with Jordanus of Saxony, another Parisian scholar of the same name.

[13] Differences in theoretical assumptions and solutions between intentionalists and the later *modistae* is not inconsistent with the fact that the former use the term *modi significandi* known since the 12th century and describing the grammatical forms of a term regarded as accidental. Construction receives its syntactical correctness due to the correspondence of some of the modes. The three above-mentioned authors have been occasionally called 'premodists'. Polish discussions of the *modistae* include Pelc 1979: 34—36 and Krauze-Błachowicz 2000, 2002.

[14] Bacon speaks of the first and second intellect only with respect to *completeness*, Jordanus introduces the division at the level of *congruity*, while Kilwardby discusses both (Kneepkens 1985: 124, 127).

of a subject and a predicate is the essential prerequisite for completeness. To refer a construction to *intellectus* as 'understanding', 'intellectual apprehension', etc. is to refer to the meaning of the expression; which has two levels. The first level — *intellectus primus* — corresponds to the lexical layer of a sentence. It is the level of understanding the expression with respect to full concordance of *modi significandi*.[15] Completeness at this level (*perfectio intellectus primi*) presupposes the presence of the 'verbal completeness', or the 'completeness with respect to terms' (*perfectio vocis*). *Perfectio vocis* and *perfectio intellectus primi* are concomitant.

The second level of meaning includes denoted objects (*significata*).[16] This level is called *intellectus secundus* or *secundarius*.[17] A sentence is complete by virtue of *perfectio intellectus secundi*. Nevertheless, it is required that it be complete also with respect to the primary meaning. This condition can be revoked in special circumstances: speech that would be complete only in respect of the secondary meaning can be used by poets and sages (Kneepkens 1985: 124). Therefore not every syntactically incorrect utterance qualifies as a sentence complete with respect to the secondary meaning — only those qualify whose intentional usage is justified in poetry, the Bible, the writings of the Fathers of the Church. A lack of the primary completeness of a figurative expression requires giving a reason (*ratio*), to avoid counting as grammatical all utterances which are simply mistaken or ungrammatical but remain comprehensible. A frequently used example of this sort, also employed by Bacon, was the incorrect expression *dominum venit*. Everyone readily recognizes that what was meant was *dominus venit*. Although such a common mistake (*solecism*) does not impede possibility of understanding the speaker, it fails to receive any justification (Kneepkens 1985: 124).

Furthermore, Kilwardby and several other thirteenth-century grammarians who displayed intentionalist tendencies introduced a distinction between primary and secondary completeness (*perfectio prima* and *secunda*).[18] *Perfectio prima* is a completeness of form by virtue of which a sentence reaches its *esse*, while the secondary perfection, added to the primary one, ensures that the sentence

[15] Robert Kilwardby, *In Priscianum Minorem*, cited after Sirridge 1990: 336, n. 30: "Primus intellectus est qui prius cadit in apprehensionem, scilicet qui consistit ex modis significandi dictionum." ("First meaning is the one that is understood at the outset, namely, which consists of modes of signifying belonging to the words.").

[16] I have borrowed this translation of *significatum* [Polish *przedmiot oznaczany*] from Marciszewski 1971: 118.

[17] Robert Kilwardby, *In Priscianum Minorem*, cited after Sirridge 1990: 336, n. 31: "Secundus est qui secundo comprehenditur, scilicet qui consistit ex significatis dictionum." ("The second is understood secondarily, that is it consists of the objects denoted by words.").

[18] Master Johannes, the author of *Sicut dicit Remigius*, Pseudo-Johannes le Rus, the author of *Sophismata*; cf. Rosier 1994: 26, n. 7.

achieves its communicative purpose. The sentence owes to the *secunda perfectio* its own *bene esse* or perfection consisting in a specific activity (*propria operatio*).[19] Primary completeness calls for a subject and a predicate, and the secondary one presupposes the primary one. Kilwardby writes that by virtue of the primary completeness *suppositum* and *appositum* bear a correct grammatical relation to each other, while by virtue of the secondary one the expression correctly moves an intellect (Sirridge 1990: 328). "Socrates is reading" has both perfections, but "am reading" lacks the primary one. Yet the expression is comprehensible for a hearer. The primary perfection is easily reconstructed from the sole "am reading" which implicitly contains "I". Thus "am reading" has primary completeness *ad intellectum*, which in turn leads to generating the secondary perfection. In "I am reading" and "Socrates is reading", the primary completeness was expressed to the senses (*ad sensum*).

Apparently, the opposition previously described as *voce / sensu*, or *secundum sensum / secundum intellectum*, reappears here as the *ad sensum / ad intellectum* distinction. In Kilwardby, we find an explanation that *perfectio vocis* used to be called completeness to the senses (*ad sensum*). For, by referring to the verbal layer, a speaker or a hearer only refers to what is apprehensible by senses. *Perfectio ad intellectum* involves understanding (Sirridge 1990: 336, n. 26).

Also *perfectio secunda* has its *ad sensum* and *ad intellectum* types. The example of non-semantic phrase "Meadows laugh", which is flawless with respect to the primary completeness, turns out to be deficient as far as the secondary perfection is concerned. However, it can be reconstructed in the mind as "Meadows flower". The reconstruction requires some effort on the part of the hearer. It can be regarded as an *ad intellectum* reconstruction. Another type of *ad intellectum* reconstruction of secondary completeness deals with redundancy. If we say too much, e.g. "She spoke with mouth" (*ore locuta est*), it is the secondary completeness that allows us to understand that a simpler meaning was meant ("She spoke").[20]

The preserved texts do not allow us to draw a straightforward parallel between the division of *perfectio* into *prima* and *secunda* on the one hand, and the *perfectio*

[19] Two sorts of completeness in grammar originate in the Aristotelian notion of first and second act (*perfectio prima* and *secunda*). A particularly striking resemblance can be found in the *Summa* by Alexander of Hales: "Est perfectio quae est a forma et est perfectio quae est a [FB01?]ne. Iterum est perfectio primi esse et secundi esse; perfectio primi esse est a forma substantiali, perfectio secundi esse est a [FB01?]ne, quia esse ordinis a [FB01?]ne per[FB01?]citur ad quem est. Item est perfectio disponens, et est perfectio complens. Perfectio complens est dignior perfectibili, et non disponens." Cited after Kelly 2002: 192; cf. Rosier 1994: 25.

[20] "*Congruitas* and *perfectio prima* are both necessary reasons for constructing words in a sentence, but a pronoun subject is added to a [FB01?]rst-person verb (*ego vivo*) for certainty, elegance or perhaps metre, which are all factors in *perfectio secunda*." (Kelly 2002: 194).

intellectus primi / secundi distinction on the other. Even Kilwardby introduced them in mutually independent writings (the former in *Sophismata*, the latter in the *Commentary on Priscian Minor*).

The second group of grammarians, mentioned above as supporters of reconstructing the complete sense *de virtute sermonis*, i.e. exclusively on the basis of elements present in a given expression, were the *modistae*. Before we move to the issue of construction which is congruous and complete *ad intellectum* and would be a subject of the *de virtute sermonis* reconstruction, we need to discuss a number of general principles of congruity and completeness laid down by the *modistae*. The principles, as we have already emphasized at the beginning, were established during the heated discussions about the boundary between grammar and logic, as well as about the purpose of grammar. Already since Peter Helias, medieval grammar tended to become a tool serving to distinguish syntactically correct sentences from the incorrect ones, the meaningful from the meaningless, which in turn would lead to separating true sentences from false ones. The majority of grammarians, however, did not agree with these postulates, claiming instead that the aim of grammar was to ensure syntactic correctness of expressions; other tasks would require dealing with content and thus with the objects denoted by expressions (*significata*). The latter concern should be left to logicians. Surprisingly, this principle was also followed by some intentionalists (Pseudo-Albertus Magnus 1977: XXII; Kneepkens 1985: 123). On the other hand, the belief that utterances appealing to grammarians serve as a tool for effective communication required in their view that a grammarian consider the meaning (*intellectus vocis*). Therefore the idea of secondary intellect formed a way to avoid the contradiction: the goal of grammar would be fulfilled if we submitted that what Priscian meant was the comprehensibility or meaning (*intellectus*) at the level of appropriate connection of the modes of signifying. This is the proper notion of comprehensibility from the point of view of grammar. Both the concern with denoted objects (*significata*), referred to by the secondary intellect, and with utterances that are congruent *secundum quid* but incongruous *simpliciter*, needs some extra justification.[21]

The *modistae* joined the discussion when intentionalist conceptions had already been present in the academic circles of Paris. This would explain why some early *modistae* believed that the modes of signifying (*modi significandi*) are the cause of congruence while the modes of understanding (*modi intelligendi*), as coming directly from the intellect (*intellectus*), bring about completeness.[22] Martinus Dacus, the earliest *modista*, knew, and critically commented on, the conception of

[21] This is the view of Master Jordanus; cf. Kneepkens 1985: 124.

[22] Vincentius Heremitus 1969: 15; cf. Kelly 2002: 195. This view will be undermined only by the third and final generation of the *modistae*, who claimed that their predecessors mistook mode of understanding for 'conceived mode of signifying' (*modus significandi intellectus*); see below.

double intellect and the arguments offered by Kilwardby for regarding figures of speech as complete sentences (Martinus Dacus 1961: 112, 114—115). Admittedly, however, two of the leading *modistae* of the earlier generation insisted that a denoted object constitutes a material cause of construction, while most of the *modistae* eliminate the concept of *significatum* from the definition of construction.[23]

A concise account of congruity and completeness can be found in *Speculative Grammar* by Thomas of Erfurt. Among the conditions of congruence there is a requirement of the right connection between the elements of construction. Thomas begins his exposition of this condition by distinguishing two sorts of appropriate combinations. One sort consists in the correlation between the meanings of elements constituting the construction and thus in the correlation of objects denoted by these elements. The second kind of connection depends on syntactic coherence generated by mutual correspondence (conformity) of the modes of signifying proper to those elements. Thomas stresses that it is a mistake to call the correspondence of meanings 'congruity'. A sentence in which the meanings of particular elements match each other can be deemed correct or 'proper' (*proprius sermo*), but *congruitas* is a technical term of grammar reserved for the syntactical coherence.[24] It follows then that "a construction, such as: *cappa nigra* [a black coat], is congruous and proper, and a construction, such as: *cappa categorica* [a categorical coat], is improper, but like the other one, is congruous." (Thomas Erfordiensis 1972: 309, 53.111; Tomasz z Erfurtu 1999: 190).[25] According to another condition, one must take into account every mode of signifying that might be relevant to the rise of a given construction. Yet another constraint involves an appropriate correlation between modes of signifying. For some modes of signifying

[23] Namely, Joannes Dacus and Pseudo-Albertus Magnus; cf. Covington 1984: 34.

[24] Thomas Erfordiensis (1972: 308—309, 53.111): "Hence it is clear, that congruity is in and of itself to be considered by the grammarian. The symmetry or contradiction of special meanings is not of itself considered by the grammarian but rather by the logician; therefore congruity or incongruity are not caused by these in the sentence. It can therefore be said that congruity and incongruity are created by the similarity or dissimilarity of the modes od signifying which are in and of themselves considered by the grammarian. However, the propriety or impropriety of a sentence is caused by the symmetry or contradiction of the special meanings." ("Unde patet, quod congruitas sit de consideratione grammatici per se. Sed convenientia vel repugnantia significatorum specialium a grammatico per se non consideratur, sed magis a logico; ergo congruitas vel incongruitas in sermone ab his non causatur. Dicendum est ergo, quod congruitas et incongruitas causantur ex conformitate vel disconformitate modorum significandi, quae per se sunt de consideratione grammatici. Tamen proprietas vel improprietas sermonis causatur ex convenientia vel repugnantia significatorum specialium."). Cf. Tomasz z Erfurtu 1999: 189.

[25] "Unde haec est congrua et propria, *cappa nigra*; et haec est impropria, *cappa categorica*: tamen utraque istarum est congrua." (Thomas Erfordiensis 1972: 308, 53.111).

are mutually proportionate,[26] others — similar.[27] Eventually, the definition of congruity runs as follows:

> Congruity is nothing else than the proper union of parts of the sentence in addition to the conformity of the modes of signifying required for any type of construction.[28] (Thomas Erfordiensis 1972: 313, 53.114; Tomasz z Erfurtu 1999: 191)

According to Thomas of Erfurt, completeness of construction calls for (1) presence of a subject and predicate, and for (2) correspondence (*conformitas*) of all modes of signifying, that is congruity.

Each construction, in light of the modistic theory, comprises two constructional elements making up the following structure: dependent element (*dependens*) — determining element (*determinans*). The structure of dependence has its counterpart at the level of modes of signifying. Accordingly, the correspondence between modes of signifying is equivalent to the existence of dependence between the elements of construction. The next condition that must be met by a complete construction is related to the notion of dependence. The requirement runs as follows: (3) a construction should not include any dependence that would demand some determining factor external to that construction.[29] In the context of the discussion with intentionalists, (2) was a crucial condition.[30]

According to the *modistae*, both the congruous construction and the complete one can appear in *ad sensum* and *ad intellectum* versions. The explication of the term *ad sensum* resembles Kilwardby's. Both constructional elements of a twofold construction are visible or audible. *Ad intellectum* involves "intellect" or "understanding", but to a very small degree, compared to the ideas of intentionalists: one of two elements of a construction is a default. The example given by Thomas of Erfurt, "read" / "I read", falls into the intentionalist category

[26] Thomas Erfordiensis 1972: 310—311, 53.113; Tomasz z Erfurtu 1999: 190. Today we would call the syntax arising from these modes the syntax of government, cf. Bursill-Hall 1971: 305.

[27] Thomas Erfordiensis 1972: 310—311, 53.113; Tomasz z Erfurtu 1999: 190. Today we would say that they are responsible for the syntax of agreement, cf. Bursill-Hall 1971: 305.

[28] "Congruitas nihil aliud est, quam partium sermonis debita unio, ex modorum significandi conformitate ad aliquam speciem constructionis requisitorum derelicta." (Thomas Erfordiensis 1972: 312, 53.114).

[29] Examples failing to satisfy the condition, given by Thomas of Erfurt and Radulphus Brito, include expressions like "if Socrates runs", "that I say", and so on; Thomas Erfordiensis 1972: 316—317, 54.118; Tomasz z Erfurtu 1999: 193, Radulphus Brito 1980: 343; cf. Bursill-Hall 1971: 309, n. 108.

[30] Martinus Dacus 1961: 166: "Principia perfectionis praesupponunt principia congruitatis, et ideo perfectio congruitatem praesupponit."

of primary completeness *ad intellectum*. Supplying the missing element of the sentence involves the notion of dependence (*dependentia*) (Radulphus Brito 1980: 180; Rosier 1994: 38). In the present example, "I" is added to "read", dependent on "I". The relation of dependence entails, according to the *modistae*, mutually corresponding grammatical properties, so that filling a slot boils down to finding an element with apposite modes of signifying. Due to this approach, the *modistae* are not interested in the role of emphasis in the Latin counterpart of "I read". For them, Latin "I read" is entirely equivalent to Latin "read". By contrast, intentionalists would claim that, in Latin, saying "read" is natural, whereas "I read", by virtue of the secondary completeness *ad intellectum*, involves the intention of emphasis. It is irrelevant for the *modistae* how determinate are the subjects of expressions like "[I] am running", "[he] runs", "[it] thunders". For it is not a matter of grammar. Thus, if "[it] thunders" is complete *ad intellectum*, "[he] runs" is complete as well, due to the same modes of signifying (Boethius Dacus 1969: 46).[31] Intentionalists, to the contrary, maintain that although "[he] runs" and "[it] thunders" can be completed, since their subjects are known, the subject of "runs" is indefinite and completing it *de virtute sermonis* is impossible, as it turns on the speaker's intention.

The *modistae* regarded utterance as the subject of grammar, and the modes of signifying as the fundaments (*causae*, *principia*) of an utterance. The modes of understanding are tackled by grammarians accidentally. If one accepts the assumption, approved by some thinkers,[32] that restoration of a congruent and complete construction *ad intellectum* happens by virtue of the modes of *understanding*, it should be conceded that these constructions fall outside the scope of grammar. Radulphus Brito, one of the last classics of speculative grammar, justifies dealing with this issue in the field of grammar (Radulphus Brito 1980: 179—180). His line of defence rests on the assumption that a construction *ad intellectum* is restored as complete by means of modes of signifying. A grammarian who is supposed to supply the missing element of construction searches for the mode of signifying of the missing element, which conforms with the mode of signifying of the present constituent. The required mode of signifying is called 'conceived mode of signifying' (*modus significandi intellectus*). To consider it is one of grammarian's tasks, since mode of signifying, as a subject of grammar, i.e. a discipline consisting in an intellectual disposition (*habitus intellectualis*), is an object knowable intellectually (*aliquid intelligibile*) (Radulphus Brito 1980: 179—181). Therefore a grammarian, as a researcher who basically deals with modes of signifying, can regard conceived modes as his subjects as well. Which leads to the following conclusion: grammar is a discipline suitable for considering

[31] The *modistae* allude to Priscian who stated that "[it] thunders" is complete and "[he] runs" — incomplete.

[32] See above, n. Error: Reference source not found.

problems connected to congruity and completeness *ad intellectum*. The view that accounting for construction *ad intellectum* involves modes of understanding rests on a misunderstanding. Intellectually apprehended, i.e. conceived, mode of signifying (*modus significandi intellectus*) of a word cannot be identified with the mode of understanding (*modus intelligendi*) of a thing. *Modus intelligendi* constitutes a cause of a mode of signifying and not its mental representation.

The present survey of select medieval views on congruity and completeness of construction did not pretend to put forward an interpretation of historical discussions about grammaticality, meaningfulness, and acceptability of expressions in the light of modern theories. It would not be a fruitful project, since, as it has already been noted by historians, medieval grammarians differed from each other to no less degree than the contemporary grammarians (Kneepkens 1985: 138).[33] Accordingly, we have focused on presenting ideas and explicating assumptions accepted by medieval grammarians. Examples taken from ordinary language did not preoccupy them. Most of the linguistic material had been drawn from Priscian and Donatus, as well as from formulas present in authoritative theological texts. The force of these authorities underpinned the intentionalist conviction that reconstructing complete sense of authoritative utterances is reasonable.

However, the notion of intention justified by the authority of a sage or a poet was extended in the Middle Ages to a whole variety of examples of elliptical usage of expressions. Due to the need to draw a line between particular disciplines and to construct them in accordance with the Aristotelian paradigm of theoretical sciences, the notion of *congruitas* employed by logicians and used in similar contexts by grammarians was redefined and in the case of the *modistae* narrowed and separated from the concept of (semantic) correctness. The modistic opposition between *congruitas ad sensum* / *ad intellectum*, could not be adequately expressed in terms of the *voce* / *sensu* opposition introduced 150 years earlier by Peter Helias. For, in their theoretical assumptions, the *modistae* went to much greater lengths in dividing grammar from logic than their predecessors. Namely, they tried to account for every phenomenon related to the notion of construction in syntactical terms. Brilliant analysis proposed by Radulphus Brito makes us believe that restoring the whole construction — which used to be called *ad intellectum*, because, despite some faults of the expression, it was possible to retrieve its sense — is only a matter of the appropriate choice of a mode of signifying. Understanding (*intelligere*) an expression is equivalent to conceiving its syntactic structure.

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SEMIOTIC IDEAS IN THE PHILOSOPHICAL SYSTEM OF JOHANN HEINRICH LAMBERT (1728—1777)

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Johann Heinrich Lambert was born on 26 September 1728 in Mulhouse, Alsace. He was one of the main representatives of the German Enlightenment, next to such philosophers as Moses Mendelssohn, Thomas Abbott, Johann George Sulzer, and Immanuel Kant; a member of many scientific societies, including the Society of Physics and Mathematics in Basel and the Royal Society of Sciences in Götingen. In 1761, Lambert became an external member of the Royal Prussian Academy of Sciences, and in 1765, after numerous perturbations, a regular member of the physics class of this Academy. Self-taught, with a very broad spectrum of interests, including philosophy, mathematics, astronomy and physics. In philosophy, he focused on the possibility of reforming the foundations, which since the times of Descartes, Leibniz and Wolff had been shaped according to a universal mathematical pattern. Lambert made his own attempt at creating a metaphysical system, which he presented in two monumental philosophical works published during his lifetime: *Neues Organon* and *Anlage zur Architectonic*.

In their logical and epistemological outline, Lambert's theories not only refer to rationalistic solutions, but also show the influence of some of the assertions of the great British empiricists: Hume and Locke. Lambert was the first philosopher to propose a process of reasoning in the area of epistemology that combined elements of synthesis and analysis, called the *Mittelweg* model. In the area of methodological problems presented in *Neues Organon*, long before Kant's *Critique of Pure Reason*, Lambert writes about the *a priori* synthesis in the context of his own theory of the realm of truths. The Lambertian *a priori* synthesis differs from the Kantian one, however, in that the content of what is synthetized stems

from experience and is asserted *a priori* through simple concepts that, on one hand, are linked to empirical data without being genetically related to them, and on the other hand, have the nature of pure concepts as abstracts on the highest level of generalisation. Lambert turned simple concepts into leading concepts in relevant theories as there was yet no way to develop formal interpretation of these concepts as terminologically unreducible predicates of a given theory. Although the procedure of creating axiomatic theories in the 18^{th} century had no sufficiently developed foundations that would allow him to make the constructed models decidable, consistent as well as semantically and syntactically complete, Lambert is seen as one of the first thinkers to try and specify the principles of axiomatic theories. In the area of logic, similarly to Leonard Euler, he proposed a graphical method of representing four different types of sentences that illustrate general subject-verb patterns in algebraic notation. But unlike Euler, he uses sections rather than circles. Lambert also introduces a new meaning of the term 'transcendent' (compare footnote 13), which Kant later adopts as 'transcendental', making it a fundamental term for the idea of the *Critique of Pure Reason*.

The study of semiotics, which is the subject of my article, complements the assertions of Leibniz and Wolff concerning *ars combinatorial*, based on formal requirements for languages. Lambert wanted first of all to complement the Leibnizian concept of the universal alphabet of human thought.

1. INTRODUCTION

The aim of this article is to present Lambert's lesser known (in particular in Polish philosophy) semiotic ideas.[1] "Semiotik" plays a special role in the *Neues Organon*. It is the third part of the Lambertian lecture on metaphysics, right after "Dianoiologie" and "Alethiologie" (Lambert, 1764).[2] In the "Foreword" to *Neues Organon*, semiotics is defined as the science of designation (*Bezeichnung*) of thoughts. In addition, Lambert points out the possible relations between thoughts and things (Lambert, 1764, Vorrede, p. XI).[3] "Semiotik" also fulfils some important methodological tasks. In Lambert's system, it plays the role of an intermediary,

[1]The Lambertian idea of semiotics in Polish philosophical literature is mentioned by J. Pelc in his *Wstęp do semiotyki* (1984: 14). See also the comments of W. Horodyski in *Lambert a Kant (idea transcendentalizmu)* (1917: 159—195). The latter work is known to me from a manuscript, which is the extended version of another project by Horodyski, namely deliberations on Lambert's philosophy in relation to the development of Kant's ideas and to Bacon (Horodyski 1916: 21—33).

[2]"Dianoiologie," §1—§700; "Alethiologie," §1—§274, "Semiotik," §1—§351, supplemented by "Phänomenologie," §1—§288.

[3]Let us add that in his later works Lambert undertook a detailed study of symbolical cognition and the Genesis of language as well as the role of signs in the study of truth. See comments in *Neues Organon...*, "Semiotik," §1—§69 and §102—§144 (Lambert 1764).

combining the subjects of study of "Dianoiologie" (the doctrine of the laws of thought) and "Alethiologie" (the doctrine of truth) with the subject of study of "Phänomenologie" (the doctrine of appearance and the ways to distinguish it from the truth). This way Lambert underlines that metaphysics has no clearly defined position and no precisely defined subject of study and therefore can be only propedeutic. It is constituted not as a scientific system with a clearly and precisely defined basis but as a study of correctly formulated criteria of asserting the truth. All four parts of the *Neues Organon* are subject to this idea. They are combined into a canon in accordance with the model method provided by mathematics. In addition, as one of these canonical structures, "Semiotik" has an important methodological function, thus substantially contributing to the formulation of the criterion of truth. In "Semiotik," Lambert tries to verify his earlier comments on the criterion of truth, presented both in *Abhandlung von Criteriumveritatis* (Lambert 1761) and the second part of *Neues Organon*, "Alethiologie." He modifies the Cartesian justification of the theorem that obviousness is a criterion of truth and the Leibnizian-Wolffian attempt to build metaphysics according to the model method provided by mathematics, and he describes the classically understood truthfulness of cognition, i.e. the concordance of content (thought) with the object (reality), by finding relevant relationships between the thing, the concept and the language. In the first two chapters of *Neues Organon*, following the deliberations of Descartes and Wolff, Lambert seeks this adequacy by presenting the object of cognition in its basic ontological aspect. In "Semiotik," in turn, he introduces one additional important aspect, which refers to the indication of the meaning of a word as a sign.[4] Let us stress that Lambert does not negate the achievements of his predecessors but instead tries to substantially complement them. For instance, he invokes the Leibnitzian project of universal characteristics and the Wolffian idea of universal language, which was developed on its basis.[5] It should be emphasised that his reflections are an analogous project (especially to this of Leibnitz) of building metaphysics on the basis of a formal algorithm and concepts of symbolic logic. An important element of his conception is the possibility of developing a system of signs characteristic to all scientific disciplines. In Lambert's philosophy, symbolic cognition is a necessary component of any cognition in general because, first, by using signs we are able to invoke concepts in the absence of the thing itself, and second, all general and abstract concepts can be conveyed only by signs. Let us consider the characteristic example of Feuillet's choreography.[6] Let

[4]See Lambert's comments on this subject in *Neues Organon*..., "Semiotik," III. Von der Spracheals Zeichenbetrachtet, §201—§144.

[5]The problem of 'lingua universalis' was first taken up my Wolff in connection with the Leibnizian*ars characteristic* in *Disquisitio Philosophica de Loquela* (1703: 244—248). See also H. W. Arndt (1971: 143—144).

[6]See Lambert's comments on this subject in *Neues Organon*..., "Semiotik," "Von der symbolischen Erkenntnisüberhaupt," §26.

us also recall that the Leibnizian system of signs is defined by a combination of the two Latin words *universalis* and *characteristic* (Arndt 1971: 110—111). Lambert's idea is similar. In his opinion, all disciplines should have their own character, depending on their subject and the signs that express them. The term 'character' itself is treated by both philosophers as the synonym of a sign or symbol and it expresses the content as well as the relationships between the studied objects. In *Mathematical Writings* Leibniz underlines that 'characters are things by means of which the relations between other things are expressed, the treatment of which is easier than the treatment of those things.' (Leibniz 1849—1863: 198—199). Characters are proper names that not only represent the simplest, homogenous concepts but through concepts also represent things, relations between them and their components. For Lambert, musical notes, that is signs representing the height and length of sounds (§ 25) are one example of characters. Another example are metaphors (§ 20) — expressions whose meaning is different (metaphorical) than that of their individual elements. According to Lambert, this is the case because the things that are named show a degree of approximation, on which the metaphorical meaning is based. The expression 'dead silence' can be used as an example here. In addition, in Lambert's view, the Leibnizian notion of formalisation of the structures of metaphysics is supposed to point to one unchangeable system of signs or symbols that can be used to formulate the criterion of truth, at the same time being a guarantee of truthful cognition, eliminating the risk of error. The criterion is based on the isomorphy between the structure of the thing and the formal structure created by the character. The system of characters whose truthfulness is based on this adequacy is called the system of the universal alphabet of thoughts by Leibniz, while Lambert calls it the characteristics of speech or language.[7]

2. CHRONOLOGICAL ORDER OF LAMBERT'S STUDY OF SEMIOTICS

The idea of introducing semiotics to the *Neues Organon* as a methodological connector between the doctrine of the laws of thought (dianoilogy), the doctrine of truth (alethiology) and the doctrine of appearance and the ways to distinguish it from the truth (fenomenology) already appeared in Lambert's works in 1752. In one of his notes from August 1752 published in Lambert's scientific diary, *Monatsbuch*, he writes about *Semeiologie*.[8] What he means by that is certainly the semiotic analysis of language. In the chronological order of Lambert's works it is treated as part of an organology (Bopp 1916), which opens the way to deliberations on the structure of the metaphysical system. This intention is confirmed by another note, of March 1753, where we can find an annotation on the stages of development of

[7]See Lambert's comments in *Neues Organon*..., "Semiotik," "IV. Von den Zeitwörten," §145—§174.

[8]See 'J. H. Lamberts Monatsbuch', edited by K. Bopp (1916 :12).

species logicae characteristicae (Bopp 1916: 12). In a fragment of his annotations to the Lambertian *Monatsbuch*, Karl Bopp describes the philosopher's semiotic search under the so called *comparatio algebrae et anallyses universalis* (Bopp 1916). It involves extensive comments on the Leibnizian idea of universal characteristics and the alphabet of thoughts, in which Lambert finds, inter alia, guidelines for the implementation of the universal calculus of cognition, based on the rules of logic and an *a priori* specification of conditions of all cognition. In particular, it concerns the *specimen calculi novi infinitesimalis* (Bopp 1916). The area of semiotic studies indicated in the notes of 1752—1753 is fully confirmed in the attempt to create a *systema de calore* (Bopp 1916: 15), as shown by the note of July 1753, containing a promise of future logical studies on *Zeichensprache*. At that time, Lambert wrote only the first and second part of *Versuche der logischen Zeichensprache* (Bopp 1916: 16). They form part of a much broader dissertation: *Die sechs Versucheüber die logische Zeichenkunst* (Bopp 1916),[9] containing extensive notes on Wolff's mathematical and logical characteristics of universal language. Other notes in the philosopher's scientific journal, from March, June, July, October, and November 1754, also confirm this. Especially interesting are the observations on the role and importance of signs in geometry and algebra (Bopp 1916: 13—15). Further studies of semiotics are contained in *Abhandlung vom Criteriumveritatis* and *Über die Methode*,[10] both written roughly at the same time. We can find information on these two books in the *Monatsbuch* under the entries of November 1762 and April 1963. They were the first works where Lambert revealed his attitude to the Cartesian and Wolffian solution to the problem of the criterion of truth. For example, he proved that while the criterion of truth proposed by Descartes and Wolff was sufficient with respect to rules, theorems and definitions, in each case it was relevant only for one scientific theory: for Descartes, it was metaphysics, and for Wolff it was ontology. They forgot about some other important determinants, for example, about taking advantage of the merits of language. Lambert, however, does not put forward any new semiotic theorems in his *Abhandlung vom Criteriumveritatis* that would go beyond what Descartes, Leibniz and Wolff had found before. It is worth stressing that all his

[9]Lambert's thoughts were first published by Johann Bernouilli III and Christian Heinrich Müller as *Lamberts logische und philosophische Abhandlungen*, Bd. 2, Berlin and Dassau 1782—1787. The first volume was published owing to the efforts of Benouilli and Müller, while work on the second volume was done also by F. de la Grade and G. E. Beer. The first volume includes the *Sechs Versucheeiner Zeichenkunst in der Vernunftlehre* (written by Lambert between 1753 and 1755).

[10]J. H. Lambert. *Über die Methode, Metaphysik, Theologie und Moral richtiger zu beweisen*, from the manuscript edited by K. Bopp, "Kantstudien," Ergänzungshefte im Auftrag der Kantgesellschaft, No. 42, Berlin 1918, §15—§34. The philosopher directly transfers to this work his findings about semiotics, in particular about the methodological aspects of the criterion of truth, from the *Abhandlung vom Criteriumveritatis*.

attempts are marked with one substantial flaw. Each thoroughly discussed problem is dependent on one condition: finding a sufficient criterion of truth, which is to be exhaustively described only in the future. Lambert remains partly within the Cartesian approach, however, in his search for clear and distinct concepts in relation to the representations of things, and partly within the Leibnizian and Wolffian approaches, when searching for a method and a clearly defined meaning of concepts. In contrast to the positive thoughts of Descartes and Wolff on reality, in Lambert's philosophy the obligatory matter in creating a system of concepts has not ontological but linguistic determinants.

3. MAIN PRINCIPLES OF THE LAMBERTIANIDEA OF SEMIOTICS

Lambert started working on the *Neues Organon* around the same time as on the *Abhandlung vom Criteriumveritatis* and *Über die Methode*. In his notes in the *Monatsbuch*, we can find information on the writing of the "Dianoiologie" and "Alethiologie" in 1762. The "Semiotik", in turn, was created as part of the system in January 1763 and together with the completed "Alethiologie" in August 1763.

Semiotics in the *Neues Organon* is a part of the canon, has a propaedeutic nature. It emerges as the need for a methodological supplementation of "Dianoiologie" and "Alethiologie." It systemises the whole area of metaphysics as a form of cognition pretending to the name of science. It distinguishes cognitively autonomous language structures. In *Basis und Deduktion*, Gereon Wolters stresses that for Lambert language is the empirical basis of all cognition (Wolters 1980: 64). Let us add that Lambert's proposal also refers partially to Locke's thoughts on the role and status of experience (Locke 1955: 9—19).[11] What Locke calls 'words' or generally 'language', for Lambert is the first element, which allows various exemplifications of cognition to appear in consciousness. The key role among them is played by concepts to which the rules and theorems of a given theory are already reduced at the level of "Alethiologie." The reduction proposed by Lambert aims to establish a relationship that, according to Wolters, is supposed to break the triad of the real object, the mental concept and the linguistic name (Wolters 1980: 56—58). Each stage of this reduction determines the method of creating concepts in a context and in connection with given linguistic operations. In §31 of "Semiotik," the philosopher stresses that simple concepts must have a strictly defined scopes of meaning, and as exhaustive concepts, they also have their own definition. They allow us each time to distinguish and identify an object. The

[11]Locke's influence on Lambert's semiotic structures is a subject of a very interesting dispute in German literature, between Krüger, Kambartel and Mittelstaβ. The first one believes that Lockean comments constitute the basis for the Lambertian solutions. The other two philosophers think that the Lockean concept of experience should be considered a pure form, free of language and directly referring to the reception of empirical data.

logical structure of language makes it possible to express through symbols the concepts that have been thought, e.g., if someone deciphers writings, banknotes, etc., taking each of them separately, then this way he divides the concept of the chaotic set into single, known elements and imperceptibly transforms the concept of deciphering other concepts (Lambert 1764: "Alethologie," §46). This way language is an intermediary between concepts, discovered in "Alethiologie," and appearances, described in "Phänomenologie." The philosopher first of all means the semiotic appearance, situated between what is real and what is illusion, which appears as a result of the interpretation of signs, utterances and writings of others. The source and reason of this appearance are allegories, metaphors, misunderstandings, ambiguity, etc. In semiotics we have, in addition, a set range of basic communicative references of a language. Lambert presents this, for example, by using sections of various lengths, the method of representing various sentences that can occur in syllogisms. Thus he tries to reconcile, within the framework of cognition in general, that which is real with that which is true. Paradoxically, linguistic determinants are accompanied by a certain accumulation, a variety of cognitive theories. The philosopher writes about comparing two worlds: the world of thoughts and the world of senses; thoughts and impressions. We use similar expressions to describe both of these worlds, and therefore the words used for it gain double meanings. In this context, if we say that it is possible that an event is true or that it is possible to lift a certain weight, then in the first case the word 'possible' means 'it is not yet known, it is still not settled', while in the second case it means that 'something may happen'. (Lambert 1764: "Alethologie," §45).

On the linguistic level, from the very beginning, what is real and true in cognition is not identified but distinguished. The character of language inherently involves various kinds of connections. As Lambert writes in §136 of "Semiotik," the role of language in naming objects starts from experiencing things through senses; it names not the objects themselves but their images or the impressions that they make on the senses. We learn words through direct empirical experiences and impressions characteristic of them. We learn a word or a name, associating it with a given experience. This project additionally bears the marks of a syllogistic procedure and is based on the synthetic-analytic method. This mental path is typical of all Enlightenment ideas, each time leading to a reformulation of the conditions of development and the criteria of all cognition. This important undertaking also consists in changing the hypothetical into the arbitrary. In the "Semiotik," hypothetical elements are extracted and eliminated thanks to linguistic structures (Lambert 1764: "Semiotik," X. Von dem Hypothetischen der Sprache, §329—§351; cf. Lambert 1771: "Vorrede," X—XI). They are the ones responsible for language not being philosophical enough. But Lambert intends to change that. For this purpose, he introduces a division of words into three groups: The first group are words that do not need a definition as they directly designate only

the things to which they directly refer (e.g. a point, line). The second group are metaphors (e.g. fiery enthusiasm), which require a *tertium comparationis*. The last group are definable words. Thus, in Lambert's view, language is composed of words that are in turn composed of signs (*Zeichen*) (Lambert 1764: "Semiotik," §21). They form part of a project called the conceptual programme. Lambert had already formulated the basics of this programme in "Dianoiologie" and "Alethiologie." He gives us the elementary conditions a system has to meet in order to aspire to the name of a scientific system and calls the developed idea of the strict harmonisation of simple concepts a 'realm of truths' (*Reich der Wahrheiten*). It is not fully justified in these two fields. Only in "Semiotik" does Lambert finally justify it. He provides, for example, the constitutive conditions for simple concepts as he wants concepts to be grounded directly in the morphology of language. The idea is to adopt the most apt etymological source of concepts, which would be a carrier of speech and which would bring us closer to the truth or to formulating the sufficient criterion of truth. Lambert notes, for example, that some words were created through free transformations and derivations; it would be necessary to correct the order of syllables, which is meaningful in the perfect scientific language, therefore it also needs to be applied consistently in natural language. In German, the words *Rathaus* (city hall) and *Hausrat* (furniture) as well as *Bruchstein* (rubble) and *Steinbruch* (quarry) are two word groups in which changing the order of syllables changes the meaning. Although the syllables of these words are composed and combined in a coincidental manner, the order is not neutral for their meanings.

It is noteworthy that all Lambertian language structures complement each other: the discussion in "Semiotik" is a continuation of some thoughts from "Dianoiologie" and "Alethiologie" and form the basis for "Phänomenologie." This is directly related to the justification of complex concepts. The possibility of combining simple concepts, as presented in "Alethiologie," is an operation subject to some conditions in "Semiotik." These conditions are the morphology and grammar of symbolical cognition: words need to have icons and concepts must be clear and distinct thanks to them (Lamber 1764: "Semiotik," §21). 'Symbolical cognition is metaphorical, in particular when the signs that reflect it are ambiguous or when they are characters (writing, numbers, notes)' (Lambert 1764: "Semiotik," §72, §260). Thus, according to Lambert, the structure of language not only corresponds to concepts but also aims to define things.[12] Lambert searches for those elementary parts that could form an etymological foundation determining precise meanings of words. These parts are the etymology and they are for a language what simple concepts are in "Alethiologie," i.e. the holistic foundation for all cognitive structures. 'The derived words should be scientific, and their meaning may be defined through the concept of etymology and the method of

[12]The only characters from this group that are not useful for the theory of truth are musical notes (Lambert 1764: "Semiotik," §25).

derivation as well as through data' (Lambert 1764: "Semiotik," §25). In this sense, the concept of 'difference' is, according to Lambert, the source of the concepts of lengthiness and spaciousness. The definitions of both these concepts start from a definition through the concept of 'difference'. In the philosopher's view, the latter can also be derived from empirical data, by noticing variety in the world of things and their characteristics. One can also classify 'difference' as a transcendent concept[13] because it represents similar things in the intellectual world and the corporal world: e.g. the variety of concepts and the variety of objects.

4. THE LAMBERTIAN THEORY OF SIGNS

The transition from real cognition to symbolical cognition, in which the language code allows terminological freedom, is characterised by Lambert on the speech level by a precise definition of the language of things (*die Sprache der Dinge*) (Lambert 1771: "Vorrede," XXIII). This is how the theory of signs (*die Theorie der Zeichen*) appears in his writings. It opens a theoretical ground for the calculus of concepts. In the *Neues Organon*, the theory of signs takes the form of a formal structure. It is a simplified version of natural language. "For it is not possible, when introducing a whole new language, to adopt etymologies from all classes of parts of speech, to make the derivation of all other words shorter and simpler and at the same time make the language complete and able to represent any relationship" (*ibidem*). The possibility of representing concepts through signs is based on the premise of isomorphism of signs and concepts. According to the interpretation in the "Introduction" to *Anlage zur Architectonic*, signs are more predisposed to reflect the form of cognition (Ibidem: "Vorrede," XXII—XXIII), while characters refer directly to the essence of cognition. One good example of how signs may be combined is algebra. The basics of algebra have been established by Leibniz and Wolff in their studies of *ars inveniendi*. For Lambert, the mathematical formulae used in algebra directly represent specific concepts.[14] The philosopher, however, does not expect algebra to provide him with the right method for discovering concepts. It is only to serve as a model, adequately expressing the calculus of concepts. The close relationship between words and things is also clear in geometry, in the analysis of geometric figures. The theory of signs as precise and simplified representations is a perfected version of speech, devoid of hypothetical elements, imprecise and ambiguous designations. For Lambert, it is structurally connected to natural language. In "Semiotik," he

[13]Lambert understands 'transcendent concept' as a concept that goes beyond (transcends) both the intellectual and the corporal world (cf. Lambert 1764: "Alethiologie," §48).

[14]It should be stressed that Lambert had already started his work on *ars inveniendi* in 1752. See the entry for November 1952 in *Monatsbuch*, p. 12 (and footnote 15 on p. 35).

presents a forecast of the evolution of the theory of signs, where special function is ascribed primarily to speech itself. The philosopher thus simplifies the complex epistemology from "Dianoiologie" and "Alethiologie" and consequently achieves the specification of what, on the grammatical level, could be the criterion of truth. According to Lambert, instead of the theory of things there should be the theory of signs, the more it refers to language, the more uniform and universal are the rules of its etymology; the efforts of linguists are useful in particular when we distinguish the metaphysical from what is free, what is incorrect from what is purely grammatical. (Lambert 1764: "Semiotik," §260).[15] Grammatical rules are the element of the theory of language that characterises and reflects its metaphysical nature.

On the other hand, however, metaphysics deals with certain things, their nature, properties and general relationships, and what is characteristic in things is also characteristic in the signs (characters) that make things manifest themselves and that are used in accordance with the rules of language, while grammar deals not with what is characteristic in real languages but what is purely free and located neither in things nor in signs. Lambert's deliberations on deriving participles from infinitives may serve as a good example of this. He notes, for instance, that when nouns are created from infinitives, such as 'sitting', 'reading', etc., by transforming the syllable -*en* in the infinitive into -*er* or -*erin*, like in *Liebhaber* (lover), *Richter* (judge), *Beherrscherin* (female ruler), etc., such nouns should count as participles. Also interesting is the discussion of the syllables -*ig*, -*isch*, which, when added to the infinitive after first deleting the suffix -*en*, forms a participle from a verb, e.g. *zänkisch* (quarrelsome), *gläubig* (religious).

Signs must keep a two-element semantic relationship between (1) the word-concept and (2) the thing. Thus, the theory of signs is a new quality in the *Neues Organon*, not only another transitional project. It promises the development of more broadly applicable ideas taken up by Leibniz and Wolff — the calculus of concepts.

5. LAMBERTIAN OUTLINE OF THE CALCULUS OF SIGNS AND CONCEPTS

The calculus of concepts is a new methodological element in the Lambertian idea of metaphysics. The foundations of the calculus, presented in "Semiotik," make it possible to reach not only what is true on the formal level (in the world of thoughts) but also what is materially true (in the world of things) and what shows transcendental properties (is applicable in both these worlds). For simple concepts

[15] The idea of the calculus of concepts as a qualitative standardisation (*calculus qualitatum*) of the distinction between words, concepts and things was taken up multiple times in the history of philosophy and logic. Another scholar who tried to deal with this subject after Leibniz was Plocquet.

are associated with empirical data, and at the same time define them with respect to the form, fulfilling the same role as a predicate in a sentence. In this sense, they form the foundation of the Lambertian idea of experience as composed of two elements: the pure concept (form) and the empirical data (the essence of cognition). The Lambertian calculus of concepts is formed by two theoretical levels. Next to the theory of signs there is the harmony of truths, closely related to the register of simple concepts. In both cases, there is a clear analogy, or even obligatory concordance between the concept, the word and the thing. As has been said in §337 of "Semiotik," a word is directly associable with a thing, but also a concept is derived from an impression from a thing (Lambert 1764). For example, the word 'beauty' is directly associable with the thing described as beautiful, but it derives from the impression made by this thing. It is worth noting that the function of the linguistic representation is not determined only by 'isolated words'. The philosopher undertook the construction of his project for the calculus of concepts in a formal way, which resembles the assertions of "Dianoiologie," where the principles have a typically Wolffian structure. The calculus is based on a strict relationship between the concept, the word and the content of the thing. Here, Lambert had to refer to simple concepts, which are not only the transfer element between matter and form but also new qualities in the calculus of transcendent concepts. For example, the concept of existence as a simple concept is applicable in describing existing things as existing, but it is also related to the conviction that concepts, as universals, exist in the world of thoughts. Let us add that in this form, the calculus of concepts is partly modelled on the Lockean attempt to define a quantity calculus (Locke 1689).[16] In Lambert's writings, on the other hand, it directly allows the adoption of the concept of identity, which indirectly refers to the concept of force and solid things. Both the transfer from matter to form and the calculus of concepts itself are additionally based on the qualitative assumption of epistemological division (already existing in the "Dianoiologie" and "Alethiologie") into *Intellektualwelt* and *Körperwelt*. We use the same words to describe these two worlds. We speak of the 'force of attraction' once meaning desire and at other times meaning gravity. The concept of force as one of the register of the ten simple concepts is a transcendent concept. Despite Lambert's efforts, *a priori* knowledge, which is based on the foundation of transcendent concepts, is only partially ordered in "Semiotik." It is additionally strengthened by the thesis presented in §192, where the philosopher notes that everything that belongs to the world of thoughts is expressed by using words, which according to their direct logic represent empirical objects (Lambert 1764: "Semiotik," §192).

6. CONCLUSION

[16]Cf. the division applied by Lambert in *Neues Organon* (1764: "Alethiologie," §36, §68) as well as in *Anlage zur Architectonic* (1771: § 46).

The aim of the idea of semiotics proposed by Lambert, with the calculus of signs and concepts as the ultimate moment, was to build a universal and non-reducible language code. The project failed, however. Lambert did not go beyond the outline of the Leibnizian idea of the alphabet of human thought. We should note, however, that his studies do not come down simply to the formalisation of some metaphysical solutions of Leibniz or Wolff. In his conception, he uses parallel structures and solutions, characteristic of "Dianoiologie," "Alethiologie," "Semiotik," and "Phänomenologie." The ultimate proposal is the suggestion of the possibility of replacing lexically simple concepts with symbols and geometrical figures representing them. The philosopher proposes the development of a system of metaphysical terminology by making it universal and useful, as in mathematical sciences. It is worth stressing that these theoretical aspirations are not unjustified. They result from the dogmatically rationalistic tendency of the whole period of Enlightenment, striving to achieve absolute certainty in every area of knowledge. As Mendelssohn observed, even if the discovery does not immediately promise great benefits, it cannot remain without meaning to speculative minds because it is the first step to be made if we are to discover the general art of designation (of simple concepts) in order to reduce all philosophic questions to a certain kind of calculation (Mendelssohn, 1765—1784).

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Mateusz Oleksy

THE USE AND INTERPRETATION OF SIGN. PEIRCE'S SEMIOTICS IN THE CONTEXT OF THE 'CRITIQUE OF THE MODEL OF REPRESENTATION'

Originally published as "Użycie znaku i jego interpretacja. Semiotyka Peirce'a w kontekście őkrytyki modelu przedstawieniaŕ," Studia Semiotyczne 25 (2004), 273–289. Translated by Wojciech Wciórka.

I would like to identify a certain weakness (certainly not the only one) which is characteristic, in my view, of the 'critique of the model of representation' or of the project of 'overturning the hegemony of representation', popular in philosophical circles inspired by Heidegger's writings. According to Heidegger's influential interpretation of modernity — which, by the way, is indebted to Hegelian philosophy of history — the logic of the development of modern thought is entirely subordinated to one idea: the idea of absolute domination of the subject as the power of discursive representation. This interpretation provides a unified vision of the history of modernity (beginning with Cartesian subjectivism) as the history of increasing relativization of all aspects of reality to the subject and its capacity to represent and to form judgements. This unified picture of modernity constitutes the common point of reference and inspiration for many intellectual enterprises under the banner of deconstruction, hermeneutics, philosophy of difference, and the critique of Enlightenment. The same interpretation is explicitly or tacitly assumed in postmodernist accounts of contemporary culture, according to which our task as post-modern thinkers is to abandon, overthrow, and shatter the model of representation.

On closer inspection, sweeping, *prima facie* homogenous interpretations of history often break up into myriads of heterogeneous, hardly congruous shards, hastily patched together to form a peculiar whole. I believe that Heidegger's one-sided interpretation of modernity obscures certain crucial tendencies, differences,

and schisms that occurred in modern thought from the time of late scholasticism, which gave rise to the idea of a theory of representation, up to Husserl's phenomenology and analytic logical semantics, which incorporated various versions of the theory. Yet I do not intend to delve into a wholesale critique of this account of the modern era.[1] As I see it, Heidegger's view of modernity, as well as the anti-modern philosophy encouraged by him, underestimates or even remains blind to the possibilities contained in the modern model of representation. The most obvious reason for narrowing down or oversimplifying the historical perspective is the belief that the development of the theory of representation is inextricably connected with the idea of autonomous subject. Due to this Hegelian superstition it is difficult to see that Kantian transcendentalism (as well as — from a different point of view — Hume's phenomenalism) paves the way for the subject-free epistemology. It is only in the latter that the theory of representation reaches a more developed stage. Yet there is another reason — equally fundamental, although less obvious and less frequently noted — namely, the dichotomy of interpretation and use of sign, a distinction accompanied by a tendency to maximize the role of the former factor up to the point of excluding the issue of use from semiotics. By considering Peirce's theory of sign, I hope to show that it is possible to develop the modern theory of representation in such a way as to make it free both of the myth of autonomous subject of cognition and of the interpretation—use dichotomy. I will focus on the latter theme, by showing the influence of pragmatism on Peirce's theory of sign and semiotic interpretation.

A characteristic feature of post-structuralism (hence its name) is its attachment to the signifying—signified distinction, taken from de Saussure. Given that de Saussure's view of sign rejuvenates the Enlightenment idea of autonomous and arbitrary discourse, it is rather surprising that French semiology loyally remains within the boundaries established by this distinction. "Cutting off the reference of a sign opens up the possibility of an infinite game of difference and repetition" — this is the fundamental idea of French post-structuralists. Yet the project of reducing the complex structure of representation to the relation of substituting one sign for another goes back to the Enlightenment model of representation.[2]

One might wonder, therefore, whether the 'deconstruction' of the signifying—signified relation is not just a delayed reaction to the fall of the Enlightenment theory of representation. Post-structuralists wish to preserve the immanent plane of interpretation which allows for referring one sign to another while ruling out reference to anything that would fail to serve as a sign or to the use of sign in

[1] A very interesting critique of Heidegger's interpretation of modernity has been offered by Alain Renaut (1997: part 1, ch. 1).

[2] Michel Foucault, often regarded as a poststructuralist himself, brilliantly brought out the fundamental role played by the idea of transparent discourse in Enlightenment epistemology. Cf. Foucault 1992: ch. 3, esp. p. 65.

practice, which encompasses both linguistic and nonlinguistic activities as an integral whole. On the flip side, they shatter the classical picture of a homogeneous and transparent discourse by introducing to this immanent plane of interpretation 'shifts', 'differentials', 'crevices', 'clashes', 'folds', etc. A similar remark applies to post-Heideggerian hermeneutics, which also posits the immanent plane of interpretation, which only allows an intertextual dialogue while postulating the open-ended game of interpretative horizons, the inexhaustible character of sense, etc.

As a justification for this ambivalent attachment to the Enlightenment theory of sign, it could be pointed out that insofar as we consider the theory of sign — as well as the theory of representation — there is nothing but silence between *La logique de Port-Royal* and *Cours de linguistique générale*. Such an assessment is plausible, to a certain degree, since neither Kant nor any of his followers explicitly elaborated on the theory of sign and representation, although several Neo-Kantians attempted to transform Kant's logic into a philosophy of language. Wilhelm von Humboldt extolled language as an 'involuntary emanation of the spirit', Hegel spoke highly of speech, the concepts of representation and image took centre stage in Schopenhauer's philosophy, Marx toyed with Hegelian ideas of *Vorstellung* and *Darstellung*, Mauthner made an attempt at a 'critique of language', which was to inspire Wittgenstein, Nietzsche was aware of the metaphorical character of cognitive processes, etc. The only exception in this history of silence was Peirce, who in the second half of the nineteenth century developed a formal theory of sign and representation.

In the present context, Peirce's semiotic thought seems interesting for two reasons. First, he puts forward a theory of representation in the framework of a universal theory of sign, distinguishing a genuine representation, which is continuous ("triadic") in character, from its degenerate types taking the form of discrete combinations of binary ('dyadic') relations. Second, in his theory of inquiry, he brings to light the specifically practical and communicative dimension of a sign, thus paving the way for the holistic account of experience, thought, and action. Suitably directed investigations into Peirce's 'eccentric' enterprise may help to fill the gap in our knowledge about the development of modern theory of representation, and thus to clear up misunderstandings which constrain the present-day discussion on the issue of the 'hegemony of the model of representation'. By "suitable direction" I mean a certain interpretative choice. Namely, one model of construing Peirce's works (adopted e.g. by Derrida and Eco) regards him as a forerunner of various contemporary theories of sign, semiology, deconstruction, etc. By contrast, in my view, which by no means diminishes the originality of his ideas, he is primarily a continuator — as well as a critic — of fundamental tenets of modern philosophy, who, in particular, revived the deteriorated empiricism of his time.

1. The post-Kantian theory of representation

The Polish term for representation, *przedstawienie*, is actually a translation of Latin *praesentatio*, not *repraesentatio*. It is easy to locate the distinction between presentation and representation in the historical context. It can be found in the form of the good old distinction between sense data and concepts, which — at least since Kant's time — is construed as applying to the order of representation (*Vorstellung*) so that concepts are considered representations of representations or second-level representations. It is worth emphasizing that, as mentioned above, no post-Kantian thinker, nor, of course, Kant himself, sought to formulate a theory of representation or at least come up with a definition of the concept. This failure is remarkable given that, after Kant, epistemology deploys the notion of representation as a fundamental concept. As far as I know, it was Karl Leonard Reinhold who first put forward a sketch of a theory of representation in his famous Principle of Consciousness, according to which "in consciousness, the subject distinguishes the representation from the subject and the object and relates the representation to both" (cf. Reinhold 1790: 167). What immediately springs to mind is that such an account of representation and consciousness latently underpinned the entire post-Cartesian philosophy of subject. Take, for instance, the definition of sign offered by the *Port-Royal* school:

> but when we regard a certain object only as representing another, the idea which we have of it is the idea of a sign. It is in this way that we commonly regard maps and pictures. Thus the sign contains two ideas, one of the thing which represents, another of the thing represented, and its nature consists in exciting the second by means of the first. (Arnauld and Nicole 1964: 42).

However, it would be a grave mistake to overlook the gap between Reinhold's theory of consciousness and the Enlightenment theory of sign. The latter is an expression of what *we* (who think after Kant and, presumably, take our cue from him) would like to call a naïve, realist approach to the object of representation. This 'naïve realism' finds expression in a typical turn of phrase: something is a representation (or representative) of something else insofar as it *stands for* (replaces) it *qua* its *sign*, *likeness*, *copy*, from which one can form a *secondary copy* to be stored in memory etc. On this view, the binary model 'copy—copying' is extrapolated to all 'levels of cognition': things present (manifest) themselves to senses, mind registers these presentations in the form of mental images (copies of sense impressions), which are stored by memory, which in turn enables speech to represent the same things by copying mental images into spoken sounds, which are then rendered into written marks, which secures the maximum durability of representation. Of course, neither thought nor speech and writing are able to

exhibit a thing if the thing fails to present itself to the senses: they can *merely* give signs, which stand for the thing 'in its absence'.

The assumption that the *object of representation* can be transferred from a lower level of cognition to a higher one is regarded as innocuous precisely because representation is considered to be a duplicate, a copy of a copy, another record of what has already been recorded, albeit in a different form (a written mark constitutes the fourth level of copying the empirical world). Hence the operation of sign is barely discernible, 'latent', and the theory of representation fails to go beyond the binary model (the 'third' element — which interprets the sign as the sign of a given object and mediates the relation of representation — goes unnoticed). By contrast, Reinhold has no illusions: what is represented, the object of cognition, is not ready for being represented like a figure ready for being impressed in clay; instead, it is constituted in consciousness precisely as the object of representation. In his Principle of Consciousness, Reinhold responds, already from a historical distance, to the question posed by Kant in 1772 in a letter to Marcus Hertz:

How my understanding may formulate real principles concerning the possibility of such concepts, with which principles experience must be in exact agreement and which nevertheless are independent of experience — this question, of how the faculty of the understanding achieves this conformity with the things themselves is still left in a state of obscurity. (Kant's letter to Hertz of February 21, 1772, Kant 1902: 10, 131; quoted in Nitzan 2014: 57)

In brief — how can something within the mind represent something outside the mind? The answer is *critical*: not only is the supposed extra-mental object of representation unknowable — it is also incomprehensible. Due to Reinhold, the concept of representation (*Vorstellung*; Polish *przedstawienie*) became a technical notion, not to be confused with common metaphors of (re)presenting [*przedstawianie*], being a representative [*przedstawicielstwo*], copy, likeness, image, etc. More importantly, the binary Enlightenment model was replaced with a triadic model (what is representing — what is represented —representation), in which the stress is put on the third element, the relation of representation, or rather on the consciousness in which the relation is constituted.

Yet Reinhold, like his master Kant, regards consciousness as a primitive fact, preceding the transcendental reflection, impossible to derive from experience, unprovable, and indefinable. Consciousness is fundamental, constitutive, but not creative, that is, 'world making' (Reinhold was no Nelson Goodman!). It was Hegel who first proclaimed that we are in no position to assume that the cognitively fundamental subject—object relation is constituted in itself, i.e. independently of the historical development of self-cognition, just as we cannot assume that the object and the subject of cognition are constituted in themselves, that is, independently of the cognition itself (as Kant claimed). It is then plausible to

suggest that in Hegel's speculative philosophy the theory of representation takes a *dynamic* form.

Still, one should immediately point out that the stage for Hegel's dialectic was set by Reinhold's account of representation. Although Hegel brings into light the naivety of adopting an 'ahistorically' constituted structure of representation, his dialectic allows no room for authentic creativity in the self-development of knowledge since it fails to grant anything that would hinder or distract the process. I would like to contrast this strand of post-Kantian philosophy with the route chosen by Peirce, since his philosophy cognition is understood, in principle, as an open-ended and creative, albeit controlled, process of learning, in which perception, discursive reasoning, and action are intermingled *through and through*. In order to throw this contrast into sharp relief, I will try to show how Peirce's 'semiotic idealism' is counterbalanced by his pragmatism. Let me point out in advance that Peirce's philosophy rests on a subtle balancing manoeuvre by virtue of which an idealistically motivated theory of continuous semiosis and a pragmatically motivated theory of the use of sign complement each other in such a way as to render the interpretation—use dichotomy moot.

2. The semiotic theory of representation

> From the proposition that every thought is a sign, it follows that every thought must address itself to some other, must determine some other, since that is the essence of a sign. (5.253)[3]

Peirce claims that every act of cognition and thinking is performed by means of signs and has a semiotic structure. Peirce uses the terms "sign" and "representation" interchangeably. A sentence drawn from another passage: "The idea of representation involves infinity, since a representation is not really such unless it be interpreted in another representation" (8.268) expresses the same thought as the assertion quoted above, albeit it explicitly introduces the concept of infinity. Given the ideal limit of *semiosis* (semiotic interpretation), infinity of representation (or sign) follows from the definition of representation (sign) as an irreducible 'triadic relation':

> my definition of a representamen[4] is as follows: a REPRESENTAMEN is a subject of a triadic relation TO a second, called its object, FOR

[3]It is customary to quote Peirce's *Collected Papers* (1931—35, 1958) by referring to the number of volume (1—8) and section. For instance "5.253" refers to volume 5, section 253.

[4]Peirce uses the term "sign" ambiguously, referring either to the whole triadic structure (then he often employs the neologism "representamen") or to the first argument of this structure. Here, I will use the term "sign" in the former sense (sometimes emphasizing that I have the whole structure in mind), and "medium" in the latter.

> a third, called its INTERPRETANT, this triadic relation being such that the REPRESENTAMEN determines its interpretant to stand *in the same triadic relation to the same object* for some interpretant. (1.541; my italics)

Each sign is defined by three elements (medium, object, interpretant) and three relations: meaning, i.e. the relation of the sign to the medium; reference, i.e. the relation of the sign to the object; interpretation, i.e. the relation of the sign to another sign. Peirce emphasizes that the 'triadic' structure of sign cannot be reduced to a combination of 'dyadic', i.e. binary, relations — they constitute a unity. This fact is underscored by a recursive definition of interpretation in the passage quoted above. Elsewhere, Peirce remarks that a sign is "anything which determines something else (its interpretant) to refer to an object to which itself refers (its object) in the same way, the interpretant becoming in turn a sign, and so on ad infinitum" (2.303, cf. 292).

Hanna Buczyńska-Garewicz (1994: 43) calls attention to the self-reproductive character of this triadic structure:

> Characteristically, this classical definition, constituting the core of Peirce's account, already points to a fundamental feature of the triad, its capacity to reproduce itself: the triad, by its very essence, indicates another triad, one interpretant must lead to another. Each representation, once given, marks the beginning of an infinite chain of interpretations.

Thus representation is *continuous*, that is to say, it is conceivable only as a chain of interpretations which cannot be exhausted by any finite set of signs. This conception of logical continuity is of great importance to us, since it serves as the basis for Peirce's distinction between genuine and degenerate signs and thereby provides the framework for the whole issue of 'degenerate semiosis'. Before I turn to this key issue, let me note that — although interpretation is a process by means of which a successive sign inherits the triadic relation with respect to the object of representation (cf. 2.274), and in this sense interpretation is the proper substrate of 'semiosis' — an infinite series of signs extend in all three dimensions of representation (sign). It is testified by the following passage:

> The object of representation can be nothing but a representation of which the first representation is the interpretant. But an endless series of representations, each representing the one behind it, may be conceived to have an absolute object at its limit. The meaning of a representation can be nothing but a representation. [...] So there is an infinite regression here. Finally, the interpretant is nothing

> but another representation to which the torch of truth is handed along; and as representation, it has its interpretant again. Lo, another infinite series. (1.339)

So when Peirce insists that the essence of sign (representation) is the "capability of the endless translation of sign into sign" (7.357), he has all three axes of representation in mind: meaning, reference, and interpretation. It means that a sign (representation) fundamentally differs from the direct manifestation, since no element of sign could be given directly — either what the sign says or what the sign is about, or even the mode of reference.

We can speak of a 'triadic' model of sign in the case of any theory which introduces the 'third' element (thought, concept, sense) mediating between the sign (medium) and its object. We encounter such an account already in Stoics (by the way, Stoic theory of sign was an important source of inspiration for Peirce; see Buczyńska-Garewicz 1994: 30; cf. Dąmbska 1984). Yet the 'triadic' model put forward by Peirce is distinct in that his mediation is continuous, that is, it proceeds in all three directions, so that all three elements provide points of reference for different perspectives on one and the same semiotic process: the medium mediates between the object of the sign and its interpretant in that it has a certain meaning which constitutes the way in which the object is grasped; the object mediates between the medium and the interpretant in that it provides a common reference; finally, the interpretant mediates between the medium and the object in that it determines another sign to serve as a representation of the object.

3. Genuine vs degenerate semiosis

Signs live their own lives. For Peirce, a paradigmatic case of sign is a conventional symbol which develops its sense in a series of inferences without beginning or end. Insofar as we look at a sign from the point of view of 'representation', 'interpretation', 'mediation', we are forced to admit that it is arbitrary (*unmotivated* in de Saussure's sense). In other words, it bears no natural relation to its object. After all, the very notions of *the object of sign* and *the subject of sign* are only meant to account for the two-directional character of the process of semiosis, in which a sign both interprets and is interpreted, translates another sign and is translated into another. The use of these concepts in a theory of 'mediating representation' by no means implies that the sign is embedded in direct manifestation, in a thing-in-itself transcendental with respect to the sign, or in self-consciousness of the transcendental mind which precedes all signs. By focusing on this particular aspect of Peirce's thought (which might be called 'semiotic idealism'), Derrida arrives at the conclusion that the notion of 'arbitrary sign' assumes a much more radical form in Peirce than in de Saussure, since the former rejects, according to

Derrida, the 'logocentrism' and the 'metaphysics of presence', which overshadow the European linguistics from de Saussure to Hjelmslev (Derrida 1976). As I see it, Derrida's interpretation adequately grasps one aspect of Peirce's philosophy, semiotic idealism, yet it disregards the project in its entirety, since it overlooks the aspect which might be labelled 'pragmatic empiricism'. Peirce's primary ambition, as I will try to show, is to reconcile these two tendencies without reducing one to another.

The two facets of the philosophy of sign which I hope to bring out find their expression in the ambiguous use of the very notion of semiosis. Namely, "semiosis" can denote a translation of one sign into another in the continuous process of 'sign-interpretation', or else it can signify the use, or operation, of a sign in a real cognitive practice, the 'sign-action' (cf. Komendziński 1996: 98). This ambiguity applies to many of Peirce's notions, including the concept of truth, reality, communication, and, of course, the concept of sign itself. The tension between these two perspectives is also visible in normative principles of the 'theory of inquiry'. Let us begin by distinguishing a 'genuine' and 'degenerate' sign ("degenerate" is a descriptive, non-evaluative term borrowed by Peirce from geometry). As Buczyńska-Garewicz (1994) explains:

> The notion of a degenerate sign plays an explicitly independent role in Peirce's semiotics. It can be understood and explicated only with respect to the genuine, 'true' sign. At the same time, the degenerate sign is a dominant phenomenon in the universe of signs — almost everything in the empirical realm of signs is of this kind. [...] Hence the distinction between a genuine and degenerate sign is of utmost importance both to semiotics as a general theory of sign and to its applications in the form of empirical investigation into particular domains of signs, i.e. to various regions of culture.

A sign in the narrower sense is a triad which cannot be analyzed into binary relations or into monads. In other words, a genuine sign involves meaning, reference, and interpretation joined together by an irreducible, substantial bond. Otherwise a sign is degenerate.

> But if the triple relation between the sign, its object and the mind, is degenerate, then of the three pairs: sign — object, sign — mind, object — mind two at least are in dual relations which constitute the triple relation. (3.361)

In a broader sense, a sign includes both a genuine and a degenerate triad. Generally speaking, a degenerate sign occurs if at least one aspect of the triad can be characterized in isolation from the whole triad. In order to present Peirce's

theory of degenerate sign in a more precise way, we would have to start with his theory of categories. Yet, since it goes beyond my brief to discuss this issue fully, I will just present the relation between degenerate and genuine signs in the context of the general triadic structure of sign.

First, it should be noted that in Peirce's theory a genuine sign can only be a general law, so it is unable to exist in the 'world of fact' (1.478). Still, for Peirce, a general law cannot be considered in isolation from the possibility of its actualization in a concrete empirical fact (1.304). This duality in the account of sign is thrown into sharp relief in the following passage:

> For while a triad if genuine cannot be in the world of quality nor in that of fact, yet it may be a mere law, or regularity, of quality or of fact. But a thoroughly genuine triad is separated entirely from those worlds and exists in the universe of representations. Indeed, representation necessarily involves a genuine triad. For it involves a sign, or representamen, of some kind, outward or inward, mediating between an object and an interpreting thought. Now this is neither a matter of fact, since thought is general, nor is it a matter of law, since thought is living. (1.480)

The latter, metaphorical description of thought as 'living' reveals Peirce's view that both nature and cognition are evolutionary in character. While natural evolution consists — as Peirce would have us believe — in developing habits, the scientific practice, understood as a controlled, self-correcting practice of producing habits is just a special case of natural evolutionary processes. The semiotics of 'living' representation must account for semiosis' oscillation between the habit produced by the sign and the role of action which constitutes a symbolic interpretation of this habit.

As for the relation to an object, Peirce divides signs into symbols, indices (indexicals), and icons. Indices and icons are degenerate signs.

> A Symbol is a law, or regularity of the indefinite future. Its Interpretant must be of the same description; and so must be also the complete immediate Object, or meaning. But a law necessarily governs, or "is embodied in" individuals, and prescribes some of their qualities. Consequently, a constituent of a Symbol may be an Index, and a constituent may be an Icon. A man walking with a child points his arm up into the air and says, "There is a balloon". The pointing arm is an essential part of the symbol without which the latter would convey no information. But if the child asks, "What is a balloon", and the man replies, "It is something like a great big soap bubble", he makes the image a part of the symbol. Thus, while the complete

> object of a symbol, that is to say, its meaning, is of the nature of a law, it must denote an individual, and must signify a character. A genuine symbol is a symbol that has a general meaning. There are two kinds of degenerate symbols, the Singular Symbol whose Object is an existent individual, and which signifies only such characters as that individual may realize; and the Abstract Symbol, whose only Object is a character. (2.293)

Further on, he presents the relations between symbolic, indexical, and iconic signs in the following way:

> A Symbol is a sign naturally fit to declare that the set of objects which is denoted by whatever set of indices may be in certain ways attached to it is represented by an icon associated with it. (2.295)

This account shows that in actual semiotic processes degenerate and genuine signs are intermingled and cooperate with each other. A genuine symbol "owes its significant virtue to a character which can only be realized by the aid of its Interpretant" (2.92). By contrast, in the case of an iconic sign, the relation between the medium and a certain object rests on the similarity between them (on their sharing a property or properties), and in the case of indices — the relation consists in a physical connection between the medium and the object. These relations exist in their own right, independently of any semiotic interpretation. Nevertheless, cooperation of all three sorts of sign is indispensable if the sign is to refer to something and convey some comprehensible information. Peirce emphasizes that "the only way of directly communicating an idea is by means of an icon" (2.278); on the flip side, it is by the use of an image, a diagram, or a metaphor (i.e. iconic signs of a monad, a dyad, or triad, respectively, 2.277) that the foundation of the sign or its meaning becomes fossilized; so it is both a convenience and a limitation. The case of indexical signs is similar. It is only by means of a demonstrative gesture or a demonstrative pronoun that we can distinguish the real world from merely possible worlds produced by signs (cf. Appel 1988: 71). Karl-Otto Appel emphasizes that according to Peirce's theory:

The point of the perceptual judgements as compared with mere assertive propositions rests precisely on the fact that the former, through the function of indexical signs are capable of integrating novel empirical informations into the conceptual-linguisitic interpretation of the world. They extend the extensional and hence also the intensional meaning of terms." (Appel 1988: 72)

On the flip side, we can speak of 'petrification' of the process of interpretation resulting in the reference being 'confined' to a fixed range of denoted objects.

As for the division of signs on account of their relation to the interpreting of thought, namely into terms, propositions, and argumentations, Peirce stipulates

that argumentation is the genuine form of sign, its first degenerate form is a proposition, and the second degenerate form is a concept (term) (2.250—2.273) (cf. also MS 307, p. 12, quoted in Buczyńska-Garewicz 1994: 12). Elsewhere, Peirce states that "a term is a rudimentary proposition, a proposition is, in its turn, a rudimentary argumentation" (2.344). Again — a genuine semiosis is actualized in infinite inferential sequences. The trichotomy term—proposition—argumentation corresponds to the particular modalities of the object of sign: its potentiality, actuality, or necessity. Symbolic representation, which is properly actualized in an inferential chain, must be, as it were, objectified in a *propositional symbol*, which refers to an actual fact, and in an *abstract symbol*, which refers to a qualitative possibility, so that a general law (the object of argumentation) is referred to the universe of facts and the universe of qualities (2.293).

Finally, let us examine the issue which is central to Peirce's semiotics — that of degenerate interpretation. As Peirce puts it: "No doubt, intelligent consciousness must enter into the series. If the series of successive interpretants comes to an end, the sign is thereby rendered imperfect, at least" (2.303). Buczyńska-Garewicz speaks of a need for a holistic account of genuine and degenerate semiosis:

> What is interesting in Peirce's thought is the combination of two facets: on the one hand, he stresses the intellectual character of semiosis, and on the other — he also acknowledges non-intellectual effects of signs. Semioticians usually limit themselves to one of these approaches. By contrast, by allowing for forms of 'interpretation' distinct from the logical one, Peirce attempts to encompass all these phenomena in a single holistic theory. (Buczyńska-Garewicz 1994: 81)

From the perspective of a genuine interpretation, considered in isolation from actual processes of semiosis, the only interpretant of a sign (representation) can be a 'logical interpretant', that is, a complete triadic sign, a symbol together with all its logical consequences. Nevertheless, "we may take a sign in so broad a sense that the interpretant of it is not a thought, but an action or experience, or we may even enlarge the meaning of sign that its interpretant is a mere quality of feeling" (8.322). Peirce distinguishes intellectual (logical), energetic, and emotional interpretants of a sign, albeit the last two ones are degenerate forms of the first one.[5] As far as emotional, and behavioural interpretants are concerned, Peirce

[5]In 5.475 we learn that „the first proper significate effect of a sign is a feeling produced by it." Further on we read: "This ŕemotional interpretantő, as I call it, may amount to much more than that feeling or recognition; and in some cases, it is the only proper significate effect that the sign produces. Thus, the performance of a piece of concerted music is a sign. It conveys, and is intended to convey, the composer's musical ideas; but these usually consist merely in a series of feelings. If a sign produces any further proper significate effect, it will do so through the mediation of the emotional

seems to believe that they appear in all signs without exception. Buczyńska-Garewicz pushes the point even further and puts forward a hypothesis that in his later writings (especially in letters to Lady Welby) Peirce preferred a joint rather than disjunctive understanding of the differentiation of interpretants, according to which "no kind of interpretant is independent — they constitute three layers of interpretation" (Buczyńska-Garewicz 1994: 92). It is not to deny that from the perspective of continuous semiosis the emotional and behavioural interpretations of a sign go beyond the scope of proper semiosis, they are "non-semiotic effects of a sign", or even interfere with the very nature of sign, disturbing its "capability of self-reproduction", since they "fail to go beyond themselves and they end the process of semiosis" (Buczyńska-Garewicz 1994: 82). The nature of those indispensable, albeit usually 'unoffical', associations which link the argumentative strings of symbols to our sensations and behavioural reactions, is to be clarified by the principle of pragmatism.

4. The principle of pragmatism

Pragmatism — in its original form from the year 1878 — is, for Peirce, "a method of ascertaining the meanings of intellectual concepts" (5.467). Its aim is to separate clear and distinct concepts from vague or empty ones. Also James, in regarding Peirce as the father of the movement, regards pragmatism as, in the first place, a method of conceptual analysis, and only in the second place as a 'theory of truth', although the latter description is, as James himself admits, infelicitous (cf. Putnam 1995: 5—27). For James, the pragmatist method is first of all a method of settling metaphysical controversies regarded as insoluble (James 1968: 142). What is the nature of Peirce's method? Here is one of the typical accounts, which was offered in his Harvard Lectures on pragmatism:

Pragmatism is the principle that every theoretical judgment expressible in a sentence in the indicative mood is a confused form of thought whose only meaning, if it has any, lies in its tendency to enforce a corresponding practical maxim expressible as a conditional sentence having its apodosis in the imperative mood.

interpretant, and such further effect will always involve an effort. I call it the energetic interpretant. The effort may be a muscular one, as it is in the case of the command to ground arms; but it is much more usually an exertion upon the Inner World, a mental effort." In the subsequent section Peirce introduces the notion of "logical interpretant," which is the meaning of a general concept (and hence it cannot be the intellectual effort, which is a singular act) and, in being a sign, requires its own logical interpretant in the form of a sign, "so that it cannot be the ultimate logical interpretant of the concept. It can be proved that the only mental effect that can be so produced and that is not a sign but is of a general application is a habit-change; meaning by a habit-change a modification of a person's tendencies toward action, resulting from previous experiences or from previous exertions of his will or acts, or from a complexus of both kinds of cause."

(5.18) In other words, the pragmatic principle requires that we translate each sign (word, concept, statement, doctrine, etc.) into a hypothetical imperative (or a series of such imperatives) of the form: "If you want to produce such and such effect, you must carry out such and such action," whose antecedent refers to possible intentions and the consequent — to possible actions. The above formulation is important insofar as it shows "the dependence of the indicative mode on the imperative one" (Buczyńska-Garewicz 1994: 107), or, to put simply, it expresses Peirce's fundamental conviction that the whole content of any thought amounts to the habit (in the sense of a rule of action!) to which we are committed by accepting the thought. That is why Peirce insists that „the most perfect account of a concept that words can convey will consist in a description of the habit which that concept is calculated to produce" (5.491). It is worth emphasizing that no such description can be satisfactory unless it involves references to human goals and specifies the attainment of those goals in terms of observable outcomes of actions which are possible to perform. Thus pragmatism eliminates all concepts and conceptions devoid of a relevant reference to aims that are achievable in the realm of observable phenomena, at least 'in the long run'. Besides, the method is supposed to find out the finest differences between concepts via analysis of their practical consequences.

I agree with Buczyńska-Garewicz that one of the premises of pragmatism was the critique of Cartesianism. Peirce wanted to dispel the myth of cognition established by the post-Cartesian philosophy. He intended to show what our thinking must consist of in order to increase our knowledge. He based his idea of normative theory of inquiry on observations of real scientific activities. In this way he arrived at the conception of rational critique, according to which we must actively intervene in natural processes so as to be able to falsify our views about nature. We must interfere with our natural environment in order to get clues enabling us to distinguish the *actual* world of experience from the possible worlds of thought. For this reason conceptual contents must be analyzed in terms of hypothetical empirical results of our actions and mental processes. We must intelligently interfere with our environment not only to detect potential errors in our theories but also to expose disinformation generated by direct perception.

In this connection, it is also easy to see the extent to which Peirce's semiotics differs from Hegel's self-dynamism of cognition. Hegel discounts the role of direct perception by considering a grotesque image of *pure* indexicals taken *in separation from any theory* and assumes that truth must be entirely contained in the development of a priori concepts, or more precisely, in a priori self-development of concepts taken as a whole. Thus Hegel, by starting from an accurate, albeit trivial, observation that indexicals such as "this one" or "this one here and now" cannot — in isolation from our conceptual apparatus — represent any definite object of cognition or provide any information about the world, proceeds to an utterly

implausible and harmful assessment that truth consists *merely* in the conceptual coherence. Presumably, we are dealing here with a lingering way of understanding empiricism according to which accepting the indispensability of direct experience in cognition boils down to admitting that our conceptual schemes are determined by something preconceptual.

At the beginning, I said that I regard Peirce as a reviver of empiricism. Namely, this revival consisted — in my view — in asserting that, in order to acknowledge the decisive impact of experience on our cognition, we need not assume that our concepts are determined by something preconceptual (preconceptual sense data or something like this). In the framework of the theory of inquiry it can be plausibly claimed that (1) perception engages our conceptual capabilities, (2) for this reason, perception is sometimes misleading, (3) in the long run, errors or disinformation contained in perception can be found out and rooted out in the course of scientific investigations, (4) accounting for the possibility of 'revising the facts' (occurring at the level of our basic description of the world, which cannot be disregarded in talking about the observed facts) does not require the assumption that we have, or can have, direct access to preconceptual reality (whatever that means). As Putnam put it:

> The fact that perception is sometimes erroneous does not show that even *non*-erroneous perception is really perception of "appearances." And it may also help if we realize that access to a common reality does not require access to something *preconceptual*. It requires, rather, that we able to form *shared* concepts. (Putnam 1995: 21)

The principle of pragmatism can thus be understood as a hint that the criterion of truth cannot amount to correspondence of concepts to something preconceptual (or non-conceptual), nor can it be equated with immanent coherence of concepts; instead, it consists in the unanimity achieved *in the long run* in the course of scientific inquiry in which perception, discursive thought, and action are mixed together.

It is not my aim to question the point of the popular (especially in the continental philosophy) 'critique of the model of representation'. I simply wish to identify a gap in the discussion revolving around this issue. Of course, the gap is not caused by not appreciating Peirce — on the contrary, he is appreciated — but by misconstruing his philosophy, by overemphasizing what I called the idealist tendency of semiotics. If we track the history of the theory of representation by going *exclusively* in the direction set by Reinhold, then presumably we will end up regarding Hegel's dialectic as its peak achievement, and Peirce's semiotics just as a sophisticated continuation of this tradition and a sort of upheaval which shakes the foundations of modern thought and anticipates the contemporary *deconstruction* (cf. Derrida 1976). Yet such an account of Peirce's philosophy blatantly disregards

his pragmatism, and in particular the pragmatist tendency of his semiotics. We are not talking about a split or tension in Peirce's semiotics (though we could plausible speak of a tension in interpretations of his thought) but about a subtle equilibrium, a result of striking a balance between opposing factors.

The account offered by the *idealist* reconstruction of semiotics is unsatisfactory if we wish to comprehend the contribution of semiotics to the theory of inquiry, to our understanding of relations holding between perception, thought, and action in cognitive practice. From the perspective of ideal semiosis, the genuine sign is a general, conventional rational symbol (i.e. an argument), yet each actual sign requires a physical substrate as a medium of communication, it occurs in the subjective world as a counterpart of concrete mental acts, it is connected with perceptual impressions by means of indices, it is spread in communication via images and metaphors, it is an object of observation (also with respect to logical structure, namely, as a diagram), it has an impact on our lives and minds by way of its emotional and behavioural effects. In his universal semiotics, Peirce, if I understand his intention correctly, set out to overcome the interpretation—use dichotomy and to this end he introduced the twofold (and yet holistic) notion enabling us to look at the whole spectrum of signs either from the perspective of genuine semiosis, which, as it were, incorporates monadic and dyadic components into the triadic structure of a complete sign, or from the perspective of degenerate semiosis, which relativizes all signs to the context of actual human actions and experiences. This duality of the account of sign constitutes the true heart of Peirce's philosophy of sign and, on the flip side, is the source of great difficulty in its understanding.

It is in this context that we should consider the distinction between presentation and representation. The duality discussed above forces us to distinguish between dyadic and monadic substructures of continuous representation (which cannot be separated from the triadic structure of sign) together with natural *re-presentations* [*przedstawienia*] of objects acting on us and natural *manifestations* of qualities (which occur in their own right, independently of semiotic interpretation). Semiosis is a continuous process, and its suitable substrates are inferential sequences of symbols. However, in actual cognitive activities, the process of interpreting a sign is repeatedly interrupted and blocked. Furthermore, an overarching, or universal, theory can require nothing more than a balance between the interpretation of a sign in ideal semiosis and the use of sign in 'living' cognitive practices. This principle immediately discounts the approaches which conflate both layers of semiosis or just pass over one of them. It is therefore hard to agree with the opinion (I am not sure whether it can be attributed to Derrida himself) that Peirce was a forerunner of deconstruction. By the same token, any attempts at placing his philosophy within the tradition of transcendental philosophy distort his overall intention. Equally misguided are, in my view, interpretations

of Peirce's semiotics offered exclusively in terms of behaviourist, interactionist theories of sign (Mead, Morris), given that the point of these readings is to reduce continuous semiosis to social communication and the logical interpretation to an emotional-behavioural interpretation.[6]

As a final point, let me invoke a celebrated fragment of the scattered Peircean oeuvre, which, ironically, has served as a motto for mutually exclusive interpretations of his semiotics. I would like to leave it to the reader to decide whether this passage emphasizes, or not, the double nature of sign, thereby mocking both the radically 'idealist' and radically 'naturalist' interpretations of Peirce's semiotics

> Symbols grow. They come into being by development out of other signs, particularly from icons, or from mixed signs partaking of the nature of icons and symbols. We think only in signs. These mental signs are of mixed nature; the symbol-parts of them are called concepts. If a man makes a new symbol, it is by thoughts involving concepts. So it is only out of symbols that a new symbol can grow. *Omne symbolum de symbolo.* A symbol, once in being, spreads among the peoples. In use and in experience, its meaning grows. Such words as force, law, wealth, marriage, bear for us very different meanings from those they bore to our barbarous ancestors. The symbol may, with Emerson's sphynx, say to man: Of thine eye I am eyebeam. (2.302)

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THE ISSUE OF LINGUISTIC AMBIGUITIES IN WITTGENSTEIN'S SECOND PHILOSOPHY AND IN SCHÄCHTER'S CRITICAL GRAMMAR

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1. The formalist turn in Wittgenstein's philosophy and its consequences

1.1. The formalist turn in Wittgenstein's philosophy

By a seemingly strange twist of fate, the formalist approach to language became popular after Hilbert's project of providing a formalist foundation for mathematics foundered on Gödel's famous incompleteness theorems. Even in September 1930, during the congress in Königsberg, where Gödel presented his results for the first time, Carnap still defended logicism against the intuitionist and formalist views on the foundations of mathematics. Furthermore in linguistics, the formalist approach to syntactic issues had only become disseminated in the 1930s, due to the distributionists of Bloomfield's school, and found its paramount expression in Hjelmslev's *Prolegomena to a Theory of Language* (1953): according to Hjelmslev, both the linguistic theory and the grammar of a given language are nothing more than a calculus. Among the philosophers and logicians of the Warsaw school, under the influence of Hilbert's works, the impact of formalism had already grown stronger in the late 1920s and resulted in the invention of metalogic. At around the same time, after a 'linguistic turn' — and, in a sense, within its limits — Wittgenstein's philosophical reflection on language and the foundations of mathematics also gravitated towards formalism and its methods. In the years 1928—1930, in an attempt to clarify fundamental ideas of the *Tractatus* in a conversation with Schlick and Waismann, Wittgenstein turned to the formalist account of language. His reception of formalism and its role in forging his 'second

philosophy' is clearly illustrated by a remark made on 19 June 1939 in the presence of Schlick and Waismann:

Part of formalism is right and part is wrong. 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 may mean when he says that a formalist conceives of the *axioms of mathematics as like chess-rules.* [cf. Weyl 1927a: 25] *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: 103—104; my emphasis)

The passage, although illuminating, requires some explaining — not unlike many analogous statements made by Wittgenstein in the 1930s. Note, first of all, that Wittgenstein refers not so much to the state-of-the-art formalism of Hilbert's school as to the so-called older formalism of Heine, Thomae, and — strange though it sounds — Frege, who developed the formalist account of the foundations of mathematics outlined by Heine and Thomae into a robust alternative to logicism (albeit for purely critical reasons). It is from the second volume of Frege's *Grundgesetze der Arithmetik* (1903: §§ 87—130) that Wittgenstein took the central idea of the older formalism — the notion of 'sign-game' (*Zeichenspiel*), as well as 'calculus-game' (*Rechenspiel*),[1] which he then transformed into the cornerstone of his second philosophy — the concept of language-game. The decisive step on the way from the account of arithmetic as a sign-game to the idea of language-games consisted in expanding the concept of sign-game into 'sign-games with elements of reality' or, to be more precise, games in which some elements of reality such as the metre standard (yardstick), colour samples, and the like, are used as means of representation.[2]

[1]Cf. esp. Thomae 1898: 1—10 and Thomae 1906 — the latter article was a response to Frege's critique of the position presented in the former work; it begins with the following remark, which distinctly reveals the affinity of Wittgenstein's idea of language games with the older formalism: "a person who wishes to ground arithmetic in a formal theory of numbers, that is, in a theory which does not ask what numbers are and what they mean but merely what we need of them, will gladly consider what I believe is another example of a purely formal creation of the human intellect, namely — chess. Chess pieces are signs that have no other content inside the game but the one imposed on them by the game rules."

[2]This expansion, as suggested by Waismann's notes and numerous passages from *Philosophical Remarks*, was probably carried out around 1930, see esp. Wittgenstein

1.2. Some consequences of the formalist turn

1.2.1. The arbitrary nature of the linguistic sign

From a formalist point of view, each grammar consists of rules for the use of signs — rules that might as well be entirely different. In this sense every grammar is arbitrary or conventional and — as such — cannot be justified. The same is true of meaning, defined in the most general terms by Wittgenstein, followed by Schächter, as the totality of syntactic rules determining the 'use' of signs. On 19 June 1930, Wittgenstein explained this 'formalist' platitude — criticized and rejected by Frege — to Waismann in the following way:

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, my emphasis)

It immediately springs to mind, of course, that there are numerous analogies with the well-known linguistic principle of the arbitrary nature of the linguistic sign. For this reason, it must be stressed that the above principle of the arbitrariness of syntax, on Wittgenstein's and Schächter's construal, has much more serious consequences for semantics than the principle of the arbitrary nature of the sign — long-known in comparative linguistics and made the basis of synchronic linguistics by de Saussure. De Saussure's principle of the arbitrary nature of the sign concerns, above all, the choice of phonic and graphic material used to designate given concepts and —indirectly — things, their properties, and states of affairs (de Saussure 1959: 67—70). Even if we accept de Saussure's thesis about the synchrony of the division (articulation) of the spoken chain and the chain of concepts (de Saussure 1959: 111—113), it leaves open the question whether designata of linguistic signs also fall under the principle of arbitrariness. Slotty, who was the first member of the Prague Linguistic Circle to supplement synchronic linguistics with semantics, was inclined to believe that designata do not depend on language and its arbitrary, synchronic delimitations of units within the spoken and mental chains. In fact, by invoking hypotheses regarding the origin of language,

1981, 1964: §§ 38—48.

Slotty denied that meaning (*Meinung*) is dependent on the grammatical and lexical structure of language; rather, it is entirely autonomous — 'logical' (Slotty 1929: 99).[3]

Such a distinction is entirely alien to Wittgenstein's second philosophy and to Schächter critical grammar, and so the 'principle of conventionality' is much more unequivocal in them. *All* rules determining usage, and thereby meaning, are arbitrary or conventional — both the rules for the use of signs within the 'sign-game' of a given language and the rules for interpreting the game or, more generally, for its application to describing reality, giving orders, carrying them out, etc.

1.2.2. From the 'ordinary' grammar to the philosophical grammar

In the first chapter of *Prolegomena to a Critical Grammar*, Schächter shows that from a semantic viewpoint there is no relevant difference between 'social use', or rather 'tacit convention' (*stillschweigende Festsetzung*), and explicit convention, *willkürliche Festsetzung* (1973: 8—9 [part 1, chap. 1, §5]). More precisely, the way of laying down or establishing rules of a language is not relevant to the meaning itself. This leads to a significant expansion of the scope of the critical grammar — which focuses on 'essential rules', i.e. rules that differentiate meanings of signs — in comparison with traditional linguistics. In the light of the critical grammar, there is no significant difference between the so-called natural languages and the so-called artificial languages (or simply calculi). Likewise, there is no difference between them and languages that could hardly be classified either as 'natural' or 'artificial', such as the language of chemistry, physics, sociology, and other branches of science.

From the viewpoint of the older formalism assumed by Wittgenstein, followed by Schächter, the principle of arbitrariness of linguistic rules applies even to the so-called 'logical rules of language' and especially to the rules of the classical propositional calculus and the classical predicate calculus.[4] This means that both the 'logic of the content' (Wittgenstein 1974: 217) and the 'philosophical

[3]Slotty's answer to the question about the synchrony of the articulation of speech and thought and the resulting dependence of thought on language is as follows: "This question — already on account of pre-linguistic assumptions — must be answered in the negative; for thought and speech are not completely correspondent in the sense that each thought-category should correspond to a unique formally defined category of words." Thus not every kind of words and affixes entails a difference in denotation (*Meinung*). It is so because thought-categories, the subject matter of semasiology, are understood here as semantic categories in the logical sense (*Meinung*), i.e. they apply to denotation instead of connotation.

[4]In fact, it was not Hilbert, Wittgenstein, or Carnap in the *Logical Syntax of Language* (1937), but already Frege in the second volume of *Grundgesetze* (§ 90), who declared that: "it is quite true that we could have introduced our rules of inference

grammar'[5] are devoid of any 'logical space' of meanings. This in turn makes for the radical separation, typical of the state-of-the-art formalism, of the calculus or — as Wittgenstein would put it — the pure 'sign-game' of language, from its possible 'external' applications and above all from its semantic interpretation. Even so, it must not be overlooked that for Wittgenstein and Schächter, in contrast to Hilbert and his school, these rules of the 'pure sign-game' (*bloßes Zeichenspiel*) determine the meanings of signs, and so they are semantic in character.

Schächter, in his critical grammar, which was supposed to be a generalized 'grammar of meaning' — encompassing non-natural languages as well — clearly distinguishes, like Wittgenstein, inessential rules concerning the choice of the 'material of the sign' from rules defining the use of signs — signs, which can be rendered or expressed by means of any material: wooden figures, written marks, sounds, or mental and physiological processes. In the formalist framework of Wittgenstein's 'philosophical grammar' and Schächter's 'critical grammar', we must disregard rules for the use of signs which fail to 'affect the gameplay' of sign-games, including sign-games with elements of reality, or rules that — to use Wittgenstein's terminology from the period of *Philosophical Remarks* and *Philosophical Grammar* — fail to bear on 'mathematical diversity of language'.[6] The distinction between two kinds of linguistic rules became the basis for the distinction between the 'grammar of material', also called the 'ordinary grammar' by Wittgenstein, and the critical grammar or the grammar of meaning, called

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and the other laws of *Begriffsschrift* as *arbitrary stipulations*, without speaking of the reference and the sense of signs. We would have then been treating the signs as *figures*. What we took to be the external representation of an inference would then be comparable to *a move in chess*, merely *the transition from one configuration to another*" (Geach and Black 1960: 185—186, my emphasis).

[5]This is how Wittgenstein described the philosophical views set out in the *Big Typescript*, whose part has been edited by Rush Rees under the title *Philosophische Grammatik* (intended by Wittgenstein) (Wittgenstein 1984, 1974). Schächter, on the other hand, often calls his critical grammar, concerned with the rules of language which affect meaning, the grammar of meaning.

[6]The distinction between essential and unessential rules of language, central to the critical grammar, was explained by Schächter in the following way: "(I) Suppose the rules of chess included the specification that the fields must be squares and either black or white. If now we play a game and notice that these rules do not affect the game so that any position on such a board may be translated to one with rectangular fields that are red or yellow, we say that these rules are inessential. (II). There are rules that state that a pawn reaching the eighth rank may be exchanged for any piece of the same colour except the king, or that castling is subject to precise and defined conditions: these rules we denote as essential, for without them different positions from the usual ones could occur on the board. These rules belong to the ŕmeaningő of the pieces, just as the rule that pawns move straight and take diagonally" (Schächter 1973: 21 [part 1, chap. 3, § 2]).

critical by Schächter precisely in order to differentiate it from linguistics, which focused on rules regarding the material of signs and lacked a clear-cut distinction between these two kinds of rules. The account of language as a sign-game established by its 'essential rules' is closely connected with the 'formalist' idea — typical of Wittgenstein's second philosophy and Schächter's critical grammar — of the sign as a type of figure, whose meaning amounts to its 'use in the game' and so is equally arbitrary as the rules that define it.[7]

For present purposes — in the context of our discussion of linguistic ambiguities— the crucial aspect of Wittgenstein's reception of formalism is its relation to the purely descriptive project of semantic reconstruction, as opposed to the project of providing a foundation for mathematical theories (as is the case with Hilbert's formalism). It found its paramount expression in the *Blue Book*, where Wittgenstein put the fundamental methodological principle of his new philosophy in the following way:

I want to say here that it can never be our job to reduce anything to anything, or to explain anything. Philosophy really *is* 'purely descriptive'. (Wittgenstein 1958: 18)

The purpose of reconstructing the 'sign-game', or simply the calculus, of a language, was not to legitimize some theory or even to test the consistency and decidability of a deductive system; the aim was to reconstruct the grammar of meaning of a given language. Thus, for Wittgenstein and Schächter, the formalist methods of scrutinizing language — in the spirit of the older formalism — did not serve as a tool for a logical critique of certain theories but rather were part of the descriptive semantics, whose main task is to offer an accurate account of semantic and grammatical characteristics of a language under investigation and to explain its distinctive nature. For this reason, Wittgenstein and Schächter ruled out, on principle, such operations— crucial for the formalism of Hilbert's school — as the translation of a given theory or its language into the language of formal logic or — after 1930 — arithmetization of syntax.

Wittgenstein's descriptivist approach is closely associated with his critique of the *Tractatus* and with the underlying acknowledgement of the limitations of the symbolism of *Principia Mathematica*, which Wittgenstein had *a priori* regarded as universally applicable and sufficient for reconstructing and expressing all possible contents (Fregean senses). From the perspective of general descriptive

[7]In the above-mentioned conversation with Waismann and Schlick, on 19 June 1930, Wittgenstein invoked the example of chess to explain the notion of meaning that springs from treating language as a sign-game: "*the signs can be used the way they are in the game*. If here (in chess) you wanted to talk of őmeaningŕ, the most natural thing to say would be that *the meaning of chess is what all games of chess have in common*" (Waismann 1979: 105, my emphasis).

semantics, the logic of the 'subject-predicate form' (Waismann 1979: 46—47) and the grammar of logical connectives (Wittgenstein 1964: 109—110 [§ 82]), turned out to be just a part of the grammar that determines the meanings of 'our language'. In order to distinguish the latter from the traditional grammar, Wittgenstein dubbed it 'the logic of the content' and contrasted with 'the logic of the form':

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)

For Schächter, it is already clear that questions about the logical properties of language and its signs can only be answered within the framework of the critical grammar. After all, their essential logical properties are nothing but semantically essential language rules, which can, and must, be established, or rather 'read off', on the basis of the actual use of signs. Naturally, as such, they are limited to a given language, and the issue whether there are logical rules that are common to all languages, or even necessary, boils down to the question about the so-called grammatical universals — understood, of course, in terms of the critical grammar (see Schächter 1973: 60—64 [part 2, ch. 1, §§ 5—7]).

2. Limitations of the formalist account

Despite numerous fruitful applications and the undeniable progress, the formalist point of view and the formalist methods associated with it imposed certain constraints on logical, philosophical, and — at least since 1959 — linguistic studies of language. The limitations of the modern-day Hilbertian formalism, concerning the interpretation of calculi and their application in the proofs of consistency, decidability, completeness, and soundness of the reconstructed theories, are well-known and acknowledged. Yet equally important for reconstructing semantics are some limitations of the formalist methods hidden in the interface between three parts or stages of linguistic research distinguished by Carnap (1939: 3—29): pragmatics of the language, its 'pure' semantics, and the 'calculus' built on it. In accordance with the method of reconstructing the calculus of a language, only semantic relations that fall under exact, unambiguous rules can be transferred to the semantics and the calculus of the language and reflected in them. This imposes fairly restrictive limits on a formalistically understood reconstruction of language, which persuaded Tarski to confine the applicability of his concept of truth to formalized languages of deductive sciences.

Even though habits and conventions constituting the semantics of a language, need not be consistent in order to be expressible in the calculus, they must not be

polysemous, vague, or simply unclear. The corresponding linguistic ambiguities cannot be smuggled into the calculus (into the 'pure' grammar — encompassing both the 'surface' and the 'deep' structure) of the reconstructed language and adequately represented. This kind of ambiguity, common not only in natural languages but also in the languages of particular branches of science, are *a limine*, methodologically, so to speak, doomed to remain at the threshold of pragmatics (Carnap 1939: 11—12). For this reason, Eleonor Rosch (1978) and other mentalists argue that logic, or even 'the tradition of Western reason' (Rosch 1978: 35), is fundamentally incapable of adequately reflecting the systematic vagueness and ambiguity of concepts and sentences of natural-language sentences. We frequently hear that language is no formal system, no calculus, and cannot be described in logical terms; and in justifying such assertions, mentalists often appeal to Wittgenstein and his 'second philosophy' (e.g. Rosch 1978: 36, Lakoff and Johnson 1980: 71—76, 122—125, 162—182, Taylor 1989: 38—40). Are they right, however, in regarding Wittgenstein as the precursor of such views?

3. (G) Grammatical ambiguities

Wittgenstein's conception of the sign as the totality of rules for its use together with the notion of sign-games and language-games lets us analyse possible kinds of vagueness and ambiguity on several planes. First and foremost, we should ask whether a simple sign of a language can be ambiguous or vague at all. If we set aside its material side and focus, like Wittgenstein and Schächter, on the rules of use, it seems that semantic ambiguity can only consist in the rules of use being (1) ambiguous, i.e. not uniquely specified or fuzzy, or (2) inconsistent. Yet, in the first case, can we speak of grammar, and especially of grammatically determined ambiguity?

There are, of course — as Wittgenstein explicitly acknowledges — games and languages "without their rules being codified" (Wittgenstein 1974: 63 [§ 26]). In assuming this, however, Wittgenstein declares that "we look at games and language under the guise of a game played according to [unambiguous] rules. That is, we are always comparing language with a procedure of that kind" (Wittgenstein 1974: 63 [§ 26], my addition). Methodological reasons justifying such an approach to the issue of ambiguity seem obvious. Most importantly, only a comparison with a calculus *sensu stricto* allows us to recognize and specify the lack of precision of relevant rules for the use of signs in a given game or a given language. Secondly, only a comparison with a calculus lets us formulate, in an exact way, the question about the specific nature of ambiguity in a given case and about its scope in a given game or language. Thus Wittgenstein's approach to the problem of ambiguity of concepts and propositions, as well as Schächter's parallel position, are at odds with the account offered by the advocates of the theory of prototypes.

3.1. (I) Inconsistency in the rules of use

The most obvious kind of grammatically determined ambiguity is connected with inconsistency in the rules for the use of signs. Since such inconsistency concerns the very 'sign-game', it must occur in all applications of the game. And since the rules in question directly determine the meanings of signs, their inconsistency should result in the total destruction of the respective meanings. Wittgenstein should not be credited with this interpretation of inconsistency in terms of the theory of language-games, although it can also be found in his writings. The idea actually goes back to Frege, and Wittgenstein drew on his works in this regard — through the mediation and under the influence of Waismann — just like in the case of the notion of sign-game and the conception of grammar as a sign-game.

In setting out the idea of formal arithmetic, merely outlined by Heine and Thomae, Frege expressly formulated the need for protecting this sign-game by means of a proof of consistency:

> The assertion that formal arithmetic permits of a completely consistent foundation accordingly lacks proof; on the contrary, its truth is subject to grave doubts. Thomae's contrary opinion rests on the mistaken supposition that the rules given in his second paragraph [cf. Thomae 1898] constitute a complete list and especially on his complete unawareness of the prohibitory rules which each new class of figures necessarily requires. (Geach and Black 1960: 215)

Naturally, it could not be consistency in the traditional, semantic sense. Rather, it would have to be a formalist counterpart adapted to the general concept of sign-game and — in the present case — to the properties of the sign-game corresponding to arithmetic. According to Frege — and to no one before him, since the issue had not been discussed in detail by the older formalists — *inconsistency* could only apply to *the rules for the use of signs*. For, granted that signs are nothing more than mnemonic material employed to present the rules of their use, and that the meaning of signs has been reduced to these rules, the traditional inconsistency between formulae or between their meanings must be reassigned to the rules themselves. It can only consist in a situation in which some rules contradict others — in particular when rules defining the use of a specific class of signs contradict other rules defining their use, e.g. general rules concerning numeral signs. Such a contradiction, in turn, can be revealed in the game only when some operations cannot be performed on certain figures or when an attempt at carrying them out fails to bring definite results which could be used in playing the relevant game. Such a 'crash' or self-destruction of a game occurs in the case of failure to impose suitable limitations on substitutions involving the sign 0 ('prohibitory rules' — Frege 1903: § 114, Geach and Black 1960: 210).

Yet how can we characterize such inconsistency in the game rules in wholly

general terms? For Wittgenstein, the paradigm case of incoherence and related ambiguities were internally inconsistent formal systems and the well-known antinomies, such as Russell's paradox and the liar paradox. Accordingly, he believed that the common property of incoherent sign-games consisted in the fact that they always involve a 'configuration' in which "I don't know what I'm supposed to do" (Wittgenstein 1964: 319). In the "true/false game" (1964: 321), e.g. in scientific theories and logical and mathematical calculi analysed by Wittgenstein — and generally: in games that involve winning and losing — the inconsistency in the game rules would occur in configurations which (1) are neither winning or losing and (2) are not the starting point for the next move in the game. Inconsistency of the rules within this kind of game could also appear in configurations (e.g. sentences) or positions in the game that can only lead to configurations which are neither winning nor losing. Finally, like in the case of the above-mentioned antinomies, inconsistency may arise in a configuration which is both winning and losing — if it is true, it is false, and vice versa.

Naturally, the distinctive characteristic of the ambiguity determined by the inconsistency in game rules, as shown by Frege in his critique of the older formalism, is that it leads to the total destruction of meanings determined by the rules in question. Such a destruction takes place, as demonstrated in § 117 of *Grundgesetze* (Geach and Black 1960: 212—213), e.g. when in introducing a new sign (a figure in the game) we neglect substitution-prohibitions governing its use. It turns out that the sign-game of arithmetic outlined by formalists leads to a contradiction. For, in accordance with the rules laid down by Thomae, which leave out prohibitory rules for substitutions involving the sign 0, we could — from the configuration "$(3 \times 0) = 0$" and the configuration "$(3 \times 0) : 0 = 3$" (obtained from the second law mentioned in the footnote[8] by substituting numeral signs for letters) — derive, by substitution, the configuration "$0 : 0 = 3$," and, by analogy, "$0 : 0 = 4$," which yields "$3 = 4$."

This leads, as shown by the 'proof' of the formula "$3 = 4$" (and we can prove, by the same token, any numerical equalities), to the destruction or extinction of meanings of numeral signs.

In this context, it is quite surprising that despite Waismann's numerous suggestions and arguments, drawn from *Grundgesetze*, Wittgenstein had long refused to accept this fact. This insistence can be explained, to some extent, by his purely operational or pragmatic treatment of the sign-game rules as rules for operations. For, in such a case, inconsistency in the rules results not so much in blurriness of

[8]Rules for numeral signs introduced by Thomae (1898: 1) include classical associative and commutative property for multiplication and subtraction enriched by the rule: $(a' \times a) : a = a$ and $(a' + a) - a = a$. Frege showed that they do not constitute a complete list of rules for arithmetic signs. Most importantly, there is no rule customarily associated with inequality ($\neq$) — or, more generally, negation — and, of course, no prohibition against substitution involving the sign 0.

meanings of particular signs as in unfeasibility of sign operations defined by these rules, that is, in annihilation of meanings of the rules themselves:

What is a rule? If, e.g., I say 'Do this and don't do this', the other doesn't know what he is meant to do; that is, we don't allow a contradiction to count as a rule. We just don't call a contradiction a rule — or more simply the grammar of the word 'rule' is such that a contradiction isn't designated as a rule. Now if a contradiction occurs among my rules, I could say: these aren't rules in the sense I normally speak of rules. (Wittgenstein 1964: 344—345)

The specific type of contradiction between rules, or rather the type of its manifestation, depends, of course, on the properties of the language-game under investigation. The only thing we can generally say about this kind of ambiguity is that in the case of contradiction among the rules we always arrive at a configuration, position, or situation in which the rules fail to determine what we should do, think, or accept next — a situation in which "I don't know what I'm supposed to do" (Wittgenstein 1964: 319).

But can we conceive of such ambiguities as ambiguities of linguistic signs, or should we assume instead that we are dealing not so much with ambiguity of meanings as with nonsensical configurations of signs such as "2 : 0," "3 = 4," etc.? The former solution seems more plausible, for two reasons: (1) such 'deadlocks' of language can be recognized *a priori*, which suggests that it is a matter of grammar alone, but also that we *are* indeed dealing with a grammar and so with a specific *language*. (2) If we were to assume that in the case of configurations such as "(3 × 0) : 0 = 3," "2 = 5," there are no meanings or linguistic expressions at all, then we would be forced to admit that the differences between all these cases, and in particular between various antinomies, are semantically irrelevant. We would have to assume that the liar paradox and the expression on which it rests — "I always lie" — as well as Russell's paradox with the corresponding formula "the set of all sets which are not their own members" mean exactly the same thing, namely — nothing; yet the liar paradox can be constructed just by means of the concept of sentence (not counting the universal quantifier and the propositional negation), while Russell's paradox additionally requires, at least, the concept of set and the concept of membership in a set.[9]

The liar paradox shows that the concept of sentence cannot be used without limitation in its original, naïve sense; thus it is the naïve concept of sentence that

[9]To be more precise, the original formulation of Russell's paradox, in the notation of *Grundgesetze*, involves the generalized primitive relation ($\cap$), for which Frege had established the equivalence: $x \cap \acute{\varepsilon}F(\varepsilon) \leftrightarrow \ F(x)$. By means of this correlation, Frege accounted for the fact that x falls under a concept (F) and thereby belongs to the extension of that concept, i.e. is a member of the corresponding set.

calls for additional rules of use and, thereby, grammatical regulations. On the other hand, solutions to Russell's paradox — even the one proposed by Frege and known as 'Frege's way out', as well as the one offered by Russell's type theory and by set theory — do not involve any semantic modification of the general concept of sentence. Frege's and Russell's solutions alter the grammatical rules determining the use of concepts (or, rather, propositional functions), while the set-theoretic solution modifies the rules for the use (and thus the meaning) of the sign of set membership and the concept of set. What these antinomies show, therefore, is nothing but the ambiguity of two 'naïve' notions — of set and of sentence.[10] Accordingly, a more thorough going examination of the impact of semantic antinomies, especially of Russell's paradox, with regard to semantic changes they triggered, could contribute to explaining an interesting fact in the history of logic and set theory, namely, the separation of the research concerning the content of concepts, or simply the 'science of concepts', from the research concerning the extension of concepts; the former being conducted in the field of logic as the predicate calculus and the latter becoming the domain of, usually axiomatic, set theory.

3.2. Language-games and their accumulations

3.2.1. The 'closed system' paradigm

One might think that the assumption about the meaning of signs, made by Wittgenstein during the formative period of his second philosophy, that such meaning presupposes a system of rules of use (in a sign-game), and that the rules, in turn, must not be contradictory, will effectively make the ambiguity of *signs* disappear from our sight. Naturally, in a coherent, and thereby 'closed', system of rules, no ambiguity is possible. In such a game, e.g. in a consistent calculus, in a system of sentences or formulae, we cannot even formulate a question which would

[10]It would prove useful to investigate more fully the history of Russell's paradox with respect to the semantic changes to which it gave rise. After all, its original formulation indicates that it reveals inconsistency in the rules of use not only in the case of the concept of set, but, above all, in the case of the concept of concept. It was precisely the concept of concept that, according to Frege and Russell, turned out to be unclear, or at least not sufficiently precise. More specific grammatical regulations were needed to define the relation between the content and the extension of a concept. For this reason, Frege believed that it was his Basic Law V, the so-called abstraction principle, $\acute{\varepsilon}F(\varepsilon) = \acute{\alpha}G(\alpha) \leftrightarrow \forall x\ (F(x) \leftrightarrow G(x))$, that was responsible for the antinomy recognized by Russell. 'Frege's way out' amounted to a modification of the use of propositional functions, including second-order concepts — together with the concept of concept. In fact, both of Russell's type theories (simple and ramified), as well as many other solutions to Russell's paradox, rest on analogous grammatical regulations, that is, on a modification of the rules of use.

lack an unambiguous answer within the system. Such a system is free not only of semantically unclear signs but also — in particular — of undecidable problems or issues, with which we 'don't know what we're supposed to do', as is the case with antinomies:

A mathematical system, e.g. the system of ordinary multiplication, is completely closed. I can look for something only *within* a given system, not *for* the system. What does 242×897 yield? This is a question within a system. There are indefinitely many such questions and answers. I can look for a certain answer only because there is a method of finding it. Algebra (calculation with letters) is also such a closed system, and the same applies to trigonometry as it is taught at school. I can ask, e.g., Is $\sin^2 x = \tan^2 x$? But I cannot ask, Is $\sin x = x - x/3! + x/5! - \ldots$? This is not for the reason that elementary trigonometry is somehow incomplete. (Waismann 1979: 35; in conversation with Waismann and Schlick, 19 December 1929)

The second question cannot even be formulated in terms of elementary trigonometry. Unsurprisingly, therefore, it cannot be answered in such terms. From the viewpoint of the system of elementary trigonometry, we are not in a position to build the formula contained in this question, and so we are unable to raise the corresponding problem. This is the case for the well-known problem of angle trisection. In elementary geometry, i.e. only in terms of compass and straightedge constructions, the problem cannot be framed. Its formulation is possible only within a much richer system, where compass and straightedge constructions can be described, or just expressed, algebraically. In the polemic against Weyl,[11] Wittgenstein generalized this grammatical fact by giving it a logical character — the character of a general law of the 'critical grammar' or the 'grammar of meaning'.[12]

So far as the issue of linguistic ambiguities is concerned, the most important and striking aspect of all these examples is that we are not talking about a *unique* system of rules of sign use — not only in the case of everyday language

[11] See Waismann 1979, 36—37, where Wittgenstein takes issue with (Weyl 1927b: esp. 20—24).

[12] According to Wittgenstein, "Weyl puts the problem of decidability in the following way. Can every relevant [*einschlägig*] question be decided by means of logical inference? The problem must not be put in this way. Everything depends on the word 'relevant' [*einschlägig*]. For Weyl, a statement is relevant when it is constructed from certain basic formulae with the help of seven principles of combination [*Kombinationsprinzipien*] (among which are 'all' and 'there is'). This is where the mistake lies. A statement is relevant if it belongs to *a certain system*. It is in this sense that it has been maintained that every relevant question is decidable" (Waismann 1979: 37, my emphasis).

(*Alltagssprache*) or natural language but also in the case of mathematical signs. Even the most basic mathematical 'calculi', such as trigonometry, arithmetic, etc., consist of even simpler, 'closed' systems or at least contain parts corresponding to such systems. This applies above all to the second trigonometrical expression mentioned above. Wittgenstein observes that with it:

> we have in fact moved on [from elementary trigonometry] to a new system that does not contain the old one but contains a part with exactly the same structure as the old system. (Waismann 1979: 35—36)

Another interesting example concerns numbers:

> the natural numbers are not identical with the positive integers, as though one could speak of *plus two soldiers* in the same way that one speaks of two soldiers; no, we are here confronted with something entirely new. It is similar when we take the step from elementary trigonometric functions to analytic functions defined through progressions. (Waismann 1979: 36)

The above examples, albeit simple, played a crucial historical role. The first and arguably the most clear formulation of one of the key notions of Wittgenstein's second philosophy, the notion of 'family resemblance', used to explain such unclear concepts as the concept of calculus, number, proposition, language-game, etc., and is directly linked to his analyses of various kinds of number and their relation to the general concept of number.

These early analyses have several advantages, which cannot be overlooked, not only in historical discussions of the development of Wittgenstein's views but also in systematic inquiries into language and its ambiguities. (1) In the interpretations of Wittgenstein's second philosophy and in its applications to linguistics, it is customary to associate each ambiguity with 'family resemblances' and thus to clarify the unclearness of the above-mentioned concepts by means of even more unclear ones. For, in contrast to the (general) notion of family resemblance, the family resemblances between cardinal, natural, rational, real, and complex numbers are exceptionally simple, clear, and distinct. (2) Although in *Philosophical Investigations* and Wittgenstein's other late writings, family resemblances are closely connected with the concept of language-games, they can nonetheless be described by means of a much simpler notion, namely the notion of a sign-game with unambiguously specified rules. (3) The account of family resemblances in terms of 'pure' sign-games lets us distinguish two markedly different types of *systematic* linguistic ambiguity.

The first type of systematic linguistic ambiguity is associated with the semantically uninterpreted 'grammar of words and formulae', i.e. with the grammar of

their use within a semantically uninterpreted sign-game of language.[13] Accordingly, such ambiguities can be classified, besides the inconsistency in the rules of use, as *grammatical* or *grammatically determined* ambiguities. They must be separated from ambiguities directly dependent on the interpretation of sign-games (necessary for employing them to describe things, give orders, carry them out, etc.[14]), which could be described, for this very reason, as *semantic ambiguities in the strict sense*.

3.2.2. (G.1, G.2) Ambiguity of signs and concepts

As suggested by the above examples, there are ambiguities of signs and concepts which do not amount to inconsistency in the rules of use but still deserve the title of purely grammatical or 'grammatically determined'. To use the example of the concept of number, discussed by Wittgenstein in its greatest detail, note that as long as we stay within the framework of one system of rules — within the grammar of natural, rational, or cardinal numbers — there is no room for any ambiguity regarding numeral signs or the concept of number. The concept of number, however, is associated with something much more complicated than any of the above systems or calculi. According to Wittgenstein, the general concept of number turns out to be so complicated mainly because there are more than one closed systems of rules of use (grammars) associated with the word "number" and with numeral signs, so that we are dealing not with one but rather with many systems of rules for the use of numeral signs.

Let us adopt, for instance, as Wittgenstein did, Frege's definition of cardinal numbers (in terms of the notion of propositional function, abstraction, and the concept of one-to-one mapping). Natural numbers — defined by induction — form a system consisting of two groups (N, 1, 0, +, ×). All their properties and all numerical equalities are demonstrated by induction. The same two methods (definitions and complete induction) can be used to prove laws concerning rational numbers, although the latter form a much more complex system, namely (N, 1, 0, +, - , ×, :), whose part has the same structure as natural numbers. By analogy, among real numbers we can detect a simpler system corresponding to rational numbers. Naturally, family resemblances between the latter two systems are not

[13] For a precise definition of these expressions and their application in analyses of ordinary speech and natural language, see esp. Schächter 1973: 11—13 [part 1, chap. 1, §§ 7—9], 28—32 [part 1, chap. 3, § 5].

[14] As for the variety of applications of the same sign-game, cf. esp. § 23 of *Philosophical Investigations* (Wittgenstein 2009: 11-12) and Lorenz 1970: 125—128, where — in reference to the paragraph just mentioned — Kuno Lorenz opposes the dominant tendency, in logic and philosophy of language, to 'confine the linguistic basis' to 'statements' and to consider other speech acts, such as ordering, asking, etc., as subordinate and secondary with regard to statements.

the same as between natural and rational numbers. Rational numbers are fractions (quotients of integers), while real numbers are, according to Cantor,[15] limits of fundamental sequences (*Fundamentalreihen*) of rational numbers, or, according to Dedekind, cuts of rational numbers.

Furthermore, Wittgenstein observes that:

A proof for real numbers is not a continuation of a proof for rational numbers but an entirely different thing. If any real number is given, then such-and-such holds for this number too, not because of an induction but because of the rules that I have laid down when calculating with real numbers. Thus such a formula does not mean that such-and-such holds good for all real numbers, but that if a real number is given, then I interpret this formula in such a way that it means that such-and-such is true of the limiting case, and I prove this on the basis of the rules that have been laid down for calculating with real numbers. (Waismann 1979: 110)

G.1. In spite of substantial differences, both natural and rational $2 + 2$, as well as real $2 + 2$, equals 4, and, in addition, the cardinal number of the union of two mutually exclusive two-element sets is four. Furthermore, each finite cardinal number can be uniquely assigned a natural number and thus we can map the set of finite cardinal numbers onto the set of natural numbers. Operations of addition and multiplication are commutative and associative for all the above kinds of numbers. With regard to the passage quoted above, it is important to note that it is the rules of the calculus (i.e. grammatical rules) laid down for real numbers that accumulate the majority of grammatical similarities between different types of numbers — mainly because these rules are drawn from the grammar of rational numbers. *This is precisely what we call 'family resemblances'.*

Thus there are similar signs among various kinds of number — not only in the sense of a similar or the same material but also in the sense of affinity between some, though obviously not all, rules of use belonging to different language-games. Thus it should come as no surprise that if we read "$2 + 2 = 4$" without specifying which calculus-game (*Rechenspiele*) or sign-game (*Zeichenspiele*) we are currently playing,[16] we cannot determine the meanings of the symbols occurring in these formulae or the meaning of the formula itself. After all, such signs and configurations of signs can be used in accordance with various systems of

[15]Despite the critique levelled by Frege against Cantor's definition of real numbers (Frege 1903: §§ 71—76), Wittgenstein adopted it at the expense of Dedekind's definition (Wittgenstein 1978: 288—289 [part 1, chap. 5, § 34]).

[16]This is precisely the manner in which Thomae (1898) treated individual mathematical calculi, and in particular the elementary arithmetic and the arithmetic of complex numbers: he used the terms *Rechenspiele* and *Zeichenspiele* interchangeably with respect to them.

rules. This is why, in themselves, they are systematically ambiguous, and it is a grammatically determined ambiguity.

At the same time, this type of ambiguity refers neither to general concepts of particular numbers (cardinal, natural, rational, etc.) nor to the broader concept of number in general (if there is such a thing); rather, it refers to *individual numbers* and their configurations, e.g. to numerical formulae belonging to the above-mentioned mathematical systems. Moreover, these ambiguities vary across numerical systems or even across individual numbers, so that we are actually dealing with a family of grammatically determined ambiguities. It is so because each numerical system (and, to a lesser extent, individual numbers) bears a certain grammatical or 'family' resemblance to the remaining grammatical systems (and analogously — to numbers). After all, an affinity analogous to that between 'natural two' and 'real two' also exists between individual numerical systems *qua* grammars or sign-games, and the corresponding ambiguities are reflected by the variety of definitions of numbers and their interpretations. In general, every ambiguity of this kind — stemming from diverse ways of using a sign, a combination of signs, or a system of signs, in accordance with different systems of rules (or simply grammars) — can be thought of as greater or smaller but it will always be a *grammatically determined indeterminacy of interpretation.* Furthermore, as suggested by the example of the concept of number, it is a *systematic* indeterminacy, grammatically determined and belonging, as it were, to the 'normal course' of language.

Schächter describes analogous cases of interpretative indeterminacy or semantic 'multiplicity' of signs of natural language and seeks their source in the 'specialization' of language, analogous to the plurality of grammars associated with numeral signs, and the emergence of expert vocabulary, e.g. connected with shipping, farming, metallurgy, the work system in a factory, etc. (1973: 15—16 [part 1, chap. 2], 24—36 [part 1, chap. 3, §§ 3—6]). The earlier, simpler and 'unspecialized' vocabulary is embedded in the expert lexicon. In other words, the grammatically richer special languages usually have 'parts corresponding to simpler systems' of grammatical distinctions. Signs of everyday language, once incorporated by the specialists into the more complex system of 'expert vocabulary', gain a new interpretation. Does it mean that they have lost the old one — just as the 'natural two', which is no longer supposed to be ordinary 2 but only +2, which in turn, 'by a logical necessity', so to speak, would have to become the equivalence class of all sequences converging to the same limit instead of being a simple number of objects? Not at all! Even the specialists, depending on their purposes, use the old signs or words in the simpler or in the more complex sense. Moreover, due to the accumulation of various systems of expert grammatical distinctions, signs can be used in one of many 'more complex' meanings. Wittgenstein deserves credit not only for recognizing, before Schächter, the above mechanism of linguistic ambigui-

ties, but also for showing that they are not so much deficiencies or imperfections of everyday language (*Umgangssprache*) as, on the contrary, manifestations of grammatical richness of language — and not only natural language at that.

G.1/I. The above-discussed ambiguities of signs stemming from their interpretative possibilities become much more complicated once the family of 'related' grammatical systems, determining these interpretative capabilities, consists not only of consistent systems. For, if at least some of them are inconsistent, then the interpretative indeterminacies arising in a *determinate* way, i.e. for specific interpretations, are coupled with inconsistencies.

G.1/P. It often happens, of course, that we use a language or its part without access to explicitly formulated rules for the use of signs or without being, for some other reason, fully familiar with them. In such a case, we are forced, so to speak, to read the rules off from the very use of signs. Then, apart from all possible grammatical ambiguities, the list of ambiguities of the language in question includes various ambiguities determined pragmatically.

G.2. There are, however, sign-games whose grammar is, as it were, *in statu nascendi* — not for extraneous and subjective reasons, e.g. due to an imperfect understanding or application of the rules of sign usage, but rather for intrinsic reasons. This was the focus of Wittgenstein's later writings, also continually emphasized by Schächter with respect to ordinary language. The resulting semantic instability of signs is determined by the *instability of the rules for their use*, that is to say, it is determined grammatically, similarly to I and G.1. We find perfect examples of such ambiguities both in natural languages — in which every synchronic state, every abstraction from continuous changes of meanings, can only be obtained by means of an arbitrary decision — and in the languages of particular scientific disciplines, including mathematics and logic.

After all, during every crisis of foundations (e.g. the crisis of the foundations of mathematics at the dawn of the 20^{th} century), we problematize the established methods, inference rules, criteria for acceptability of results, admissible experimental methods, types of definition, other 'specialized' foundations, and, in consequence, also the basic concepts, principles, and axioms. As shown by Thiel (1972, 1995: 330—337), two conditions must be met before we can speak of a crisis of foundations or a paradigm shift in a given discipline. First:

certain social groups responsible for its organization (usually the scientists working in a given field, but also public opinion) must reflect on the scientific practice (*Wissenschaftsbetrieb*) of this discipline,[17] voice justified doubts about its results

[17]The term *Wissenschaftsbetrieb* might be rendered as "science factory" or even better as "science-forming enterprise." For we are talking here about the totality of theoretical and material resources employed to achieve scientific knowledge in a given field and the organized groups of scientists exploiting them.

(theoretical sentences and technical instructions) or procedures used to obtain them, and demand changes in this practice. (Thiel 1995: 333)

Besides, a genuine controversy over foundations presupposes alternative proposals for changes of practice within the discipline, proposals leading to new foundations. Hence a controversy about foundations:

arises when influential groups of scientists seek to realize mutually exclusive proposals aimed at overcoming the crisis of the foundations of their discipline. (Thiel 1995: 333)

Each foundational crisis is thus determined, in equal measure, by the state of knowledge and by the 'grammar' of the language of a given discipline — as illustrated by the set-theoretical antinomies underlying the crisis of the foundations of mathematics — and by various pragmatic or sociological factors (no language, even the language of mathematical logic and 'pure' mathematics, is free of them). Nonetheless, once a crisis of foundations or, more generally, a paradigm shift is already present, i.e. once alternative foundational proposals are available — as illustrated by such projects of founding mathematics as logicism, intuitionism, and formalism — it necessarily results in a global destabilization of rules of the language of a given discipline. The crisis of foundations of mathematics in the wake of the 20^{th} century concerned not only its logical basis — especially the account of concepts and the abstraction principle (Hilbert 1922: 162) — but also the list of admissible methods of proof, and, above all, the principle of mathematical induction, criticized by Frege and Russell, as well as the principles rejected by intuitionists (the law of excluded middle and De Morgans's laws for quantifiers).

Thus, unsurprisingly, the destabilization of rules determining the meanings of fundamental notions brought to light the disputable nature, and — more importantly — *ambiguity*, of central mathematical concepts, such as the notion of natural number (thoroughly discussed by Frege in *Grundlagen der Arithmetik*), rational, and real number (e.g. Frege 1903: §§ 67—90, Thomae 1898, 1906, Hilbert 1922), the classical concept of set (criticized and rejected by intuitionists and Wittgenstein), the notions of function, continuum, continuity, etc. Thus the conceptions and theorems of what in the age of crisis, without any deeper historical or methodological reflection ('roughly', so to speak), was called 'classical mathematics' — usually referring to the body of established mathematical concepts, theorems, and methods — became radically and systematically ambiguous. Their meaning started to depend on the choice of critical arguments against the inference rules and the logical foundations of mathematics that were considered plausible, and on the position one took on the issue of founding the 'classical mathematics' — for this is what determined the set of accepted grammatical rules defining the

meanings of fundamental mathematical notions.

Accordingly, in the age of crisis, natural numbers could have meant, and did mean, a variety of things. They could have been defined in Frege's and Russell's way, by means of the concept of cardinal number, which in turn was defined with the help of the notion of propositional function and its extension. Yet if one rejected — like Hilbert — 'the logical notion of concept and its extension' as paradoxical, they could have been defined in the framework of Cantor's or Zermelo—Fraenkel set theory. One could also refuse — like Wittgenstein at the time of the *Tractatus* and intuitionists — to accept set theory and, instead, define natural numbers as the exponents of operations[18] or arguments of a fundamental sequence. Finally, they could have been understood in purely formalist terms, as figures in the sign-game of elementary arithmetic. Equally diverse were the possible meanings of rational and real numbers, of sets (including the uncountable ones), of the concept of function, and of many other mathematical notions.

We should bear in mind, however, that the kind of ambiguity discussed here has little to do with polysemy of concepts — rather, it consists in their vagueness or fuzziness. Although the ways of understanding numbers etc. were determined by alternative choices concerning the foundation of mathematics, and so by different grammatical regulations, all alternative interpretations preserved a common 'semantic core' of these concepts, equated with their 'classical' meaning, or rather with their meaning within 'classical mathematics'. Besides, the type of ambiguity in question — *pace* Wittgenstein — cannot be reduced, like in the case of G.1, to the occurrence of the same concepts across a family of related calculi. The crisis of foundations and the accompanying instability of rules is independent of whether the relevant grammar contains similar sign-games, together with signs and formulae affected by this family resemblance. The instability might as well affect a language in which no sign-games interfere or overlap with elements of other games.

In the analysed example, the crisis of foundations and the destabilization of grammatical rules did indeed bring out family resemblances characteristic of the concept of number, and — at least in the case of numbers — resulted in the conjunction of the two types of ambiguity. Consequently, individual natural (and not only natural) numbers became exceptionally convoluted and ambiguous. Due to the alternative attempts at reforming the grammar of numbers (functions, sets, ...), the language of mathematics did not contain any unique concept of natural or real number, even defined in terms of family resemblances. This was not due to interferences or overlaps within the family of related sign-games but rather

[18]This is the definition accepted by Wittgenstein in the *Tractatus*, 6.02—6.03 (1961). Frege had given a very similar definition, using the concept of series, in the third chapter of *Begriffsschrift* (1970). The intuitionist concept of natural number resembles Wittgenstein's as well.

because the basic rules of this whole variety within mathematics became debatable and 'fluctuating'. Of course, there remained numeral signs common to the whole mathematics (and, analogously, signs for functions, sets, relations, etc.) and some universally, or almost universally, accepted rules for their use, constituting the contents of 'classical mathematics'. Still, mathematicians may have, and did have, doubts about their meaning.

3.3. Ambiguity of 'excessively general' concepts

Given such a complicated constellation of sign-games, are we dealing with a *unique general concept*, e.g. a unique general concept of number, which encompasses all figures involved in the overlapping sign-games entangled in the crisis which gives rise to the instability of grammatical rules, or just with one word, which may mean different things depending on which specific regulations of grammatical foundations one stipulates (e.g. which project of founding mathematics one endorses)? It depends on what we call concepts, that is, on the notion of concept we adopt, and on whether we truly have one concept adequately representing entities as diverse as e.g. cardinal, rational, ..., complex numbers in their multifarious interpretations; interpretations which in turn depend on decisions concerning the foundations of mathematics. If the proposed systems of foundations are mutually exclusive, as is the case with intuitionism and formalism (or, previously, logicism), then it is impossible, of course, to arrive at a general and universally accepted concept of number. An analysis of the phenomena accompanying crises in other branches of science and the history of particular natural languages might offer numerous analogous examples.

Still, once we overcome a crisis and the associated instability of rules, are we in a position to find a common concept for the figures and configurations entangled in the grammars of related sign-games? To put it another way: do the languages assembled from related sign-games always contain concepts that can adequately capture all figures caught up in these families of sign-games? One thing is certain — in its own right, the notion of family resemblance does not secure a general concept capable of capturing all 'figures', 'configurations', or 'positions' constituting the related sign-games. As shown by Wittgenstein in *Remarks on the Foundations of Mathematics* (1978), we have no *general* concept of number capable of comprising numbers of all known systems of numbers — even independently of the crisis of foundations. Actually, we only have access to a *collective* concept of the above-discussed family of various sign-games or systems of numbers and to the concepts of grammatical similarities between them.

Nevertheless, we use the concept of number as though we not only had a general concept of cardinal number, a general concept of natural number, etc., but also, on top of that, a general notion encompassing cardinal, natural, rational, and other numbers. The same applies to concepts such as game, calculus, language,

proposition, expectation (Wittgenstein 1958: 20—22), knowledge (Wittgenstein 1958: 22—24), and the like. All of them, similarly to the concept of number, are systematically ambiguous, and this ambiguity is determined by the grammar of the sign-games in which one deploys them. According to Wittgenstein (1958: 17—20), these ambiguities are due to our 'craving for generality' — the tendency to equip words (and especially names) with unlimited, precise generality. In this connection, we can distinguish two principal kinds of ambiguity.

G.3.1. We usually use words: proposition, number, game, knowledge, etc. *in reference to a limited domain* of linguistic systems or language-games which form such-and-such 'our languages'. Then these words play the role of chapters in the handbook of grammar for these languages. In order to learn the meanings of such words and dispel all doubts, it is enough — yet it is no small task — to describe their various uses. But if, in addition, we wish to speak of *a unique concept* encompassing all these grammatical types and subtypes, then, more often than not, it will not be a *general* notion in the ordinary sense, such as the general concept of natural number, but rather a mere *collective* concept; this is due to the differences between systems of rules for the use of different types of proposition, number, game, types of 'knowledge', etc.

Schächter was reluctant to think of such words as ambiguous or vague (1973: 12—13 [part 1, chap. 1, § 8]). Rather, he was inclined to treat them as examples of polysemy or 'multiplicity of meaning'. We use the same sign material, the same word, e.g. "constitution," analogically within different systems of rules of use: "natural condition of body or character," "basic guiding principles of government," "material make-up of a substance," etc. (Schächter 1973: 13). In the languages of particular branches of science, it often happens that a word borrowed from ordinary language is given an entirely new meaning. Schächter's examples include signs or names in the field of physics, such as "work," "force," energy" (1973: 13—14). What these signs, as used in ordinary language and in physics, have in common is mainly — or, according to Schächter, exclusively — their material.

The rules for their use (their grammar, or — more precisely — the grammar of their use) in everyday language and in the language of physics are quite different. There are undoubtedly some grammatical similarities between them, for instance, in both systems of rules force, energy, and work have quantitative characterizations. But is this enough to form one general concept of force capturing all cases of 'physical' and 'everyday' force? Indeed, is the everyday notion of force a single *general* concept, or just a chapter in the grammar of 'our' everyday language? Should we consider the everyday notion of force, or some version of it, as the *prototype*, as a 'more genuine' force, while all other versions as more or less similar to that prototype force? Would such an account of a 'general' notion of force adequately capture the actual meaning, or rather meanings, associated with this word?

G.3.2. Still, even in situations such as the ones described by Schächter with regard towards "force," "work," "energy," we are talking about a kind of grammatical ambiguity rather than mere polysemy. Usually, however, these are ambiguities introduced to semantic analyses by logical and linguistic terminology and only 'secondarily' lent to the meanings reconstructed by its means. Ambiguities arising at the interface between language and its descriptions spring from the fact that the analysis of language does not recognize, as a rule, any 'natural' units other than sign, sentence (proposition), and language. The sentence and the sign are defined within the framework of the language to which they belong, which boils down to the dilemma: either within the *system* of the natural language or within the *calculus* to which they belong.[19]

This also accounts for the *terra incognita* between formal languages, or simply calculi, and natural languages — populated by languages which, like the language of mathematics, physics, sociology, philosophy, or the language of everyday life (*Alltagsprache*), are neither artificial (are not mere calculi) nor natural, and, more importantly, fail to form a *unique* calculus or system. Languages of this kind, as shown by Wittgenstein and Schächter, actually consist of numerous, more or less complex 'sign-games', closed 'systems of grammatical distinctions' constituting their exceptionally intricate and radically heterogeneous grammar of meaning. This non-systemic character — as emphasized in particular by Schächter — also marks German, English, Polish, Chinese, and any other *language of everyday life* (*Alltagsprache* or *Umgangsprache*), in which various signs are used in accordance with distinct systems of rules, in part derived from mathematics, physics, building, shipping, chemistry, computer science, law, economy, and so on, and so forth. Thus it should come as no surprise that in such a mixed bag of grammars many signs lack a homogeneous system of rules of use or a uniquely determined set of designata.[20] Since such ambiguities — whose instances are, among other things,

[19]Clearly, there are numerous considerable differences between the logical conception of language as a calculus and the linguistic, especially mentalist, notion of 'natural' language. Yet they are fairly similar in at least one semantically relevant respect: it is always the linguistic *system* that serves as the target of questions about the meaning of signs and grammatical forms. For generativists, as well as for logicians, a given language is simply a *unique* calculus whose signs and their meanings are defined — for 'obvious' reasons, associated by Chomsky with the 'creative character' of language — by means of ('surface' and 'deep') recursive rules. Also in both European structuralist schools (Prague and Copenhague), meaning of a sign is characterized, by and large, in terms of its position (synchronic value) within the *whole system* of language. Jakobson, seeking to unify the semantic heterogeneity of signs of natural language, defines their meanings as semantic invariants across various ways of use (Jakobson 1971: 225). The same idea of the *systemic nature* of language also underlies the theory of prototypes.

[20]An attempt to find unity and systemic nature in the grammatical diversity of everyday language (*Umgangsprache*) lead Schächter to an interesting conclusion applicable also to the notion of 'natural language' (which is a counterpart of the 'language

'prototypal categories' in natural languages — are only secondarily introduced to the reconstructed language via its various theories, they should be set down to the metalanguage(s) rather than to the reconstructed language itself and labelled *metalinguistically determined ambiguities*.

G.3.3. Another type of grammatically determined ambiguity occurs when, as pointed out by Wittgenstein, one wants to use words such as number, language, game, proposition, wish, etc., not only as collective concepts but also as general ones. One is then compelled to *propose*, on the basis of the known and clear family resemblances, a *general* concept which could be adequately applied (without confining it to the above-mentioned 'chapters in the handbook of grammar') to countless other (distinct from what is already known) examples of numbers, games, propositions, wishes, etc. Clearly, (1) a concept of this kind must be a more or less arbitrary semantic stipulation — a new rule for the use of a definite, already existing sign; (2) if we subsequently wish to transform such a definition into a general concept, we must adapt it to new 'grammatical systems', to as yet unknown (and not described in any grammar) numbers, games, propositions, languages, and so on. Hence, every such concept is doomed to various modifications.

It is exactly for this reason that Wittgenstein said that such concepts *dissolve* (1974: 119). Outside of the already known fragments of various grammars, their

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of everyday life', at least in the domain of contemporary languages such as German, Polish, Chinese, or any other): "only certain words and their combinations fall under the imprecise description of őeveryday languageŕ, and these are common to all special languages of sailors, factory workers, farmers, engineers and so on" (1973: 15 [part 1, chap. 2]).

Among such signs, Schächter only listed some propositional conjunctions, such as "and" and "not," and words denoting activities that are 'independent' of a particular profession or a special language, such as "go," "eat," "table," "left." It is doubtful, however — and such doubts predominate in Schächter's work — whether there really are words whose meaning is utterly independent of various human activities or more or less specialized languages. It is even more doubtful whether one could piece together all these words and isolated, partial, so to speak, rules of their use, so as to fashion any of the contemporary 'natural' languages. Still, there is no denying — and Wittgenstein and Schächter did not deny it either — that natural or everyday language indeed forms a certain whole marked by a kind of unity.

Yet it is also hard to imagine that this would be a whole or a unity other than the one found by Wittgenstein in mathematics of the age of the crisis of foundations and by Schächter in the everyday language of his time. Both languages form, to an equal degree, a 'network' of criss-crossing sign-games tied together by numerous family resemblances. Furthermore, this network is constantly amenable to changes — both as a whole and in each of its subsystems. Wittgenstein described its general properties *inter alia* by means of the metaphor of suburbs: "Our language can be regarded as an ancient city: a maze of little streets and squares, of old and new houses, of houses with extensions from various periods, and all this surrounded by a multitude of new suburbs with straight and regular streets and uniform houses" (Wittgenstein 2009: 8 [§ 18]).

content and extension is in constant change, and the direction of that change cannot be predicted or controlled *a priori*. In *Philosophical Grammar* (1974: 114—121 [§§ 71—76]), Wittgenstein regarded this kind of ambiguity as typical of most, if not all, grammatical notions supposed to describe — with unrestricted generality — certain grammatical items such as number, proposition, word, game, language, rule, calculus, representation, etc. Characteristically, with respect to the known types of games etc., they can be applied as collective concepts, encompassing certain grammatical systems or even general concepts of some grammatical items (such as a number or a proposition) fashioned within such systems. But if we try to transform them into general concepts then they necessarily 'dissolve', just as the general concept of game does:

For us games are *the* games of which we have heard, the games we can list, and perhaps some others newly devised by analogy; and if someone wrote a book on games, he wouldn't really need to use the word "game" in the title of the book, he could use as a title a list of the names of the individual games. If he's asked "but what's *common* to all these things that makes you collect them together?" he might say: I can't give it straight off — but surely you may see many analogies. Anyway the question seems to me idle [*müßig*], because proceeding by analogy, I can also come by imperceptible steps to things that no one in ordinary life would any longer call "games." [...] The case is the same with the concepts 'rule', 'proposition', 'language', etc. (Wittgenstein 1974: 116—117 [§73])

This is exactly how — according to Wittgenstein — all the above-mentioned *general* concepts (of number, proposition, game, calculus) 'dissolve'.

3.4. Indeterminacies

3.4.1 (G.4.1) Indeterminate conceptual characterizations

Linguistic ambiguities of this kind, well-known in contemporary linguistics, can be illustrated by almost any name or concept of natural language. Schächter uses, *inter alia*, the example of "to obey an order" ("*x* obeys an order"). Can we say that trained animals follow orders? Yes and no. The rules for the use of the word "order," like in the case of many other words of everyday language, allow us to distinguish not two but three areas of use:

to the first belong all those cases where usage admits a sign; to the second, all those where it excludes a sign; and to the third, all those where it allows no decision. [...] Suppose someone ask us: can we say that animals trained to approach on hearing a certain sign of a bell obey this sign? Here we must note the following: (i) When applying this word to man, the question simply does not arise, usage

is unambiguous. (ii) For objects like table and chair and so on nobody (except animists) will speak of obeying. In between we have the reactions of animals and plants, which more or less resemble either man or object. To the above question we would

reply: we are free to call this behaviour 'obeying' or not. (Poets extend the first area at the expense of the second, the sleeping apple, the laughing sun, the merry wind and so on.). (Schächter 1973: 12 [part 1, chap. 1, § 8])

Applying this expression to humans is uncontroversial; the same is true of not applying it to trunks or stones. However, when it comes to donkeys, Pavlov's dogs, and other animals, we are no longer certain if they too *are able to* 'obey orders'. The rules of language do not specify whether their behaviour can be described in these words. Arguably, Schächter is on the right track when he claims that "in that case a question as to membership of a borderline case [in the extension of a concept] is misconceived. For here language has by convention renounced the question" (1973: 14 [part 1, chap. 1, § 8]). The justification of this view also seems plausible:

or rather, its concepts are as though defined in a way that precludes such questions from arising: if someone asks them, he must have defined the concepts differently. (Schächter 1973: 14)

We cannot, however, avoid the question — which is perhaps partly diachronic or even genetic in nature — about the origin of such ambiguities or misconceptions. Do they always stem from the fundamental indeterminacy of the rules for the use of signs in natural language, where they are 'tacitly' established in the course of using the signs ('as we go along') and so are subject to the elusive influence of non-grammatical factors? If this really were the only source of the ambiguities in question, we would be talking about a change in meaning, a topic for pragmatics or simply for historical linguistics. Schächter himself was often inclined to understand the indeterminacy of the scope of applicability in this way.

It must not be overlooked that ambiguities of this kind take place in a synchronic state of language: that they are part, as it were, of its 'normal course'. After all, we often apply certain concepts to areas for which, according to the traditional grammar and the ordinary use, they were not meant. This is the case with "obeying orders," as well as with the majority of Lakoff's and Johnson's concepts marked by metaphorical structure. In fact, every concept can be used outside of its originally established area of application, and — as pointed out by Lakoff and Johnson —it is a perfectly normal way of using concepts, not only in natural languages but also in the languages of particular sciences and other

specialized languages.

3.4.2. (G.4.2) Conceptual inaccuracies

There is a related case of indeterminacy, which may be dubbed *conceptually determined*, or just conceptual, *inaccuracy*. Suitable examples include expressions like "until Friday" and "in the daytime." Does the expression "in the daytime" also refer to the last minute of the day or maybe even to the first minute of dusk? In a variety of conceptually defined orders and series, we encounter doubtful elements or even whole transitory areas and unspecified boundaries between them. Here again, language, with all its fixed conventions, gives us carte blanche to subsume a given 'borderline case' under a given concept. It is only a matter of making the rules of use more precise, wherever 'language has renounced' precision because, so far, it has not been important.

Are these ambiguities also connected with the fact that 'our language' (natural language) does not conform to the law of excluded middle, or, more precisely, to the *postulate* of sharply bounded concepts, explicitly put forward by Frege but accepted throughout the history of classical logic? Are these ambiguities characteristic of the 'logic of natural language'? Do they apply to the concepts of natural language alone or to scientific concepts as well? Perhaps they arise because concepts within 'natural language' are for the most part devoid of 'logical structure'; rather, they are defined in terms of 'paradigm cases' — prototypes — and roughly specified similarity to them, so that they can neither have unambiguous, clear contents nor — *a fortiori* — a clear-cut, sharp extension?

Presumably, in some cases the prototypal character of 'natural categories' may account for such phenomena. We should note, however, that — as pointed out by Wittgenstein in his analysis of the visual field (*Gesichtsfeld*) — the ambiguities under discussion rest on two assumptions. They are possible only if (1) we are dealing with two different scales — otherwise the request for a more precise specification could not even be formulated; in fact, neither of these scales need be more precise than the other (as opposed to the visual and geometrical space described by Wittgenstein): in order to enable requests for a more precise specification, it is enough that the scales are different and that (2) they concern the same 'conceptual characterization' (the same 'logical coordinate' or 'parameter') of a given class of objects. Of course, ambiguities usually occur when the same property of objects can be described both by means of a finer and by means of a coarser scale. This happens, for instance, when one attempts to translate ordinary descriptions of time, place, colour, sound, etc. into mathematical and physical continuous scales. Accordingly, it must be emphasized that ambiguities of this type are possible only if 'our language' not only contains distinct conceptual systems but also allows us to apply them to the same 'conceptual characterization' (the same property) of a given class of objects.

4. Semantic ambiguities (S.1, S.2, S.3)

All the above kinds of ambiguity are determined grammatically and may occur in pure sign-games as well as in semantically interpreted games, that is, in languages.[21] In *Philosophical Remarks*, Wittgenstein (1964:73—81 [§§ 38—48]) made use of the notion, or rather a metaphor, of a proposition as a yardstick or a ruler laid against reality, and with the help of the examples of the unit length, colour samples, etc., worked out one of the key semantic notions — the concept of means of representation (*Mittel der Darstellung*, Wittgenstein 2009: 25 [§50]). It then became evident to him that:

It's easy to understand that a ruler is and must be in the same space as the object measured by it. But in what sense are words in the same space as an object whose length is described in words, or, in the same space as a colour, etc.? It sounds absurd. [. . .] The unit length is part of the symbolism. It belongs to the method of projection. Its length is arbitrary, but it is what contains the specifically spatial element. And so if I call a length '3', the 3 signifies via the unit length presupposed in the symbolism. You can also apply these remarks to time. (Wittgenstein 1964: 78—79 [§ 45])

By incorporating such elements of reality, sign-games become games with reality, *language*-games in the strict sense — forms of life (Wittgenstein 2009: 11 [§ 23]). Once we deprive them of this embedding in reality, say, in order to explore them in purely formal terms, they turn into pure sign-games, which might as well be associated with different 'units' (unit lengths such as inches, feet, yards, etc., colour samples, sound intervals, weights, and so on). A 'pure grammar', that is, a sign-game, remains the same under all these interpretations. Yet its symbols and formulae signify something else in each case, depending on the means of representation to which they have been linked. Clearly, all language-games, including games with reality, that are based on the same sign-game are isomorphic, or at least homomorphic. This shows that, on the one hand, pure grammar determines, to a large extent, meanings and the whole semantics of language, yet, on the other, leaves unlimited space for possible semantic interpretations; that space is the subject matter of model theory.[22] At the same time, it is the

[21] It is precisely the interpretation, or the 'application' of a sign-game, that Wittgenstein saw as the key difference between sign-games and languages (Waismann 1979: 104).

[22] For these reasons, model theory should not be regarded as a descriptive semantics of language (in any case, that was not Tarski's intention). His concept of truth and model theory, like the 'method of models' before, is not a semasiology in Marty's sense but, above all, an instrument or method for proving consistency of deductive systems, subject to rigid restrictions regarding its applicability. For these among other reasons,

space of various possible ambiguities connected with interpretation, that is— in contradistinction to the ones discussed so far — *semantically* determined ambiguities.

Yet even a preliminary analysis of these phenomena requires additional elucidations. As we have seen, interpretations of a sign-game (like the whole grammar) are based not on sentences (propositions) but on rules. The choice of a unit length etc. — whether it has been made 'consciously' or 'tacitly' — amounts to a *stipulation* concerning meaning, and in a special case — to a kind of habit. In any case, however, it is not a sentence (proposition) which might be verified or falsified. The same is true of the connection between the means of representation and a particular sign of language together with the rules of its use. Accordingly, the process of interpreting a sign-game can be viewed both from a grammatical and a semantic viewpoint.

S.1. Separation of a pure grammar — a sign-game — from its applications lets us distinguish, at least within sign-games with reality, a new kind of ambiguity. It stems from the diversity of means of representation and their associations with distinct systems of rules of use — with different grammars. It happens both that (1) a linguistic community uses the same fragment of reality (means of representation) according to similar but different rules and that (2) the same grammar is associated with different means of representation. Good examples of the latter are various medieval ells and ounces as well as the tone *a'* in Bach's times.

S.2. The reverse holds if the means of representation are unique — if, say, it is a single object or situation — but the rules according to which we want to use them remain unclear, ambiguous, or even indeterminate. For this leads to blurriness of the very means of representation. It becomes unrecognizable. We cannot tell with which syntax we should associate it, according to which rules we should use it, in short — what it is supposed to mean. Naturally, in such a situation, ambiguity also affects the sentences presupposing that symbol or at least appealing to it. It marks all ostensive definitions and all predicates or 'predicators' (Lorenzen 1987: 25f) introduced by means of exemplars. Apart from ostensive definitions, Wittgenstein's favourite example of this kind of ambiguity was a pointing gesture or — in other words — the meaning of words such as "this," "here," "there."

S.3. Finally, semantically determined ambiguities should include ambiguities resulting from translation. Although translation is never a sufficient means of radical semantic interpretation, it often serves to clarify meanings and always yields an interpretation of one symbolism in another. We must bear in mind,

Wittgenstein rejected as insufficient all semantics based on translation, such as the 'method of models', and — in order to avoid 'the vicious circle of analytic philosophy' (Wittgenstein 1958, Lorenzen 1968) — he kept calling for 'radical interpretation'.

however, that from the viewpoint of Wittgentein's and Schächter's philosophical grammar, we can speak of a *translation* from one language into another language, from one symbolism, system, or calculus into another symbolism, system, or calculus (possibly belonging to the same language as one of its subsystems) only if both languages or systems are marked by a different grammar of meaning, different means of representation, or by both. Otherwise, we are dealing not so much with translation as with transcription.

Of course, translation thus understood, as a tool for explicating meanings, is ambiguous by nature, if it is possible at all. After all, nothing can guarantee that a system of rules for using a given sign material should be expressible in terms of a separate system of rules, or that one system of rules for deploying certain means of representation should be unambiguously and accurately represented by another system of rules for using different means of representation. As shown by Wittgenstein in *Remarks on the Foundations of Mathematics* with regard to 'classical mathematics' and its logicist explication, such translation is indeed possible in some cases. Even so, in order to determine its accuracy and thereby the lack of *ambiguity*, one must know both languages in the first place. Otherwise, even an exact and explicit translation is radically ambiguous— even if it serves as a means for communicating meanings of the translated language to a person who is as yet unfamiliar with that language. It is also unclear whether ambiguities, inaccuracies, and inadequacies connected with translation should be considered as semantic, grammatical, or pragmatic in character — or perhaps they involve all three kinds of determination.

5. Pragmatic ambiguities (P.1, P.2)

P. The issue of a unique assignment of meanings is further complicated if — apart from the rules of use and means of representation — we take into account the very sign material and the process of communication. The list of ambiguities is then extended to include all problems surrounding the connection of such-and-such signifiers with the rules of use and the means of representation. The resulting ambiguities apply not so much to the meaning of signs. i.e. the rules of use as such, as to reading these signs off from their use in the process of communication. Accordingly, they may arise even when the rules for the use of signs of a given language are, in their own right, coherent and explicit, and — in addition — the means of representation for a given sign-game are also uniquely defined. All signs — utterances, written marks, or other communicational activities — even if their grammatical and semantic foundations do not raise doubts, always leave open the issue of their interpretation by the receiver. After all, a given utterance, example, activity, etc., can be in accordance with a greater number of rules, and with each of them to no lesser degree than with the rest of them.[23]Accordingly, each sign

[23]The following example, adduced by Wittgenstein in *Blue and Brown Books*, per-

can be placed in different grammatical and semantic environments or contexts and thus understood in different ways.

P.1. First, we should discuss the original haziness of the rules of language — as opposed to the grammatically determined one — connected with the necessity of reading the rules off from the use of signs. It characterizes any process of seeking understanding (*Verständigungsbildung*). Of course, we might distinguish its various types, depending on whether meanings are read off in isolation from any linguistic system (the situation of a child learning their mother tongue) or whether the receiver decodes the message in the framework of a familiar linguistic system. In *Prolegomena*, Schächter quotes the following example which may throw light on this situation:

when trying to explain to a child that $2 + 2 = 4$ by using the words "you have two apples and you are given another two, how many do you have then?", the pupil replied that he had no apples nor had anyone given him two more. (Schächter 1973: 17 [part 1, ch. 2])

Is it a matter of ambiguity of the concept "2," of the concept of addition, or maybe we are just dealing with a stubborn child who refuses to learn the rules for the use of numbers, either by way of reading them off from the use of numeral signs or in any other way? Clearly, the latter can always happen. Such a situation illustrates a borderline case in which we can no longer reasonably speak either of ambiguity or of misunderstanding. The child, or another receiver of a message, just refuses to play the communication game.

P.2. In the above scenario, however, the student is not so obstinate. The teacher eventually manages to provide a rationale for the formula $2 + 2 = 4$ and to explain its meaning by invoking a situation from the boy's life:

But he did not succeed until by accident he hit upon a real circumstance in the child's experience by asking him to say how many pairs of shoes he had, and the reply came "one for Sundays and one for weekdays." Now he found it easy to elicit the fact that each pair consisted of two shoes making four in all. (Schächter 1973: 17 [part 1, chap. 2])

Does this didactic success mean that the boy understood the meaning of

fectly illustrates the general principle of ambiguities connected with reading linguistic rules off from the use and the widely-discussed issue of rule-following: "Someone teaches me to square cardinal numbers; he writes down the row 1 2 3 4, and asks me to square them. [...] Suppose, underneath the first row of numbers, I then write 1, 4, 9, 16. What I wrote is in accordance with the general rule of squaring; but it obviously is also in accordance with any number of other rules; and amongst these it is not more in accordance with one than with another" (Wittgenstein 1958: 13).

natural numbers? Even if he grasped the rules of the sign-game, so that both of them — the student and the teacher — reached an agreement as to the grammar of arithmetic statements, there is as yet no agreement about the application of these formulae. The boy is reluctant to apply numbers and their sums to counterfactual things and situations, so he consistently refuses to assign any meaning to many arithmetic operations carried out 'on paper only'.

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SCIENTIFIC HUMANITIES AND PHILOSOPHICAL CONCEPTIONS OF SYMBOL. META-SEMIOTIC CONSIDERATIONS

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I

The issue discussed in this paper, although controversial, is cognitively non-trivial. Namely, we shall be interested in the matter of possibility to use certain semiotic conceptions in research conducted in the area of a certain group of specific sciences, that is humanities. The aim of this work is to show the possibility of adopting in humanities ready-made conceptions of symbol created on the grounds of the analytical philosophy of language and logical semiotics. Also, we wish to outline the actual state of assimilating and using the mentioned philosophical conceptions by scientists who represent the sciences under consideration.

We formulate in the thesis that any application, or adaptation, of particular and specific semiotic solutions causes considerable difficulties of a methodological nature, which are related to interference in the scientific cognition process and to properties of this process. Also, we claim that reception of the mentioned ideas developed on the grounds of the philosophy of language and theoretical semiotics in scientific humanities is rather negligible. We think that in humanists' research practice attempts to use such philosophical ideas are of clearly limited and marginal character.

II

Let's begin with establishing what is understood by the notion of scientific humanities, that is sciences of humanities. Sciences of humanities are a group of

scientific disciplines[1] which are interested in man, society and widely understood culture, in which the ultimate, acceptable premises are a priori theorems (that is axioms and postulates), theorems directly based on experience and theorems based on understanding certain statements. Among these sciences it is possible to distinguish a further three types: (a) nomothetic (explaining), e.g. psychology or sociology, (b) idiographic (descriptive), e.g. history, and (c) axiological (evaluating), e.g. ethics or aesthetics.[2]

Let's try to briefly characterize humanistic disciplines. Humanistic sciences study man, the world of his artifacts, feelings and behavior. Thus scientific humanities are interested in: firstly, acts, activities or processes, secondly, objects of these acts (artifacts) and, thirdly, contents of acts or actions. And hence humanistic disciplines are interested in psychic processes, impressions, feelings, intentions, aims, motifs, dispositions, desires, needs, beliefs, concepts, language, social norms and practices, various forms and patterns of individual and group behavior, social institutions and structures, etc., in other words: the whole socio-cultural reality.

The mentioned sciences create two intersecting groups, namely: sciences on culture and sciences on society (social sciences). This division is neither exhaustive (complete) nor disjunctive. Especially the latter condition which is imposed on a correct logical division cannot be met when it comes to classifications of scientific disciplines.

Sciences on culture examine the whole spiritual and material achievements of societies, e.g. language, customs, art and literature. They are idiographic and typological sciences. Sciences on society, which are in principle empirical sciences[3] in a broad sense, usually have a nomological character[4] and are rather focused on behavior and processes typical of man than on artifacts or objects of human activity. The former group consists of e.g. ethnography, musicology, literary studies, philology, while the latter — sociology, psychology, and economy. The border cases are: anthropology, archeology, linguistics and even history.

[1]Let's highlight here that a scientific discipline is a certain didactic or organizational unit. Most often disciplines are distinguished on account of their formal object, method (especially the way of justifying theorems), or types of cognitive aims. Groups of sciences, that is scientific disciplines, which are interested in related issues create a branch of science.

[2]For more see Ajdukiewicz 1985.

[3]Empirical sciences are any disciplines based on experience, which examine the real world, that is, nature, man and social life.

[4]Nomologic sciences are the ones which discover laws. Sometimes instead of NOMOLOGICAL sciences, after Wilhelm Windelband, the expression NOMOTHETIC sciences (constituting laws) is used. It is advisable here to regard both terms as synonyms and assume that what is meant is the disciplines which discover, and not constitute, general theorems.

The fundamental purpose of science — understood as an institutionally organized activity aimed at establishing knowledge about reality — is, on the one hand, solving problems, and on the other, searching for good explanations for anything that needs explanation (Popper 1992: 249, Popper 1997). Scientific humanities is a certain branch of science and at the same time a branch of knowledge about a certain sphere of reality. Scientific humanities have both an explanatory and a descriptive function, which are both important. The former is executed mostly by sciences on society, the latter — sciences on culture.

The term "symbol" is very ambiguous. It is present in anthropology, ethnology, religious studies, history of art and literary studies. Also, it is used by linguists, psychologists and sociologists. Various researchers who employ the term frequently intentionally give it different senses. The conceptual chaos occurring in scientific humanities may sometimes cause considerable misunderstandings.

III

The word "symbol" (Greek *σύμβολον*) generally means: (1) a conventional sign which has a replacing function towards a certain object (concept, state of things, phenomenon) and brings this object to mind; (2) a certain graphical sign (most frequently of letters or numbers) which replaces certain concepts, quantities, measure units, or expressions; (3) a motif or a group of motifs in a work of literary art which has the function of a sign referring to another sphere of reality which has not been directly presented (Sobol 1999: 1059; cf. Simpson, Weiner 1989: 451-452). The word "symbolism" is understood above all as, respectively: (1) the totality of symbols used in a given branch; (2) symbols occurring in a given piece of work or work of art; (3) a symbolic meaning of something, a symbolic character of something (Sobol 1999: 1059).

Non-philosophical conceptions of symbol are created on the grounds of a certain group of real sciences, and indeed humanistic sciences, and common knowledge. Philosophical conceptions approach the issue of symbols and symbolism in a broader cognitive perspective than specific sciences or non-scientific common sense investigations. A philosophical reflexion is frequently a reference point for research in the mentioned specific sciences. However, the matter of the scope of application of various philosophical conceptions in these sciences is disputable.

The notion of symbol causes considerable interpretive difficulties. Symbols are quite commonly regarded as certain kinds of sign, namely conventional signs.

Specialist philosophical conceptions are aimed at answering the questions of what symbol is and what place it takes among other signs, gives the origin and function of symbols, and, finally, characterizes the relation between symbols and what they symbolize, as well as between those who use them and those who interpret them (Morris 1971a; Morris 1971b; Ossowski 1966; Ossowski 1967; Wallis 1971; Langer 1977; Wallis 1983a; Wallis 1983e; Dąmbska 1973; Dąmbska

1982). Very often specialist definitions and various explications of the term under consideration are made (Lurker 1986: 1027-1029; Eco 1986: 1029-1033; Gräfrath, Kambartel 1996: 158-160; Dobrokhotov 2001: 532-534; Turner 1968: 576-581).

It is commonly assumed that symbols are objects which bring to mind other objects. Controversies arise in more specific matters. Researchers frequently differ in views about what kind of objects may be regarded as symbols, e.g. it is contentious whether both visible, concrete, sensory perceptible objects created by man, and abstract objects, ideas of objects, features or relations, etc. can be symbols. It is frequently assumed that one of their properties is their dual nature, that is the possibility of being interpreted asemantically or semantically. A series of controversies are raised by the character of symbolizing. Differences in views appear when it comes to relations linking the symbol with the symbolized object. It remains disputable whether the semantic function of symbols results from a more or less freely chosen convention, arbitrary decisions, or whether it is always conditioned by a certain analogy (though not completely clear or specified) between the symbol and the symbolized object. It is believed that the interpretation of a symbol depends on many factors, e.g. the scope of knowledge of the interpreter, the context, or dominant cultural trends. Researchers interested in the issue usually agree that the symbolized content is more significant than the symbol-object which has a service function.

It can be said that generally there are two kinds of symbols distinguished in specialist literature. The first consists of emotional and axiologically neutral symbols, which are unequivocal, well specified, and semantically clear, and whose relation to the symbolized object is not motivated by the belief of the user that there is a causal relation or a similarity between the symbol and the object. These symbols are usually used to improve cognition or communication actions. Whereas the other kind consists of symbols which are not neutral axiologically, express emotions, are equivocal, non-specific and semantically unclear. The user is convinced that there is a causal relation or a similarity between the symbol and the symbolized object (Pelc 1996).

An example of non-iconic symbols of the first kind are logical, mathematical, physical or chemical symbols, that is: the symbol "˜" or "¬" stand for negation, the symbols "⊃ " and "→ " are signs of implication, the symbols of equivalence are "↔ " and "≡ ", "∧" is the symbol of conjunction, "∨" — disjunction, etc. Also, what comprises this kind of symbols is: arithmetic symbols, e.g. "+" — summing, "·" — multiplication, "=" — equality, symbols of physical quantities and constants, e.g. "F" — the symbol of force, "E_k" — the symbol of kinetic energy, "U" — the symbol of electric voltage, "G" — the symbol of gravity, "h" — the symbol of Planck's constant, "c" — the symbol of the speed of light in a vacuum, symbols of chemical elements, e.g. "H" (hydrogen, Lat. *hydrogenium*), "C" (carbon, Lat. *carboneum*), "Fe" (iron, Lat. *ferrum*), and measurement symbols, e.g. "s" (second),

"g" (gram), "m" (meter), "in." (inch), "A" (ampere), "K" (kelvin), etc. An example of the iconic symbols of the first kind is — most frequently represented on maps and plans — a sign on a fuel dispenser which stands for a fuel station.

An exemplification of natural symbols of the other kind are: eucharistic symbols (bread and wine), the eagle as a symbol and an attribute of Saint John, the lion — a symbol of power and authority, as well as a symbol and an attribute of Saint Mark. Non-natural symbols of the other kind are: the sphere as a symbol of completeness and perfection, a mythological Phoenix symbolizing rebirth and indestructibility, or mandala in Hinduism or Buddhism — a symbol of the Universe.

Sometimes it is believed that symbols of the other kind designate objects which are used to communicate certain values and cause an axiological experience (Dąmbska 1973: 37-38; Dąmbska 1982: 125). Let's highlight here that "a neutral or axiological nature of semantic content of a sign is not related to a type of objects which function as symbols, but to a type of their pragmatic use which is assigned by the nature of objects designated by them" (Dąmbska 2015).

Researchers representing specific sciences continuously find themselves in a situation when they make a choice of cognitive aims, methods and appropriate selection and analysis of collected material. Conducting cognitive activities researchers may benefit from some ready-made semiotic or methodological ideas which were created on the grounds of philosophy, or go their own way. No matter what choice is made ultimately, there are always "objective" limits of freedom of conducting scientific research. Now we shall have a look at certain limitations imposed to semioticians and methodologists by the process of scientific cognition.

IV

Scientific knowledge results from solving scientific problems. The process of scientific cognition itself has a very complex character. Components of this process are: the cognitive situation, the cognitive attitude, and products of cognitive activities. Cognitive situations are certain conditions in which research and scientific investigations are conducted (Znaniecki 1987: 352). These conditions are: cognitive issues and problems which generate topics and plans of research, objects of controversies in the scientific environment, the general state of knowledge, the existing methodological apparatus (procedures, methods[5] and research techniques,[6] as well

[5]The method is a model selection and system of activities which are used consciously, systematically and methodically, and which allow to effectively and efficiently obtain the assumed aims of action. Scientific methods are understood here in relation to basic kinds of reasoning, that is deduction, induction, reduction, and analogy. See Kotarbiński 1982: 78-79; Kamiński 1981: 184; Ostasz 1998; Ostasz 1999.

[6]Research techniques are related to a selection of certain means to obtain particular cognitive aims. Techniques are a more specific solution and application of scientific methods. They have the character of specialist tools used in the cognitive process.

as research instruments, that is devices for observing, measuring and experimenting), scientific language and information about the research object. The cognitive attitude is, in other words, a chosen intention (aim) of solving the problem which determines the selected direction of research and takes into consideration the specified cognitive situation (Znaniecki 1987: 351-355). The cognitive attitude is a reference point to develop the whole research strategy. Cognitive attitudes consist of research methods and techniques as well as research procedures, which are: the description (describing), explaining, anticipating, the idealization, defining, the conceptualization, the systematization, and the classification. (The complex and methodological system of cognitive activities, which consists of specifically chosen research procedures and appropriate research methods and techniques is called the research strategy). The fundamental products of cognitive activities are categories and concepts, models, theorems and theories.

The process of scientific cognition is individualized and depends on a certain problematic situation which faces a particular researcher. Science, understood as an activity and a product, is not assumption free. Ontological and epistemological theses mutually determine the research action (influence cognitive activities and the shape of products of these activities).

Any scientific research is conducted from three perspectives: (a) ontological, which is the vision of the world and man represented by the scientist; (b) methodological, which concerns knowledge and methodological practice; (c) axiological, which determines the system of values (Topolski 1978: 37). A special place is taken by the axiological sphere of scientific research. Philosophical assumptions of science have an effect on the choice of cognitive aims; metaphysics (ontology) and axiology undoubtedly have a heuristic value, they inspire, give meaning and validate the legitimacy of the undertaken research problems and the ways of solving them (Nowak 1984: 21-30, 35-36). Philosophical assumptions are an indispensable part of the process of creating scientific knowledge. Scientific knowledge assumes both an explicit and implicit form. In cognition there are unconceptualized factors, unverbalizable elements which become distorted when they are subject to linguistic expression.[7] A consideration of these problems should always be within the scope of interest of researchers-humanists and methodologists of humanities.

Somebody who deals with logic, general or specific methodology of sciences, or logical semiotics faces a certain dilemma when conducting their own research projects: to describe or to prescribe. Shortly, researchers must answer the question if they are rather passive observers, or engaged participants. Let's remind ourselves

[7]According to Michael Polanyi it is the so called "tacit knowing," which is able to take the form of "tacit knowledge." The "tacit knowledge" is knowledge which cannot be verbalized. It accompanies skills which are expressed in particular actions. Expressing such skills in a language other than the language of the procedure of conducting a given action is impossible (Polanyi 1967: 3-25; Polanyi 1969a; Polanyi 1969b; Polanyi 1958: 49-65).

that methodology — which also concerns logic and semiotics — may have a dual role: it may be either an instrument which provides rules of effective research action in order to guarantee scientific success, or a means which serves to reconstruct rules of research action. In the former case we are talking about normative methodology, in the latter — descriptive methodology. Normative methodology formulates recommendations and precepts, while descriptive methodology speaks of scientific activity and its results. Methodology in its normative function meets serious obstacles, which it must not transgress. The role of both a methodologist and a semiotician is in this respect quite limited.

Let's refer here to the observations of A. Motycka who distinguishes two myths which occur in contemporary meta-methodological awareness. One of them is called the myth of methodologist-advisor, the other — the myth of self-conscious researcher. The myth of methodologist-advisor "is related to the conviction that the methodologist may provide a scientist with such a method, piece of advice, rule or hint which will allow him to remedy particular problems in the scientific research process" (Motycka 1985: 58). According to Motycka, this myth is characteristic of these methodologists and philosophers of science who "in their best, although naive intention to give help to scientists in need, devote themselves to works on constructing pseudo-methodology with a character which directly intervenes in the research process" (Motycka 1985: 58). Thus, a methodologist should not try to give scientists specific advice concerning a particular problematic situation. In scientists' minds, the myth of methodologist-advisor occurs as the myth of Good Mr. Methodologist. The myth of self-conscious researcher is related to the fact that scientists do not always have the awareness of applied cognitive activities. Hence one should be cautious about the knowledge about norms and procedures used in the research practice. The author further writes that "the juxtaposition of these two myths allows him to clearly see the delusion of methodological mythology which, by connecting the myth of methodologist-advisor and the myth of self-conscious researcher, provides a completely magical image of a scientist who, having fed the methodologist with illusions on what is true in science, awaits his advice" (Motycka 1985: 60). Obviously Motycka does not claim that scientists cannot, could not or should not have a philosophical reflection on science or express opinions in the sphere of methodological awareness. The object of research in methodology is science understood as scientists' activities and products of their activities. The methodology where the aim is to give advice to scientists, is called by Motycka a garage methodology, because science "is not a motorbike whose repairing gets described in guides" (Motycka 1985: 72). It is not an obligation of a methodologist to advise scientists what they should do in a particular situation. The fact that "science makes use of particular methods and that methodologists are professionally interested in them does not authorize suspicions and does not induce conclusions that a methodologist is the one who offers solutions to a

scientist" (Motycka 1985: 69). We agree with these remarks.

Undertaking methodological matters cannot be related to patronizing, or formulating dogmatic prescriptions about how to conduct science. Similarly, in the case of insistent propagation of semiotic conceptions and ill-considered attempts to apply them in research conducted on the grounds of humanities.

Analogously to the above mentioned distinctions, we may indicate the myth of semiotician-advisor and the myth of Good Mr. Semiotician. The former myth is the wrong conviction that semiotics, especially theoretical semiotics, is capable of providing scientists with tools allowing them to solve particular cognitive problems which they face in the course of their research practice, while the other myth is nothing else than an illusory conviction of scientists themselves about specific omnipotence of semiotics and semioticians.

Let's remark here that the object of consideration in theoretical semiotics are semiosic properties (features) of sign. Theoretical semiotics of a higher level analyzes semiosic relations (functions) of sign.[8] Thus understood semiotics deals with describing and defining these properties, showing relations between them and ordering these properties, classifying as well as systematizing, typologizing and explaining them (Pelc 1982a; Pelc 1982b: 223-227; see also Pelc 1992: 23-24). In short, theoretical semiotics is an embodiment of fundamental research. One of the main tasks of semiotics is to analyze functions of speech, to prepare a conceptual and terminological apparatus aimed at reporting on various transgressions against postulates of reality, unequivocality and clarity of communication, as well as to systematically review these transgressions and to indicate preventive means against them (Ajdukiewicz 1974: 15).

Semiotics provides humanities with a rich arsenal of valuable cognitive instruments, but their usage lies only in the hands of scientists. Only the knowledge of actual epistemic problems in a specific branch of science, or a given cognitive situation, could allow methodologists and semiotics to take a fully constructive stance towards research practice and effectively aid representatives of real sciences.

The complexity and multi-layerness of the process of scientific cognition makes it considerably difficult to implement specific methodological or semiotic recommendations. The actual difficulty is an attempt to reconstruct ontological, epistemological and axiological assumptions (which are not always expressed *explicite*), and an analysis of a specific cognitive situation which inspires such and such research. In fact, scientists always wish to maintain independence in choosing the research issues as well as determining and modifying the chosen research strategy. An external interference in the cognitive process may sometimes disturb the cohesion of products of cognitive activities.

V

[8]What counts as semiosic relations is semantic, syntactic and pragmatic relations.

Observing the research practice of humanists, we can notice that there are a few different meta-theoretical approaches and attitudes. From the meta-scientific perspective there are mutually incomparable epistemological patterns, different opponent epistemological models and meta-scientific traditions (von Wright 1971: 1-33; Chmielewski 1989). As it is believed such divisions are related to different assumptions and philosophical preferences. Numerous researchers derive inspiration from other intellectual traditions: some are closer to analytical tradition, others — to hermeneutic tradition, some are in favor of naturalism, others are inclined to anti-naturalism. Not all scientists are in favor of the same models of science, that is identical normative conceptions of science, as a form of knowledge and cognition. Empirically oriented sciences on society, such as linguistics or cognitive psychology, generally prefer other epistemological patterns than descriptively oriented sciences on culture. Additionally, what overlaps with the opposition scientism — anti-scientism is a certain individual inclination and bias in favor of different semiotic conceptions.

Membership of a particular group influences the character of created works. In the face of barriers in the form of meta-theoretical convictions and attitudes resulting from adopted philosophical assumptions, some actions and propositions of semioticians and methodologists may turn out to be completely inefficient. Very often in humanistic sciences certain concepts are falsely regarded as obvious and "commonly" understood. Not infrequently problems of a semantic nature are ignored.

In works which today are considered classics, it is indeed difficult to find any reception of semiotic conceptions under consideration. Let's remember that these works were created in times when the results of semiotics were limited and difficult to access. Many authors in the past referred to their own language intuitions when analyzing rites, customs, and concepts of various societies. What often characterizes works under consideration is a broad approach to the research object, good technique and a quite precise language, but sophisticated semiotic considerations are present very rarely (Frazer 1894; Mauss 1968; Durkheim 1995; Kroeber 1952). And more than once the descriptions of customs, ceremonies, and rites contain only a brief reference concerning symbols and symbolism. Such works as a rule are devoid of a more general reflection on symbols as such (Benedict 1934; Evans-Pritchard 1962; Lévi-Strauss 1963; Lévi-Strauss 1966).

A specific case are publications of B. Malinowski which stand out as very perceptive, original and independent in terms of their considerations about semantic problems (see Malinowski 1946). A separate place, so to speak, is taken by works of prominent representatives of psychoanalysis. Researchers such as S. Freud or C. G. Jung provided no specific definitions of symbol, although they both — not identically — used this concept and understood it in their own characteristic way (Freud 1977; Jung 1981).

Nowadays we encounter a multitude of approaches towards tools created by theoretical semantics. Thus, it is possible to distinguish a few types of attitudes concerning philosophical conceptions of sign. Usually we may encounter works whose authors, describing and analyzing particular examples of symbols, rather do not talk about general matters (Eliade 1961; Eliade 1993; Roux 1988). Many researchers base on conceptions taken from works of Neo-Kantians or representatives of hermeneutics. Both of these tendencies, by the way, are represented by a certain group of philosophers who do not shun etymological considerations and remain more or less open to other epistemological approaches while making various explications (Cassirer 1923; Cassirer 1944; Ricoeur 1967; Ricoeur 1976; Gadamer 1987). More than once we may encounter works whose authors — aware of various conceptual nuances — looked for inspiration in different, sometimes very distant, intellectual traditions (Lurker 1998; Marchetti 2001; Dupré 1972; Filipowicz 1988; Czerwiński 1997).

A great number of representatives of sciences on culture and sciences on society conduct research on symbols on the basis of texts written by sociologists, anthropologists and ethnologists, and only marginally refer to works by analytical philosophers (Duncan 1968; Hałas 2001; Węcławski 1995). It happens repeatedly that even great historical syntheses which encompass longer periods in the history of a given cultural circle do not contain any — even short — semantic and pragmatic analyses (Le Goff 1988; Delumeau 1967). Sometimes it happens that works which undoubtedly stand out for their clarity and unequivocality, and written by representatives or obvious sympathizers of analytical tendency, do not contain meta-theoretical terminological analyses (Tatarkiewicz 1970; Eco 1985). Also, there is no lack of works from applied semantics in which there is no reference to theoretical semantics, while the problem of symbols and symbolism is treated only marginally (Uspenskii, Zhivov 1987). Additionally, there are cases in which the research on cultural phenomena is actually accompanied by ignorance of the problem of symbol and symbolism, and a low reception of texts from analytical philosophy (Carrithers 1992; Berger, Luckmann 1966; Cawelti 1990). Also, there appear publications which creatively combine findings of theoretical semiotics with achievements of specific sciences (Kłoskowska 1964: 77-93; Niżnik 1985; Wallis 1983b, 1983c, 1983d). Finally, there are works, usually bordering on philosophy of language, cognitive psychology, and linguistics, which not only use ideas of analytical philosophers, but additionally present their own, often polemical, competitive semiotic conceptions (Daddesio 1995; Haarmann 1990).

This whole, merely outlined, gamut of approaches determines the image of a certain sphere of research on cultural and social phenomena. It is beyond doubt that the meta-scientific approach influences the ultimate effects of undertaken cognitive investigations. If a particular scientist does not share certain values such as, e.g.: a bias towards formulating clear and unequivocal judgments and epistemic

minimalism understood as a dislike towards great metaphysical systems and a quest for "depth" or "essence" of things or phenomena, which is accompanied by the awareness of limits of human cognitive powers, then it is doubtful that this scientist will be willing to use ideas developed by analytical philosophers.

VI

Initially, we proposed to divide scientific humanities into two groups of sciences which permeate each other to some degree: sciences on culture and sciences on society. In both of these groups, the reception of semiotic conceptions of symbol is not equal or homogeneous. When looking at humanities as a whole we can see that the scope of interaction of these conceptions is quite negligible. Observing the research practice of humanists we perceive that they show a willingness to maintain a great degree of independence from the mentioned ideas. Scientists with considerable methodological awareness are substantially independent in conducting their research. On the other hand, a certain small number of researchers interested in specific sciences are also interested in philosophical reflection and improving techniques.

To sum up, let's highlight: neither semiotics nor methodology should limit researchers with strict prescriptions and postulates, it is advisable to be moderate and cautious in this respect, and formulate potential directives in a balanced way. It is not needed to impose terminological conventions too much or intervene in the conceptual network and research procedures used by scientists. One should not act as a legislator and an executioner at the same time. The role of theoretical semiotics and methodology is e.g. to provide and improve tools, while the use of these tools should be left to scientists.

For humanistic sciences, philosophical conceptions of symbol have mainly a heuristic and a systematizing value. What remains significant is the fact that the relation between philosophy and specific sciences is dual, and benefits are mutual. The results of research conducted in specific sciences may be successfully used on the grounds of theoretical semiotics, and not infrequently it happens, more than once these results are a valuable empirical and illustrative material, and may be helpful in explaining formulated theorems.

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Jerzy Kolarzowski

USING PRESUPPOSITION AS A VERBAL MEANS OF INFLUENCE IN THE COMMUNICATIVE PROCESS

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In the history of philosophy, presuppositions entered onto the scene when the category of pre-understanding was introduced by Edmund Burke, the late 18th century English thinker. Phenomenologists, particularly Alfred Schütz, a co-founder of symbolic interactionism (Woroniecka 1998), drew upon these concepts. Still, the philosophical categories of pre-understanding and prejudice [pre-judgment] have a number of counterparts in every natural language, and these are worthy of researching classification and detailed description.

Among the three functions of language – informative, ritual and persuasive – presuppositions belong to the third group, actually, but their persuasiveness is veiled, as it were, concealed behind the outer form of language communication. So, in the linguistic approach, pre-understandings and prejudices will be understood as expressions and individual utterances which mean that our interlocutor or negotiation partner receives a communication with a hidden assumption. This hidden assumption is supposed to evoke some specific reaction in their consciousness, exert a communicative and social influence that is not immediately perceptible to the interlocutor. Social influence occurs when the sender (individual, social group, institution) causes – by means of communications – changes in attitude, behavior, thinking, motivation and emotions.[1]

[1]The concept of presupposition is sometimes contrasted with the idea of scenarios and metaprograms in a way which has it that metaprograms are habitual mechanisms whereas presuppositions are innovative ones. To what extent they are innovations and how far they are accepted as something natural is not only determined by the

Through the application of presupposition, we can suggest the desirable contents to our interlocutor and with this, affect their actions. We do so in a polite manner, rather than imperative, and therefore we make its reception easier. So, the point is to be capable of persuading others to our ideas, influencing decisions (such as voting, purchasing some goods, etc.). If our influence is not powerful enough, and this is the case in most situations, the point will be to attract someone's attention for some time, inform someone of something, evoke liking and some positive associations related to ourselves and the content of the communication uttered, both at thatmoment and in the future.

In any sentence that involves presupposition, we can identify an INTRODUCTORY expression, which focuses the attention of the critical mind of the interlocutor and also the part that conveys the HIDDEN COMMUNICATION, acting upon subconsciousness. The part that acts upon subconsciousness can, as an expression, include several semantic strata: the INFORMATIVE LAYER and one that CREATES a PRESUMPTION, often determined by the context, sentence structure, the words used and their meanings.

Along with the postulates of cognitive psycholinguistics, we need notions that build the description of human experience in the categories of unity.[2] In the

flexibility of our intellect but, above all, by the language, which neutralizes and domesticates – levels the roughness of the cognition of the novel and the different. On metaprograms, cf. Jerzy Kolarzowski (2001). See also Pöppel and Edingshaus (1998). These authors write: "The principle of economicality tells us that we (our perceptions) are driven by hypotheses, attitudes and expectations [i.e. metaprograms, J. K.] or prejudgments/prejudices. It does mean, though, that we are, indeed, blind to that which is new. In actively shaping our perceptions and thinking only along a top-down principle, we would finally have to lock ourselves in a world of hypotheses, pre-established by ourselves. In recognizing that which we want to see, we would in the end see ourselves only – we would lapse into some sort of perceptive narcissism. However, we want to mix the top-down principle with the bottom-up approach. Then, whatever is new will not be taken as interference but will be built into the world of our thinking and perceiving: the top-down principle imparts a structure on our perception whereas the bottom-up approach gives it life. It seems bizarre (at first sight, at least) that such a manner of connecting the two principles should not only be advantageous in the processes of thinking and perception, but it also can have a general application to any complex system. A business can break up on account of low flexibility where the top-down principle dominates its management, but it can plunge into chaos when all goes along the bottom-up approach. The same concerns a family or a state." (pp. 71-72) [rendered from a Polish translation by L.K.]

[2]In the cognitivist research agenda, the division into traditional philosophical disciplines – epistemology, ontology and axiology – is negated: Looking back, it was ascertained that those who dealt with ethical issues were losing sight of ontological questions. Those few who were laying the foundations for philosophical systems and did ontology, rid it of axiological problems. So, it was either an activity that stemmed from silently accepted philosophical assumptions (e.g. Christian, Marxist or utilitarian

analysis of human consciousness, the realm of really existing objects cannot be separated from the cognitive contents derived from them, the criteria and ways of expressing judgments of the world and objects and also the ways in which these are evaluated. Translating the stream of consciousness for remembering the meanings of words does not differentiate that which is real from what is ideal, that which is subjected to judgment from what eludes judgment, that which is valuable in a context from that which is neutral or anti-valuable in another. It is, then, a project in line with the traditional divide between the sphere of being, methods of its perception and the sphere of values abstracted in our mind.[3]

Cognitivists classify the expressions by means of the opposition that operates two basic ideas: the notion that constitutes the ontological relation and the concept ofthe context filter.

The notion that constitutes the ontological relation will be any relevant abstract term, such as any word that corresponds to some value or object.

The term "context filter" will be any variable affecting the way an abstract notion is perceived and realized, such as the passage of time, the subject's emotional attitude or cultural derterminants. These variables are relevant insofar as they are reflected in the customarily accepted contexts of language use.[4] This distinction will be particularly useful when it comes to determine whether a linguistic expression is still introductory or presuppositional already (see "0. Introductory-presuppositional expressions").

In psycholinguistics, dealing with presuppositions deriving from the scientific program of cognitivism, and practically in NLP as well, rests upon a significant assumption.

The assumption is that the meaning of a communication is the listener's reaction (interest, better or worse shown, or, better still, exposing the motivations

ethics) or an abstract philosophical speculation on being that was easily susceptible to any ideological influence.

[3]See: the closing stages in Lakoff, Johnson (1980) and the introduction in the Polish translation (by Tomasz P. Krzeszowski) (1988).

[4]In the context of the language we use there are a number of axiological systems. In one of these we deal with a division into three: in a given context, we consider some goods valuable, neutral in another, and in yet another these will be considered anti-values, such as *drogi* [*dear/expensive*] in reference to prices. In another system, objects are divided depending on the context in which these are discussed, into dynamic and static. Again, only that which is dynamic can be positive on one occasion and negative on another; a neutral semantic context also can be envisaged. Another division was borrowed from psychoanalysis: the contents of cognition were divided into those that serve life – vital (connected with life instinct, erotic) – and not in the service of life (related to the instinct of death – tantalogical). Because in the latter case life was juxtaposed with death, and this is a dichotomy, the distinction introduced has contexts limited to the two, but are often symmetrical, e.g. in the expressions *life after death* or *death for life* – metaphorical representations of the states of human spirit.

of this interest) (Mudyń 1999). The originality of this assumption is about a peculiar understanding of meaning – different from the one traditionally accepted in epistemology, logic and non-cognitive linguistics. Left out are such problems in the history of European philosophy as the issue of universals, the classical definition of truth, denotation and semantics of the vocabulary used. To make this assumption more detailed and "reinforced," it will be given an obligatory and practical character. It has a status of "good advice." It is believed that, in the name of communication effectiveness, it is better to adopt the primacy of subjective comprehension on the part of the listener. One cannot adopt an assumption that identifies the meaning of our communications with our intentions. There are only two tools for exerting influence on our part as sender. These should not be seen in the context of cultural background where the encounter occurred. The tools we have at our disposal (here understood as skills) can only be more or less effectively selected and applied. We cannot rest upon an assumption that there is within the language used by the sender and the addressee an objective true meaning of the words being said, that there is some fellowship to be appealed to within the understanding of the world of ideas. We cannot treat our communication as a trustworthy, reliable and objectivized description as there are no reasons for it to be such for our listeners. A meaning of communication thus perceived becomes detached from the world of ideas objectively constructed or construed. Adopting the perspective that the meaning of a communication is that the listener's reaction protects (or at least warns) the participants, in communication, from entering the paths of fruitless polemics and disputes of the kind "what does the word mean?" "what should it mean?" "whose interpretation is right?" etc. At times, however, it can be a good starting point for the constructive process of negotiating meanings.

The same expression (independent sentence or part of a sentence) can be one presupposition or it can include several presuppositions. Presuppositions can be combined. By combining presuppositions we attain different effects. We either make them more subtle – creating a subtype of a presupposition; or we reinforce them, with an accumulation; we can also create a new type of presupposition, which has a different semantic meaning and a different context of application – we attain a new presupposition.

Those who apply persuasion techniques into practice will have noticed that it is a good idea to accumulate three or four presuppositions. One or two can be "unpacked" by our brain during a conversation. What is meant by "unpacking" is both theright comprehension of the words and a correct understanding of the meaning of the words. The task of presuppositions is a veiled imputation of our intentions, thanks to which they are more easily accepted by the other party. The listener memorizes them and, unless their attention is intense and defenses inherent in the habits of consciousness keen, they can receive the speaker's intentions more easily, even if they do not suit them at all. The problem inherent in that which

they have heard, if valid, will be appearing in their consciousness, recur and accompany them in a number of everyday activities, but it can also be considered from various angles. If the listener has no negative experiences connected with the speaker and the problem mentioned, they will seek to find positive sides in what the less conscious mind has remembered. Naturally, most people seek good rather than evil in the whirl of professional and social experiences.

Applying this idea to too many presuppositions one after another, such as more than four, is not to be recommended. If we do so, what we are saying may sound unnatural and cause more attention to be directed at our words and outer behavior. As a result of keen observation, the interlocutor can, based on our appearance, presume our intentions, these kinds of speculations do not always lead to the right conclusions.

No more than four presuppositions used in one sentence sound persuasive and enable the achievement of communicative objectives, which can be either about attracting attention to the first part of the sentence – an introductory-presuppositional expression – or on its subsequent parts connected with the intentions being conveyed. The subsequent course of the conversation will determine, depending on the atmosphere and context, whether the other party will deal with introductory settlements and their specification, or immediately proceed to providing an answer, along with our expectations or not as the case may be.

It may also happen, and indeed it does happen, that the reaction to the second or third presupposition will not come at once and that in the first part of the conversation it may not occur at all. It is only when we combine the wishes of our partner with our own selves – expressing that in words or gestures – will we discover the effects of the effort undertaken and appreciate the time devoted to the study of presuppositions.

In selecting some expressions from casual language and classifying those, I mean to make the skill available to all who will get familiar with the following classification of presuppositions. This classification is not easy as it is made up of a number of subsets. These will be divided into subsets such as implications – they are generally one type of presuppositions but because there are divisions among implicative expressions, every expression that differs in structure from others is a different type of presupposition. Presuppositions appearing as questions with a concealed intention only constitute separate classification types. The difficulty in classifying presupposition is that the existence of a new type of presupposition is determined by the bond connecting words and their grammatical form with the intention of the speaker. What determines the intentions of our communications, in turn – other than the richness of vocabulary – is the syntactic capacity of the expressions used: there are questions that can include a negation and those that lose their point in the interrogatory form.

These are the expressions made up of the verbs *know* or *imagine* as well as

words having a big syntactic potential, such as *if you, surely, once/one day, what would it be like, how, whether,* as combined with the verbs *know* or *imagine*. These words make numerous combinations with others as well as amongst themselves, and therefore we can say that what is meant is an introductory communication, which contains words that are unusually "adhesive:"

What would it be like if you imagined...
Imagine what it would be like if one day...
If you knew that one day your imaginings...
(Numerous permutations of such expressions are possible)

The thing is that each of the words discussed here can "play an introductory part" and can itself be a presupposition depending on the context in which it is used.

The verb *know* occurs in these expressions as a signal of a communication that appeals to reason and performs a role that is both introductory and presuppositional (see "4. Consciousness Presuppositions").

The verb *imagine* has a bigger introductory and presuppositional power as that which is imagined does not have to fulfill the requirements of the rigor of a critical mind – it becomes a signal to let fantasies go free, lowers the tension related to intense attention and sets in motion this part of our mind which is responsible for sensory constructions (usually visual).

It has been observed that women tend to use the verb *imagine* while men usually appeal to the interlocutor's knowledge and transform an affirmative sentence into the question starting from *Do you know?*

For men, the expression *imagine* usually means irony or irritation whereas women use it freely as a way of starting a social chat or attracting attention to what they have to say (Tannen 2001).

Communicative sentences in the form of questions appealing to reason are more natural and more common for men than for women in positive and neutral situations. Women associate tension, irony and irritation with such questions.

The expression *surely* and *once* tended to act in two ways: as an introducing expression and a presupposition through homonyms, appealing to certainty, something possible which, though improbable, has none the less happened (see: "6. Ambiguity").

Likewise, the conjunction *if*, as well as the expression *what it would be like* may just as well be introductory and constitute an important element of implicative presuppositions (see: "9. Implications").

PRESUPPOSITIONS WITH "NO(T)"

People do not accept *no(t)* into their subconsciousness. So, when we say a sentence with *no(t)*, the addressee behaves as though they have not heard the negation. How does our mind react to persuasion communications containing

negation? Dear reader, please ignore your left hand for a while and the sensations that come from it. Are you still ignoring your left hand? Another example: *Do not think of a black cat.* Surely, after hearing these expressions, we will pay attention to our left hand and will think of a black cat. It happens this way because for our brain to be able to accept and comprehend the communication about the non-thinking of a black cat first it must understand the word *cat* – think of a cat. This is extremely important when it comes to persuasion communications which, irrespective of our intentions, may be negative or positive in the semantic foreground.

Presuppositions containing *no(t)* may be used in a negative, positive and subtly positive meaning.

A subtype of a presupposition containing *no(t)* in a negative meaning.

Do not get angry.
Do not worry.

Let us imagine that we are on our way home and hear: *Do not get angry: I want to tell you something, but please promise that you will not get angry.* Obviously, upon hearing that we attract our attention to "getting nervous" and its possible causes. How do we react if, before an important conference, attended by a number of important people, we hear the following words of consolation from a friend: D*o not worry. You will surely not lose face during this speech.* So that we can process this communication we must first understand the words "worry" and "lose face" (before we make those negative), so we must admit the experiences, feelings and images connected with worrying and disgrace. If, instead, we heard this: *I am sure your address will be great*, then our attention would concentrate on positive sensations, images and associations.

If we address somebody in a negative form: *Don't worry. Just do not fall over, Do not fall down,* we evoke the thought of worrying about falling and we can cause such results (Maciuszek 1999).

A subtype of a presupposition with no in a positive meaning:

Do not desire fame.

Using the word *no(t)* in commands or suggestions can be a tool of exerting a positive influence on the interlocutor's mind. Somebody encouraging us to work may say:

Do not yet think about the riches you can get or the most beautiful places you can go to, organized by a company for leaders, about a dream car or of the education of your children. Do not think of it yet, focus of the work you are supposed to do and what is expected of you.

When listening, the images of beautiful cars, holidays in exotic places, elegant hotels and foreign universities will cross the interlocutor's mind and the addressee can experience a joyful arousal.

A subtype of the presupposition *no(t)* in a subtly positive meaning:

Sometimes our influence can be more delicate, when we precede a negation containing *no(t)* with a conjunction *if/or*.

I wonder IF you would. We could go there OR not.

A positive and subtle use of presupposition containing *no(t)* can sometimes be weakened by the word that follows: *do not joke, do not be jealous*. The listener does not stop joking or being jealous right away. Sometimes we can repeat the communication several times. If in such communications we achieve the desired effect, it is not thanks to their semantics, but thanks to the tone of voice, change in posture and other extra-semantic means of influence.

PRESUPPOSITIONS USING TIME SEQUENCE

These are sentences using the words positing an activity in time: *during, after, when, at the time, before*. Adding positive associations, we obtain certainty that the information will be well received by the listener.

When we sit down to talk tomorrow, these documents will be in order.

This sentence assumes that despite the lack of order with the documents, tomorrow the talks will go as planned before.

Before you sign the contract, I want to discuss something with you.

The presupposition makes an assumption that the person will sign the contract

Similarly, the structures:

Do you want to read the flyer before you decide to buy this product?

Are you visiting her after our meeting?

This sentence assumes that the meeting will take place.

I wonder if after purchasing this product you will see our offer.

Presuppositions using the word *after* usually have a structure as follows: *Do you want to do x after doing y?*

Presuppositions with time sequences using the synchronizing word *during* direct the listener's attention on the first time plane implied by the time adverbial and allows for suggesting something less nice in the (other) clause.

During the wedding, we will be able to discuss some of the issues that have come up.

The nice associations connected with the word *wedding* build up an assumption that while it is being held, there will be a time when we will be able to probe or "soften" our interlocutor.

While you are getting to know our business, you will fully appreciate the possibilities related to entering into co-operation with us.

The sentences using the word *while* will have this form: *x will happen while y happens*. The word while refers to the synchronicity of past or future situations and thus is perfectly suited to time sequences.

Presuppositions using a time sequence are easy to detect for a skilled negotiator. The thing is that suggesting a time sequence might allow us to know about what has happened, what will happen or what has been planned and what our interlocutor is unaware of. Using time presuppositions might cause our partners to accuse us – rightly or not – of dishonesty, bad intentions or keeping silent about circumstances that are important for our interlocutors. Therefore, in consciously using a time sequence presupposition, one needs to take into consideration the possible effects of their use.

In official language, presuppositions with a time sequence tend to sound artificial as these refer to circumstances unrelated to the situation, which, however, might attract the listener's attention, such as:

Before I came here to address you...

In Polish, we appeal to presuppositions with time sequence more often in relations with the near and the dear as well as in those contacts we would like to make seem familial.

<CLIPS>

The metaphorical term *clips* has been used to denote affirmative and, more often, interrogative sentences, containing the words: as/for*, but, either, or*. "Clips" create a choice, without questioning the experiences of the interlocutor. Possibly, when interrogative, they create some assumptions.

Do it for me for I'm in a hurry.

It is interesting that the word *for* in a sense acts in such a way that whatever follows is not very important. It may be significant for the sender of the communication but not necessarily for the addressee. The following experiment has proved it: various people joined the queue standing before a photocopier asking for them to be let through. Those who gave some justification stood a better chance than those who did not provide any (Maciuszek 1999: 68).

Please let me through for I want to copy some pages in peace.

Please let me through to the ticket office as I need to buy a ticket and get to ...

We can use this trick in difficult situations, such as when we are in a hurry to catch a train, but we need to remember about a nice and concerned tone of voice and an attitude that is expecting a concession, which incidentally can be rather vague (such as a slight movement of the body that allows us to get to the ticket office).

It happens that we get this answer: *You are absolutely right, but ...* meaning that it was conceded that we were right, but the request was denied. Using *but* cancels the first part of the sentence in a subtle manner. Let us compare how we react to the first two sentences:

Yes, you are satisfied with the collaboration with company X, but we would like to present you with our company.

One can hardly be satisfied with company X in the long run. You had better learn about our offer.

The difference between the sentences is that the latter overtly undermines the conviction of the speaker and provokes them to defend their position. The first, though, arouses doubt regarding the first part of the sentence without an open negation and thus causes no opposition (Maciuszek 1999: 69).

A subtype of the presupposition of "clips" using an option of choice rests on the use of the word *or*. It provides even bigger possibilities than *for/as*. It is assumed that at least one of the number of possibilities will come about. It creates the situation of choice to a limited extent, dependent upon a more fundamental assumption.

Do you prefer to discuss the issue now or in the afternoon?

The content of the sentence assumes that we will discuss something, but we do not know when. So is the case with the questions:

Will you be coming to the presentation this coming Tuesday or next?

Are you paying in cash or by money transfer?

Sentences featuring such words as *because, since, providing* often contain assumptions-presuppositions that suggest a limited choice or making it a matter s of interest to us (those on account of which we want to influence the listener).

Because you are interested in new ideas, I will tell you about a proposal.

Interestingly, the presuppositions of the "clip and choice" type occur as statements or questions and using them in the form of questions increases their strength and muffles the suggestion. Their impact manifests itself more strikingly if we use several assumptions and do the so-called accumulation of presuppositions. The mind of the listener will accept more presuppositions unconsciously then (Maciuszek 1999: 71-72).

I was wondering WHETHER you will copy documents for me IF you have some free time WHEN you go to work.

In communicating the above we are making assumptions: you will surely go to work, but I know you may be busy, so I want to be polite to use your kindness.

In creating presuppositions of the "clip and choice" type, we had better remember to empathize in the situation of the other party and avoid the weakening of the power of presuppositions but accumulating too many of those; rather we should reinforce them. Therefore, choice presuppositions ought to be made use of in correspondence when we have the time and can think over each word that goes into our commercial letter of intention, response to an offer, arrangement of a meeting, demand for explanations or one that urges the other party to do something specific.

CONSCIOUSNESS PRESUPPOSITIONS

These are presuppositions that attract the listener's attention without allowing them to undermine the idea contained in it. We use the construction of "hidden authority" then. These sentences include words and phrases such as: *know, realize, notice, see, hear, imagine.*

Do you realize how much I have done for you?

Explaining the presupposition: I have done so much for you – a certainty. Are we certain how much?

These kinds of presuppositions use an externally or internally hidden authority, veiled under the words: *know, realize,* etc. In such presuppositions, the context and self-confidence are essential, but these should not be strikingly overdone. A subtype of consciousness presuppositions operates the other group of words: *see, hear, imagine.* They refer to functions related to consciousness rather than consciousness itself, and force the listener to focus their attention; they can also convey indignation.

Imagine what has happened to me.

— to pay closer attention.

Has anyone heard of such a behavior that....

— indignation.

TIME CHANGE

Time change is a weak presupposition, which is essentially about the confirmation of any information and creating a context, which in the name of agreement calls for the specification of the extent of the information. In a presupposition with a time sequence, a limited choice is proposed; in the presupposition using time change the listener is made to face the necessity of making a vague utterance more specific so that they can understand the intentions of the speaker.

The sentences that contain the words: *begin, finish, stop, continue, as well as yet, already, still, continually*, along with the appropriate verb are the explication of this presupposition.

When we want to stop collaboration for a time, which is in our opinion not tantamount to ceasing friendly relations, we can say:

What will finish and what will continue?
Are you still bearing a grudge?

– why don't you give up your emotional stance and all will come back to normal?

The above presuppositions with time sequence and time change as well as consciousness presuppositions can be applied when forming application or splitting sentences.

AMBIGUITIES

Phonological ambiguity occurs when a word of the same form has a different meaning. Synonymous to phonological ambiguity is the term "homonyms," except that the term encompasses ambiguities arising when a figurative use of language is used. Linguists are arguing about the existence of strong and weak versions of homonyms.

Strong homonyms[5] occur when the same word has two different meanings that have nothing to do with each other, such as a *lock* in the door and a *lock* on one's head.

Examples of weak homonyms include the noun labor, the adjective fishy and the verb consume. The verb labor always means an effort, such as labor force,

[5]The authors of a book on the foundations of cognitive linguistics deliberate on the gap existing in language research regarding homonymous ambiguity: "The authors of a book on the foundations of cognitive linguistics deliberate on the gap existing in language research regarding homonymous ambiguity: "To our knowledge, no one explicitly holds the strong homonymy position, according to which concepts expressed by the same word (like the two senses of "buttress" or the many senses of "in"), are independent and have no significant relationships. [...] Although virtually all homonymy theories espouse weak version, in practice there seem to be only strong homonymy theories, since no one has attempted to provide the detailed account of similarity necessary to maintain the weak version of the theory. And there is a good reason why no attempt has been made to give such a detailed account of the kinds of examples we have been discussing. The reason is that such an account would require one to address the issue of how we comprehend and understand areas of experience that are not well-defined in their own terms and must be grasped in terms of other areas of experience. In general, philosophers and linguists have been concerned with such questions." (Lakoff, Johnson 1980, p. 114).

but it can also mean specific efforts connected with childbirth. The verb consume can be related to eating food, but also, more kind of figuratively, to feeding, as it were, of a person, money or resources and in overpowering or such as using up an object of consumption.

Problems in communication, such as negotiations, are also caused by adjectival homonyms. Words such as fishy and suspicious. Fish sometimes stink and so do deals, and so this metaphor has entered the language of business. Suspicion is close to falsity:

This is a false perception of the issue.

This sentence might meana lack of consent or misunderstanding of the interlocutor, having no knowledge and an erroneous view due to error or it could mean a deliberate disinformation, a lie. The word *false* thus means a wide range of guilt: from a carefree lack of focus, misunderstanding of someone's reasoning or value judgment to misinforming on purpose. This ambiguity can easily be exploited for the sake of defending one's position, company or oneself by explaining:

We really care for the truthfulness or reliability of information.

Our products have for years been prepared and tested in laboratories of such scientific institutes as ...

The first sentence is polemical to the more negative semantic reference of the word false;

the other – to the milder one. Also, the latter makes an appeal to an external authority, which might be important in specific polemic.

It is somewhat different concerning the adjective *fishy.*

There is something fishy about that guy. This is a fishy issue. This is a fishy deal.

In all the above examples, the word *fishy* has a metaphorical context, but at the same time has some openness to the root *fish:* fish stink and so do deals or issues. Fish are slimy and easily slip through fingers, and so can deals.

Ambiguity of range frequently occurs with the metaphorical usage of verbs. These will be with a negative potential (though vague in the communication): *abandoned, broke, burned out.*

He abandoned the trade.
They broke the deal.
Retail isn't broken.
She burned out professionally.

The indefiniteness of "destruction" words leaves a broad margin for a positive semantic context, such as:

Poles broke the Enigma code.

Metaphorical ambiguity may also occur in the use of verbs having a positive semantic potential, such as back, arouse or expand.

He backed the case.
He aroused interest.
He expanded the offer.

Sometimes for the sake of creating a sentence containing presuppositional ambiguity of range, it is a good idea to change demonstrative pronouns *this/that* into personal pronouns: *your*, etc.

This situation – your situation – your plight.
This assistance – your assistance – your backing.

On top of the grammatical change of pronouns, what we need in these operations is rich vocabulary and linguistic experience.

Ambiguity connected with sentence stress is about changing the sense of a sentence depending on which the verb is stressed.

I liked to come to this restaurant WITH HER.
I liked to come to THIS RESTAURANT with her.

The emphasis either points to a person or place.

This kind of ambiguity often occurs in sentences using some determiners, such as ordinal numbers: *first, last, numerous.*

At the university, the FIRST day was spent doing administrative business.
AT THE UNIVERSITY, the first day was spent doing administrative business.
This is our LAST evening.
This is OUR last evening.
On this day, a BIG CROWD gathered at the square.
On THAT DAY a big crowd gathered at the square.
On that day a big crowd gathered AT THE SQUARE.

It often happens that the information on which part of the sentence should be particularly focused on and emphasized is placed in the subsequent sentence. When we read a letter or document addressed to us, we have the time for the analysis of the coherence of the text and so the investigation of the intentions of the author. In living speech we can by negligence or engrossment cause an unintended effect, particularly if our rapport with the interlocutor is far from perfect. Still bigger problems are encountered by those who are supposed to take

down someone's utterances in the form of a press communication. In compound sentences, the sense and stress may be dependent on commas.

ORDINAL NUMBERS AND POSITION ADJECTIVES

Using ordinal numbers is often fraught with the potential to cause ambiguous statements. All words like these – *first, second, third* – but also *beginning, another, next, subsequent, middle, central, ultimate, last,* on top of two- or mani-fold information, may contain a judgment that is determined by context. The power of this presupposition is in its context and a multi-stratum quality of the information conveyed. The ordinal number first gives rise to the presumption of the existence of something that is second or opening the whole sequence. The ordinal number 'second' assumes something first and a presumption of elements that follow. The context and, even more so, the customs that hold in a given situation affect that which is certain and what is presumed.

The first prize has not been granted.

Upon hearing a sentence like this, a communication taken out of context, we can guess that only the second and third prizes as well as distinctions were awarded.

Position adjectives – beginning, next, subsequent, middle, central, last and ultimate – build similar ambiguities of information and value judgment.

First – may mean: best, beginning but also inexperienced,

Central – often means the same as situated in a filled space or important,

Ultimate – closing, perfect or unique,

Last – might mean: old, precious unique,

Beginning – easy, poor or inexperienced, untested.

Adjectives that refer to both space and activity, such as *open, opening, closed, closing* are less common in expressions where they have ambiguous meanings. They may be referring to some space, they have a smaller potential of presuppositional ambiguity – they are definitive in their meanings.

GRADABLE ADJECTIVES

Particular presuppositional power has been conferred on the comparative. It informs the existence of one of the categories indicated by the base form and creates a presumption of the existence of the superlative: *smaller* makes it 1. certain for *small* to exist and 2. presumable – for the superlative. The presuppositional power of gradable adjectives increases when we ask for them, forcing the interlocutor to provide specific information or force comparisons, which by nature are relative and ambiguous.

This boat is smaller than...
This is a very small town.

We are forced to ask ourselves or the interlocutor questions: How much smaller? How small? To what degree smaller? Smaller than what?

IMPLICATIONS

Implications are about combining two possibly unrelated strands.

Implications using the conjunctions: *if, but, but not:*

If you don't study more, you will fail entrance exams.

Implications using the connector *and*:

You may come to meetings and feel ever greater interest.

Get a grip of yourself and do it now!

Implications containing the words: *because*, *as/if, while*:

A*s/If you are here, you might want me to make you interested in something.*

Equivalent-temporal implication contains the words: *and at the same time, simultaneously.*

The best fun is when at the same time the child is learning.

Semantic implication is one where the grammar forms used, such as participles, refer to a specific meaning

When coming here, I noticed a poster, which said...

– the speaker makes a reference to the content of the poster he has noticed.

Cause-and-effect implication using the words: *can, should, need, enable, usually.*

Now that you are left alone, you must find a job that will ENABLE you to earn more.

Implication – compound equivalent, using the words *meaning that:*

Participation in the course MEANS THAT you want to make a career in business.

Each of the implications has a strong presuppositional potential. It suggests and even imposes some idea, some part of someone's worldview, may serve the construction of an expression testifying to an ability to read someone's mind (see "13. Reading One's Mind"). Sentences containing implication have a natural ease of merging with others, hence they are often used in various contexts and types of discourse, particularly when we are accumulating presuppositions.

NON-IMPLICATIVE CONNECTION

Non-implicative connection is a combination of completely random and unrelated clauses or expressions.

Getting high grades at school testifies to high intelligence.

Association of images and contents that are doubtful for an average addressee is the basis of advertising.

PRESUPPOSITIONS WITH CONCEALMENT

Presuppositions with concealment occur as questions, they are made up of a key introductory phrase and a command hidden behind it in the form of a question. The power of this presupposition is about this concealment being two-fold: through both the key introductory question and the form of a question, which is nicer to the listener.

The interrogatory part of command need not, however, be reinforced by a question mark at the end of the sentence. A polite command need not be a question – it is enough that one or two polite expressions are applied, such as

Please lock the door.

KEY INTRODUCTORY EXPRESSIONS	QUESTIONS AS COMMANDS
I wonder if you can →	tell me what you really want.
I am asking myself whether you know how →	to learn in a different way.
I am wondering if you know how →	to play with these expressions and learn them at the same time.

The latter example contains an additional presupposition – equivalent-temporal implication (hence a full stop rather than a question mark).

QUOTATIONS

A sentence that makes us think that somebody said something – the "mysterious they:"

They've just told me/I've just been told.

Quotes are presuppositions that are really useful to express sensitive issues, sometimes ones the direct utterance of which would put the speaker outright at risk of excessive straightforwardness, too strong intervention in someone's business or even rudeness.

My friend would say in such situations...

– simple quotations.

Using quotes, we might resort to inventing things. We may say to Y:

Z is [...now we hear a pejorative term regarding Z] – I heard what Z said to V.

– and we report their words.

We say this not necessarily to express indignation. We may say so to convey the information included in S's communication and thus make a shocking impact on the listener.

Quotations are amongthe few presuppositions we can mutually accumulate, e.g.:

My coach told me how once his course companion addressed a person, who had to respond. . . .

READING ONE'S MIND

The speaker knows – or thinks they know – what others think or feel.

I know why you did that.
She said that only because she was mad at me.
I can see that you are irritated.

It is important to realize that such statements may, on their own or as accumulated, perform the function of a means of exerting influence, such as in propaganda or advertising, not to mention situations where we make efforts to persuade someone.

ANONYMOUS AUTHORITY

These are opinions and judgments where their author is omitted.

Curiosity is a good thing.
It is good to be punctual.
Children have a right . . .
Old age is rich in experiences.
Beauty will fast pass away.

It is a way to weaken or eliminate action in a sentence by way of using gerunds. This is a particular kind of strong presupposition – it affords a possibility of constructing a communication without alienating anyone or making any people responsible for any given event. These are often used in technical language, politics and public relations as it is impersonal, accounts for the reality but it avoids words that can be interpreted as an intention to stigmatize someone.

We have a problem communicating with one another.

VAGUE VERB

Vague verbs are used in reference to consciousness: *realize, experience, discover, understand, bear in mind.*

It ought to be borne in mind...
It could be realized...

The "vague verb" presupposition is close to the homonymous ambiguity of using a verb, but in this presupposition the verb only appears in the infinitive form. Therefore it constitutes a different taxonomical unit of presupposition.

GENERALIZATION

Sentences that contain certain words such as: *others, foreign, fellow countrymen.*

Using this presupposition must be veiled or nuanced if it is to make an impact. Otherwise, it might indicate a problem between the speaker and the representative of the group.

Young workers do not succeed in this area.
Germans are envious in business contacts.

These sentences do not sound convincing. We may, however, use them in free conversations when we back them up with an example or additional justification.

REFERENCED INFORMATION MISSING

It is about a pronoun replacing a word or sentence part that would otherwise be written/said in its stead.

One could expect THAT.
– what exactly?

IT is not difficult.
– what exactly do you mean saying "It is not difficult."

QUESTION AS CRITICISM

Formulating a question in such a way that its form conceals disapproval.

Don't you think that you put on too much lipstick?
Do you think this is the right way to behave in this kind of situation?

QUESTION AS MAKING ONE THINK

It often happens that there can be a question in a communication that forces an intellectual effort.

Do you think this is a good method of . . . ?
Would you be happy if I . . . .?

QUESTION AS BOASTING

A question can be a form of concealing information to do with our prestige.

Do you know that I have been given a new computer?
– read: better than yours.

I do not know whether you have been told that our small company earned $1 m last year.

QUESTION AS A STATUS SYMBOL

In this presupposition,unlike all the others, almost everything depends on the context.

Did I do a good thing choosing a college close to home?

The context is about the addressee being someone that has not been able to work or study in another place.

A question that stresses the status of the speaker acts best if it is spitefully given a negative form:

Isn't dealing with presuppositions a waste of time?
Is anyone today questioning the benefits of foreign language skills?

QUESTION AS COMPELLING TO MAKE A DECISION

This category includes questions that may lead to the conclusion of talks but to disorientation, too. It is a weak presupposition.

We have made a decision to close negotiations. What are then your final proposals?
– a question asked of partners who have not yet made a decision.

Have you decided to buy this, madam?

Presuppositions in Polish are formed better when used in colloquial speech, addressing someone directly or by name (see "6. Ambiguity"). Therefore it is often worthwhile to change the official language, in Polish characterized by *Sir/Madam*, into direct conversation and then use a presupposition and sentences constructed thus might then be re-translated into the language that holds in business contacts.

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Language is a kind of tool that can be used in a number of ways. The same pattern of language use in one situation can be classified as incomplete and distorted, but in another it can do very well to build consensus in a conversation with an agitated person.

The presupposition tools, described from the perspective of cognitive psycholinguistics, can have numerous applications:

— they facilitate communication, particularly when we are supposed to convey novel or vital contents;

— anticipate possible problems in communication; our discourse is dictated by fears and is designed to anticipate them;

— help hide our confusion as interlocutor (sender of the communication);

— help decode embarrassment our interlocutor has fallen into.

NAMES, EXAMPLES AND DESCRIPTIONS OF THE WAY PRESUPPOSITIONS ACT

NAME	EXAMPLES	DESCRIPTION
0. introductory-presuppositional expressions	*If only you knew how easy it is to imagine that one day...*	Appeal to knowledge or imagination and include a number of highly syntactically "adhesive" words
1. "No(t)" presuppositions	*Do not expect quick success. Do not worry about the future of this project.*	Subconsciousness does not know the word "no(t)" – negative particle. Therefore sentences with no(t) might be used with negative or positive meanings.
2. Presuppositions using time sequence	*Before we conclude the negotiations, please go over the protocol of additional agreements.*	Sentences using words that place an activity in time: *during, after, in, when, while, before.* Attaching to them positive associations, we become certain that the information was well received by the listener.

3. "Clips"	*Do what I am asking for as I am in a hurry. Before we sign the agreement, we will check some agreed clauses.*	"Clips" build a choice without questioning the experiences of the interlocutor. Possibly, when they take on question forms, they create some assumptions. These are affirmative, but more often interrogative sentences, using the words: *since, but, either, or*.
4. Consciousness presuppositions	*Do you know how important it is for me?* *Please be so kind as to note that your behaviour leads to...* *Do you realize the situation we are in?*	Presupposition that cause the listener to make a note of something but allow for no questioning of the "idea" contained in the sentence. The structure of "hidden authority" is used in it. Words and phrases used: *know, realize, notice, see, hear, imagine.*
5. Time change	*We should like to stop our cooperation for some time, which in our opinion does not preclude our friendly mutual contacts.*	A weak presupposition, which is essentially about the confirmation of any information and creating a context, which in the name of agreement calls for the specification of the extent of the information. The sentences that contain the words: *begin, finish, stop, continue, as well as yet, already, still, continually*, + the appropriate verb are the explication of this presupposition. In (2-time change) we suggest a spurious choice; In (5) we make the listener confront the need to make a vague utterance specific.

6. Ambiguities	*This is a fishy issue.* *She is burning out professionally.* *The first day at work WAS SPENT xxxing* *THE FIRST DAY at work was spent xxxing*	These are divided into homonymous, weak and strong, ambiguity of range and stress.
7. Ordinal numbers and position adjectives	*The first prize has not been awarded.* *This is the last stage of the games.*	On top of information, any ordinal numbers and synonymous adjectives – *beginning, last*, etc. – contain a presumption of a sequence or order.
8. Gradable adjectives	*They tried harder.*	On top of information, the comparative, in particular, contains a presumption of the base form and the superlative.
9. Implications	*If you are learning negotiations, perhaps after graduation you will seek a job in business.* *Because you neglected classes, you are having problems during exams.* *Coming to see you, I have made an assumption that..* *Doing NLP means that you want to control others.*	Simple sentences or, more commonly, complex ones, built in such a way that they contain: – connectors such as: *if, but, because,* – conjunctions: *and, if/as,* – cause-effect structures: their reflectiveness and power of implication depends on the context, – semantic structures starting from or including participles, – compound equivalent: x means y.

10. Non-implicative connection	*A good disciple is someone with a servile attitude to the teacher.*	Combining two logically or contextually unrelated truths in one sentence.
11. Presuppositions with concealment	*I am wondering if you could see the problem differently.*	Made up of an introductory sentence and a question functioning as a command. The interrogative part of the command need not be reinforced with a question mark at the end.
12. Quotations	*In such situations, our boss would say...* *You should ask me what I think about it (introductory).*	Attributing some sentence to someone else. Particularly useful in embarrassing situations.
13. Reading one's mind	*I know why you did that.* *You need not talk to them – I know what they will say.*	The speaker knows or thinks they know what others think, feel or are planning.
14. Anonymous authority	*It is good to be punctual.* *Curiosity is the first step to hell.* *Beauty will pass away fast.*	Opinions and affirmative sentences where the speaking subject has been hidden.
15. Nominalizations	*We have a problem with communication.*	Weakening or eliminating the activity of the sentence by way of using gerunds. It might indicate a desire to avoid responsibility.

16. Vague verb	*It needs to be borne in mind... You could say that...*	This presupposition "likes" verbs related to consciousness, used in the infinitive and in ways close to all sorts of ambiguities.
17. Generalization	*Others, strangers, all....*	Poorly persuasive sentences with generalizations, which can be used if supported by an example in a casual conversation.
18. Reference index missing	*This could not have been predicted*	A pronoun replaces a word or part of a sentence, that would have otherwise been used.
PRESUPPOSITIONS OCCURING AS QUESTIONS ONLY		
19. Question as criticism	*Do you think it is the right behaviour?*	
20. Question that forces one to think	*Do you want such a solution?*	(19) and (20) are often used for responding with criticism to criticism, making criticism milder or demanding additional explanations. Thanks to this we gain time, show courtesy and we can also demonstrate the absurdity of someone's way of thinking.
21.Question as boasting	*Do you know what turnover our company recorded last year?*	Tends to be a form of thinly veiling our prestige.
22.Question as a status symbol	*Is it worth doing NLP?*	How important the context is for this presupposition will become obvious upon deeper deliberation.

23. Question that forces one to make a decision	*Have you made a decision on the size of order?*	Such questions can lead to concluding talks but also to disorientation.

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Robert Zaborowski

FEELING AS A LINGUISTIC CATEGORY[1]

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To Tadeusz Kobierzycki

It is characteristic that in consideration of the issues related to feeling, one encounters a problem of its definition; it is not only about determining the essence of feeling itself but first it must be explained how we understand and use the word 'feeling'. We could give examples from Polish, German, French, English and Latin as well as Ancient Greek to look into the issue of determining 'feeling' as a language category. Feeling is described by words that are not cognates in these languages; also, the terms function in ways that overlap only partially, so they are only partial counterparts. Does it mean that the very essence of feeling is different or appears as something different to the speakers of the many languages? Or is it that some languages create the word 'feeling' more skillfully than others, some rendering it more aptly than others? Or maybe giving a name to feeling exceeds the capacity of language? Does the lack of the equivalent of the Polish word *uczucie* in the Greek language mean, as is often presupposed, that feeling was beyond the ancient philosophers', psychologists' or poets' perception?

[1]This is a modified and extended passage – the third chapter of the first part "Introduction to the philosophy of feelings" [Wprowadzenie do filozofii uczuć] – of the PhD dissertation *The Role of Feelings in the pre-Socratic Philosophy*, whose *viva voce* was held on June 17, 1998, at the Institute of Philosophy and Sociology, Polish Academy of Sciences [IFiS PAN] and dedicated to Tadeusz Kobierzycki. I have published two excerpts from it: the first one was heavily abbreviated and had several amendments as wished by the editorial board of *Przegląd Filozoficzny* "Rozumienie logos. Presokratycy-Platon" (Zaborowski 1998a); the other concerned the multi-layer quality of feeling "Co to jest uczucie. O wielopoziomowości uczucia" (Zaborowski 1999). The dissertation is available at the library of IFiS PAN, signed D. P. 273. I had my abstract on the role of feeling in the pre-Socratic philosophy "Rola uczuć w filozofii greckiej przed Sokratesem" published in *Heksis* (Zaborowski 1998b).

However the answers to these questions were to be formulated, it is worthwhile in my opinion to show the effects of a free and interchangeable use of categories that describe the world of feelings and to suggest a proposal for solutions in Polish. In order to illustrate the variety and heterogeneity of the word 'feeling' [*uczucie*], let me to put forward several examples. What I mean is to consider the purpose of the setting of the meaning of the word 'feeling' so we can find it easier to address the essence of what the word describes and to avoid a situation where, instead of discussing the nature of the object, a dispute over its name arises.

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The equivalents of a given philosophical category in different languages can be found in Lalande's *Vocabulaire technique et critique de la philosophie*. The French equivalent of the Polish word *uczucie* is *sentiment*, for which the dictionary gives: German *Gefühl*, English *sentiment*, *feeling*, Italian *sentimento* (Lalande 1960: 985).[2] One can compare and review philosophical works on feelings and their translations, such as the treatises on feelings by Thomas Aquinas and Descartes, the relevant chapter from Spinoza's *Ethics*, the corresponding passages from Aristotle's *Ethics* and *Rhetoric* as well as writings by German phenomenologists: Edmund Husserl and Max Scheler. Here is a comparative selection.

The translator into Polish and commentator of the treatise by Aquinas tells us that "the biggest issue in translation was the vocabulary, not because there are no Polish counterparts but because of an excess of these and the ambiguity of the Latin terms" (Bardan, Bednarski 1967: 6). It can be seen from this example how difficult it is to translate ambiguity by the application of a tool that is overly elaborate. The Latin original is *passio*. Bednarski wonders why Aquinas did not choose a less ambiguous term *affectus* to denote feelings, especially because "he sometimes uses the term to denote what we call *uczucia* in our language," and he answers that "apparently the word *affectus* had an even broader application in Aquinas' days than *passio* as it covered not only all sensation but also some acts of will, temper and touch" (Bednarski 1967: 277). The translator (J. Bardan) and F. Bednarski also inform us that *"passiones* [...] has a very broad meaning. With scholastics, it means [...] all *passive states* and all *sensations* [...]. Some Polish scholastic philosophers translate the word *passio* in the later sense as *namiętność* [passion] while others as *żądza* [strong desire, lust]" (Bardan, Bednarski 1967: 8). Why, then, do they not translate it as *doznanie, odczucie* [sensation] or *namiętność*, but as *uczucie*? They do so after J. Woroniecki who wrote, "On account of its

[2]That *sentiment* is the equivalent of the Polish *uczucie* follows from the contents of the entry but also from citations, such as the work by T. Ribot, *La psychologie des sentiments* (1897).

etymology, the term *uczucie* corresponds to the concept it expresses rather well as it denotes an activity associated with sensing [Pol. *czucie* – L. K.], with a physiological process that we experience, this is that we sense. [...] The only Polish word that, like *pathe* and *passio*, encompasses all the phenomena of the field in question is *uczucie*" (quoted after Bardan, Bednarski 1967: 9). The scope of my paper does not allow me to critically respond to the statement "the term *uczucie* corresponds to [...] an activity associated with sensing, with a physiological process that we experience, this is that we sense" as I am supposed to analyze feeling as a linguistic category.

Another well known treatise on feelings is the third part of *Ethics* by Baruch Spinoza. He used a different word than Aquinas, giving his work the title *De origine & natura affectuum* (Spinoza 1925). He nevertheless also used the word *passiones*. Such as in the note to the proposition XI: *quæ quidem passiones nobis explicant affectus Lætitiæ & Tristitiæ*.[3]

The French counterpart of the Latin *passio* is *passion*. In the plural it appears in the title of Descartes' work *Les passions de l'âme* (Descartes 1988). The Polish translator gave it the title *Namiętności duszy*, but in the index of names and concepts it reads "*namiętności* – patrz *uczucia*" [for 'passions/desires' see 'feelings'] and for *feeling* we read: "*uczucie*, *namiętność* (*passions, passio*)."[4] It must be an evidence of some liberty of the translator as Descartes uses the term *passion*.[5] A relatively well-known French work on feelings is also the book by T. Ribot. He used a word other than that used by Descartes, giving it the title of *La psychologie des sentiments* (Ribot 1897).[6]

What follows from the comparison of the four works regarding the linguistic

[3] "[...] et ces passions nous expliquent les sentiments de la Joie et de la Tristesse" (Spinoza 1954); "These passions, indeed, explain to us the affects of pleasure and unpleasure" (Spinoza 2004).

[4] For names and concepts see index in Descartes 1986: 206, 208.

[5] Bringing affections down to sensations or desires means to deprive them of autonomy. Also, in Polish, *namiętność* is an etymological opposite of *pamięć* (see Brückner 1970: 393), whereas affections constitute mnemonic dynamics (affective memory) – see S. Wyspiański ("what I felt [pol. *czułem*] I later forged into my art / with feeling only rather than the mind [...]"), "U stóp Wawelu miał ojciec pracownię...," [1903 (?)] and "Napis na obrazie," [Feb., 1905] in Wyspiański 1987; W. Heinrich "the issue of affective memory is among the most debatable questions in psychology" (1907: 200; on p. 203 we find "cases of true affective memory" described); H. Elzenberg ("an argument in favor of the affective memory: associating representations where at least one of those is a memory, by way of their mere affective properties. They must have been remembered if the association could occur on the basis of these.") (1963, a note from August 15, 1918); J. Mazurkiewicz (1950: 199); K. Dąbrowski (1984: 110–112).

[6] Ribot uses the word *émotion* ("émotion est, dans l'ordre affectif, l'équivalent de la perception dans l'ordre intellectuel," 1897: 12) and *passion* ("passion est dans l'ordre affectif ce que l'idée fixe est dans l'ordre intellectuel," 1897: 20); see also Ribot 1905.

level of the world of feelings? Aquinas uses the word *passio*, with Spinoza employing *affectus*. Descartes writes about *passion*, whereas Ribot – *sentiment*. Aquinas' *passio* and Descartes' *passion* have been rendered by translators as *uczucia* and *namiętności* respectively, with Aquinas' and Ribot's terminologies having been made uniformed in Polish. Does terminological vagueness belong to texts, translators' craft or the nature of languages? Or, perhaps, did Spinoza mean something else than Aquinas and did Ribot write about something else than Descartes? Had the object of their descriptions changed its name in the course of time that had elapsed in Latin from Aquinas to the time Spinoza wrote his treatises and, for French, between Descartes and Ribot?

Popular French dictionaries corroborate the sway or, as Bardan and Bednarski put it about the Latin *passio*, the ambiguity of the French word *sentiment*. In *Le petit Larousse illustré* it is identified with sensing on the one hand (*sensation*, *impression*), but, on the other, with emotions and representations (*émotions ou représentations*).[7] This is the case of the philosophical dictionary referred to above. Lalande notes that there are two meanings of the word *feeling*: the activity of feeling and the psychological state felt. Lalande divides those into six particular meanings,[8] that can be combined into two groups. In the first one, the basic thing is the idea of an affective state; in the second, it is the idea of cognition, particularly direct cognition. The last French philosophical dictionary I know mixes up or insufficiently differentiates *sentiment* and *passion*. It reads that "feeling and passion cannot play a foundational role in rationalist ethics and are perceived as obstacles in the exercise of virtue [...]."[9]

The delimitation of meanings is hard and complicated. However, it seems that the French word *sentiment* covers, as remarked by Lalande, both an affective experience (*affection*), emotion (*émotion*)[10] and intuition (*intuition*). It has a

[7] "1. Connaissance plus ou moins claire donnée d'une manière immédiate, sensation, impression. 2. Etat affectif complexe et durable lié à certaines émotions ou représentations [...]. 3. Manifestation d'une tendance, d'un penchant [...]. 4. Disposition à être facilement ému, touché, émotivité, sensibilité [...]. Litt. Manière de penser, d'apprécier; opinion [..]" (*Le petit Larousse illustre* 2000: 932).

[8] "1. état affectif, ou tendance affective, en général, par opposition à la connaissance; 2. plus spécialement, plaisirs, douleurs, émotions qui ont des causes morales; 3. ensemble d'émotions et d'inclinations altruistes, sympathiques, par opposition à l'égoïsme; 4. conscience [...] claire ou confuse suivant les cas; 5. intuition – connaissance ou savoir donnés d'une manière immédiate; 6. opinion, avis, croyance" (Lalande 1960: 985–986).

[9] "[...] le sentiment et la passion ne peuvent jouer de rôle fondateur dans l'éthique rationaliste et sont pensés comme obstacles à l'exercice de la vertu [...]" (Canto-Sperber 1996: 1379).

[10] I replace a linguistic calque *emocja* with the Polish counterpart *wzruszenie*. The word *wzruszenie* is found in P. Skarga, with the word *emocja* being testified to in Polish as of 1861 (Bańkowski 2000, I: 346), see "*emocja* [...] (from French) *wzruszenie*

broad range of meaning and is ambiguous. Translated into Polish, it is rendered depending on the context as *odczucie*, *poczucie* and *uczucie*.[11]

As I have already said, Lalande gives *sentiment* and *feeling* as the English counterpart of the French *sentiment*, but whereas French distinguishes between *sentiment* [Pol. *uczucie*] and *sensation* [Pol. *czucie*], the difference in English is harder to render. Lalande indeed makes a distinction between the two categories and gives the French *sensation* the English counterpart *sensation* (Lalande 1960: 976), but in the informal language as well as in some scientific work the authors do otherwise, substituting it with *feeling*.[12] A good example could be M. Arnold's *Emotion and Personality*. That *feeling* has the meaning of *sensation* to the author seems to follow from her statement "Emotion always focuses on the object, while feeling reveals my momentary state of mind" (Arnold 1960: 21).[13] I am not going to analyze the English works concerned with the issue of *emotion* vs. *feeling* not only because the literature is rich[14] but above all because the discussion of the concept of feeling goes beyond the subject matter of this paper. I only want to demonstrate that at the linguistic level, there is a noticeable terminological vagueness in the English literature. This is corroborated by a dictionary of the English language that gives *feeling* the meanings of sensation, emotion, impression, understanding and sensitibility.[15] A thesaurus gives a yet more elaborate meaning of feeling.[16]

[Eng. *emotion, being moved*]" (Zdanowicz et al. 1861: 2). It is missing in Linde, whose six-volume dictionary came out in 1854–1860. See also Doroszewski (1967: 466): *doznać emocji, wzruszenia* [Eng. *experience emotion, be moved*].

[11]See *"Słowniczek terminów"* [glossary] in Bergson 1988: 142.

[12]See "*Alle Gefühle*" = "All feelings" as well as "*vitalen fühlen*" = "vital feeling" in Scheler 1973.

[13]See also "[...] emotion as a tendency toward or away from some objects and feelings as the direct awareness of one's state of functioning [...]" (Arnold 1960: 36). Chapter 4 is about "Feeling as reaction to sensory experience" (Arnold 1960: 70-89). See also an extended definition of *emotion* on p. 182. On the other hand, *sentiments* "are enduring tendencies to react emotionally and overly when the opportunity is given [...]. A sentiment is a disposition to react with love or hate, activated by an actual intuitive and reflective appraisal [...]" (Arnold 1960: 199–200).

[14]See among others Reymert 1928 [it includes, among others, E. Claparède, *Feelings and Emotions*, W. McDougall, *Emotion and Feeling Distinguished*]; Harlow, Stagner 1933; Ruckmick 1936; Gardiner, Metcalf, Beebe-Center 1937; Reymert 1950; Beebe-Center 1951; Perkins 1966; Arnold 1968; Arnold 1970 [contains e.g. J. Hillman, *C. G. Jung's Contributions to <<feelings and emotions>>: synopsis and implications*].

[15]"1. power and capacity to feel; 2. psychical or mental awareness: emotion; 3. (pl) emotional side of a person's nature (contrasted with the intellect); 4. sympathy. understanding;. 5. excitement of mind; 6. taste and understanding: sensibility" (Hornby, Cowie 1980: 314-315).

[16]See "consciousness, impression, perception, presentiment, sensation, sense; air, atmosphere, aura, mood; idea, notion, suspicion; consensus, opinion, view, affection,

David Hume is the paramount author among the English philosophers who deliberated upon the issue of feelings. Speaking about feelings, he uses yet another term than *feeling* or *emotion*: *passion* (Hume 1978, Book II)[17] and, therefore, one can say he draws upon Aquinas and Descartes rather than Spinoza. More contemporarily, it was William James who took up the issue of feelings: devoting a paper to them he used the term *emotion* (James 1884). According to James, *feeling* is a component of *emotion* (James 1884: 189-190). These examples demonstrate that there is a considerable terminological license in English and the concept may have evolved from *passion* in Hume's day to *emotion* in the times of James. If so, one can ask if it has an impact on the way feelings have been understood.

What is it like in Polish? For the Polish reader what may be important is the etymology of the Polish word *uczucie*, made up of the prefix *u–* and the root *czucie*, a deverbal noun from the verb *czuć*. It is more difficult to demonstrate which function of the prefix *u–* is involved in the combination. Does it "influence the alteration of the meaning of verbs," here from *czuć* to *uczuć* as it "signifies the consolidation of effects of the action and bringing it to (or itself reaching) a satisfactory degree or a desirable state" (Karłowicz, Kryński, Niedźwiedzki 1952: 195–196)? Does the prefix *u–* mean the transformation of the external into the internal, or a development, termination or perpetuation? Or does it perhaps combine all these functions?

It is even more difficult to indicate the etymology of the verb *czuć*. Aleksander Brückner derives the verb *czuć* from the root *czu–*, which in Slavonic peoples refers to hearing and the sense of smell, whereas among Germans and Greeks – to vision. The root *czu–* [tshoo] can be found in the Greek *κῦδος* (Polish *cud*, that is, what "falls into *czucie* [sensing] (hearing)" (Brückner 1970: 67; see also Chantraine 1990: 595–596) as well as in the verb *κοέω* (Brückner: *miarkuję*[18]). The etymological reconstructions concerning the Polish word *uczucie* indicate that, reduced to its original root (*czucie, czuć*), it is related to sensory cognition, vision, smell or hearing, that the ability to feel is a wonderful ability that has to

fondness, affectivity, warmth; emotion, fervor, passion; compassion, empathy, sympathy, understanding" (Clark 1989: 131; see also p. 516 with 20 more synonyms).

[17]Hume says (II, III, III) that "We speak not strictly and philosophically when we talk of the combat of passion and of reason" (Hume 1978: 415).

[18]Brückner 1970: 81. According to Brückner, *κοέω* is close to *ἀκούω*, see *czuję*, that is, *słyszę* [I feel, i.e. I hear] (Brückner 1970: 81). Węclewski identifies it with *νοέω* (Węclewski 1929: 407). In the etymology of *κοέω* there is the Sanskrit *kavi-* (sage, poet) (see Chantraine 1990: 551). The verb *κοέω* means *to perceive, understand and hear*, that is, it has meanings that are close to *αἰσθάνομαι* and *νοέω*, which initially (in Homer's epics) means *notice and see*. The deverbal nouns from *αἰσθάνομαι* and *νοέω* (*αἴσθησις* and *νόος* respectively) may mean various levels of feeling in Greek (Zaborowski 1998: 55-185).

do with the cognitive (sage) and creative (poet) dimension.[19]

The meanings of the word *uczucie*, given by the *Słownik języka polskiego* [*Dictionary of the Polish Language*] by Karłowicz, Kryński and Niedźwiedzki (1952: 226), are as follows: "1. moral sentiment, 2. sensing, sensation, impression, 3. physical sensation, sense." The first, the broadest category covers, among others, the feelings of "friendship and love, as well as noble, religious, transcendental, deep, strong and filial feelings." Notably, with reference to affectivity [*uczuciowość*] and affective/sentimental [*uczuciowy*] the dictionary records negative connotations. For instance, the fourth meaning of affectivity is "pathological: the disorder of affectivity [...]," the first two for *affective* being "1. pathological: affectively obsessed, 2. where feeling surpasses the other powers of the soul [...]."[20]

Doroszewski's dictionary describes *uczucie* thus: "a psychic experience [identified with *emocja* [*emotion*]], whose essence is an attitude to stimuli that act or used to act: objects, other people, oneself, one's own actions, etc.;" "love, cordiality, friendship, tenderness, affectionateness, passion, physical sensation [identified with *impression*]" (Doroszewski 1967: 464–465).[21] The entry *uczuć się* provides this: "become aware of one's own physical or psychological condition, one's plight, situation; feel" (Doroszewski 1967: 466).

Apparently, Polish dictionaries tend to mix the words *uczucie* and *emocja*, which is particularly manifest in the entry *uczuciowiec*: "an affective/sentimental person, directed in his actions by emotions rather than reason."[22] Of the Polish philosophical dictionaries, some present this distinction,[23] whereas others make a simplification.[24] I do believe that the use of a word should reflect the multi-layer

[19]It demonstrates the connections between creative cognition and what is a wonder in man, which Thomas Mann writes about in the following way: "I repeat, that therein lies our duty, our sacred duty to feel [...]. For feeling, young man, is godlike. Man is godlike, in that he feels. He is the feeling of God. God created him in order to feel through him [...]" (Mann 1999: 603). See also Democritus B18 and Plato, *Ion* 534b3–6.

[20]Karłowicz, Kryński, Niedźwiedzki 1952: 226: "1. czucie moralne, 2. czucie, poczucie, wrażenie, 3. uczucie cielesne, czyli zmysł [...] uczucie przyjaźni, miłości, uczucia szlachetne, religijne, nieziemskie, głębokie, silne, synowskie [...] patol.: choroba uczuciowości [...] uczuciowy: 1. Patol.: obłąkanie uczuciowe. 2. w którym uczucie góruje nad innemi władzami duszy [...]."

[21]Szymczak (1992: 578–579) identifies a meaning that is similar to the ones given but in another order.

[22]The entry is identical in both dictionaries: Doroszewski 1967: 465 = Szymczak 1992: 578–579.

[23]"2. psych. [...] Unlike emotions, feelings are a higher order of experience, emotions being ones at the level of senses" (Podsiad, Więckowski 1983: 410).

[24]"Feelings [*uczucia*] (emotions, affections [*emocje, afekty*]) – an array of experiences ranging from sensory impressions [...] to psychical states [...] intentional human attitudes [..] to a peculiar (notionless) experience of oneself and the world [...]" (Herbut, Żardecka 1997: 524–525).

content of the phenomenon it describes, though. What follows from the lack of distinction? Is it only negativizing affective phenomena, which is visible in the case of substituting *emocja* for *uczucie*? The phrase "led by emotions" has rather negative connotations, whereas "led by feelings" evokes rather positive associations.

The effects of confusing the levels and of treating separate levels of feelings in homogeneous ways can be seen in David Hume's work. In a bid to reinforce the position of feelings, the Scot philosopher contrasted them with the reason. However, he forwent making a distinction between levels of feelings, covering various affective phenomena with one term: *passion*.[25] In doing so he became an unconscious follower of Aristotle, who also had an *en bloc* take on feelings.[26]

It should be investigated whether the synonymous treatment of the words *emocje* and *uczucie* in Polish is legitimate and whether the replacement of *uczucie* by *emocja* is not a semantic shift. One can order concepts, distinguish *emocja* from *uczucie* and replace the calque *emocja* with the Polish counterpart *wzruszenie*. The solution becomes all the more significant if we consider that there has been an increased interest in the issues of affectivity. However, authors are still for the most part using the term *emocja*.[27] Does it not predetermine the results of their analyses?

Yet another distinction was made by Norbert Fries, according to whom "EMOTIONS [...] need not necessarily correlate with FEELINGS" (Fries 1992: 111) By *emotions* Fries understands "semiotic equivalents of feelings [....] meanings in a semiotic or linguistic model" (Fries 1992: 111), whereas *feelings* are referred to as "states of consciousness available only by introspection, whose function is to signal the meanings of stimuli for the inner needs of the body" (Fries 1992: 119). This is to quote the distinction made by Fries as he gives the linguistically demarcation proposal and the word *emotion* is treated as empty from the psychological standpoint, one that can be filled only by a specific feeling.

It might be a good idea to make an attempt at a historical recapitulation. Above all it needs to be emphasized that in the Ancient Greek a double nature of feeling can be seen: its active aspect (*θυμός*) and its passive one (*πάθος*).[28] The

[25]Hume also uses terms such as *sensible emotion*, *real passions*, *emotion*, *immediate feeling*, *sensation* (Hume 1972: 692–735).

[26]Hume proved to have weakened the position of feelings in the conception of man, especially because "the opposition of feelings and the mind as two separate and opposite axiological sources, outlined by Hume and still present in philosophy, proves to be [...] spurious." (Buczyńska-Garewicz 1975: 21).

[27]Such as Ekman, Davidson 1994; Goleman 1995; LeDoux 1996; Segal 1997; Goleman 1998; Goleman 2001. Some titles of the French authors include Cosnier 1994; Filliozat 1999; Braconnier 2000; Lelord 2001, and one Polish: Maruszewski, Ścigała 1998. Otherwise Cyrulnik (1993): *Les nourritures affectives*.

[28]The active and passive aspects of feelings were described as early as the earliest

former was particularly appreciated by Plato, who ascribed to *θυμός* an etymology that emphasized its turbulent and agitation nature: "And *θυμός* has its name from the raging (*θύσις*) and boiling of the soul" (trans. Fowler).[29] The passive facet of feelings – their sensational and experiential nature – was particularly appreciated by Aristotle who, in reference to various affective conditions, not only experiences and sensations, but also emotions and feelings, such as courage and friendship, used the word *πάθος*.[30]

What follows is that the divergence between the active and passive meaning of a feeling took place as early as in ancient Greece. It could have been the authority of the Stagirite that caused the word *πάθος* to be spread to cover other levels of affectivity. Subsequently the Latin *passio* (Aquinas), French *passion* (Descartes) and English *passion* (Hume) have by analogy become technical equivalents for the description of feelings at large. It must be noted, though, that this was a decisive factor for the treatment of feelings as passive and thus negative phenomena.[31] It was only when William James introduced the term *emotion*[32] to the philosophical

extant psychological texts, even within one and the same feeling, see "Dans l'*Illiade* et l'*Odyssée*, tlènai exprime un courage tantôt passif, tantôt actif. Il prend le sens de *<<endurer, supporter avec courage, patience>>* ou *<<oser, avoir le courage de>>*" (Smoes 1995: 68).

[29]Plato, *Cratylus* 419c1-2: "*<<θυμός>> δὲ ἀπὸ τῆς θύσεως καὶ ζέσεως τῆς ψυχῆς ἔχοι ἂν τοῦτο τὸ ὄνομα*" This is the etymology favored by Liddell, Scott, Jones 1989.

[30]See Aristotle, *Nicomachean Ethics* 1105b21-23: *λέγω δὲ πάθη μὲν ἐπιθυμίαν, ὀργήν, φόβον, θράσος, φθόνον, χαράν φιλίαν, μῖσος πόθον, ζῆλον, ἔλεον*" and *Eudemian Ethics* 1220b12–13: *λέγω δὲ πάθη μὲν τὰ τοιαῦτα θυμὸν φόβον αἰδῶ ἐπιθυμίαν* [...]" but on another occasion friendship is referred to as *ἀρετή* or it is tied to it: "[*φιλία*] *ἔστι γὰρ ἀρετή τις ἢ μετ' ἀρετῆς*" (*Nicomachean Ethics* 1155a3–4). Some questions arise, the answers to which need to be sought on another occasion. Is the Aristotelian mean (*τό μέσον*), which is the middle ground between two extreme feelings a category different from them (*ἀρετή*) or is it a feeling that is dubbed *ἀρετή*? How does this middle ground arise? Is it negative in nature and arise by negation, evasion and a flight from both poles? Does it arise from the knowledge of the experience of both extremities in their fullest breadth? In the latter case the Aristotelian theory would be non-dogmatic, practical and therapeutic. Notably, in Plato's theory *θυμός* was equated with *ἔρως*, while Aristotle's theory reduced *φιλία* to *πάθος*.

[31]I do not discuss here the fact that "*passio* [...] comes from [...] *pati*, meaning *experience*, and in particular experience what is bad and painful, that is *suffer*. Therefore *passion* also means *suffering*" (Bednarski 1967: 277). See also I. Craemer-Ruegenberg who emphasizes that the terms *πάθος*, *passio*, *Affekt* refer to feelings as passive phenomena (Craemer-Ruegenberg 1981: 10). See also "Les mots *πάθη*, *perturbationes animi* (auctore Cicerone), *affectus*, *affectiones*, *passiones* sont donnés comme synonymes par St Augustin, *De civitate Dei*, IX, 4" (Lalande 1960: 30).

[32]The term *emotion* was also used by James's friend C. S. Peirce "Everything in which we take the least interest creates in us its particular emotion, however slight the

language, the active pole of affection was restored to universal consciousness,[33] which in ancient Greece was recorded with the word *θυμός*. The overlap of substance between the English *emotion* and the Greek *θυμός* is written by Snell: "*Thymos* in Homer is the generator of motion and agitation [...] If we translate *thymos* as 'organ of (e)motion', the matter becomes simple enough" (Snell 1960: 9).

In Polish, there is a double-track quality in terminology: on the one side there are borrowings from West European languages (*afekt*, *pasja*, *emocja*),[34] on the other original Polish words (*odczucie, doznanie, wruszenie*, *uczucie*). Please note that Polish words have proved to contain Greek messages. The words *uczucie* and *przeżycie* [experience, in Germ. *Erlebnis*] have in their etymologies references to this language.[35] This is why it is all the more worthwhile to keep these references and therefore I suggest that *wzruszenie* be restored to the Polish psychological

emotion may be. This emotion is a sign and a predicate of the thing" (Peirce 1958: 67).

[33]Ribot informs us that the term *émotions* has replaced in contemporary psychology the words *passions*, *affections de l'âme* (*passiones, affectus animi*), used in the 17^{th} century. It also has that advantage that it stresses the "élément moteur inclus dans toute émotion (*motus*, *Gemuthsbewegung*)" (Ribot 1897: 92). Ribot's rendition of emotions is as follows: "J'entends par émotion un choc brusque, souvent violent, intense, avec augmentation ou arrêt des mouvements: la peur, la colère, le coup de foudre en amour, etc. En cela, je me conforme à l'étymologie du mot <<émotion>> qui signifie surtout mouvement" (Ribot 1905: 67).

[34]The word *afekt* has been recorded in Polish since the 16^{th} century. Linde renders it as "1. any motion or agitation of mind, 2. passion" and quotes P. Skarga, *Żywoty* 11, 390: "Making this look, he was carried away with affection [*afekt*] rather than equity" (Linde 1854-1860, 1: 6). Linde omits the word *pasja*. According to A. Bańkowski, it has been present in Polish since the 18^{th} century (Bańkowski 2000, II: 509).

[35]It is an argument in favor of the view that a peripheral culture retains an ancient legacy. Regarding *uczucie*, see *κῦδος* above; regarding [*prze-*]*życie*, see Greek *βέομαι*, *βίος* (Brückner 1970: 669; Chantraine 1990: 177). The German *fühlen*, too, as well as the English *feel* elude to a direct Latin influence. In the etymology of the English *feel* there is the Greek *παλάμη*, Latin *palma*, Sanskrit *pani*, whereas the German *fühlen* is matched with the Russian *palets*, and as for the English word, the Latin *palma* and the Greek *παλάμη*. See also: "The majority of words for *emotion*, *feeling* [...] are derived from verbs for *feel*, which are either *perceived by the senses* [...] or else originally denoted *feel* by the sense of touch [...]" (Buck 1949: 1089). The English *emotion* in the sense of "any vehement or excited mental state" has been testified to since 1660, *feeling* in the meaning of "pl. emotions, susceptibilities, sympathies" since 1771 (Simpson, Weiner 1989). On the basic role of the sense of touch, compare "Man's basic and thus main sense is the sense of touch [..] The sense of TASTE [...] is a variety of the sense of touch situated in the mouth [...] THE SENSE OF SMELL is also only a variety of the sense of touch and the sense of taste [...] Another sense based on touch is the sense of SIGHT [...] THE SENSE OF HEARING is the fifth sense based on touch [...] The highest position in the hierarchy is thus reserved for the sense of touch" (Michałowicz 1997).

and philosophical language instead of *emocja*. I also suggest that two meanings of *uczucie* be distinguished between: the first one, which is broader and more common (?), where this word would mean the totality of emotional life, otherwise – affectivity (general dimension); the other more narrow and specialized, where *uczucie* is a specific dimension of affectivity (a particular dimension) – higher than sensation and lower than experience.

If such an ordering is possible, as I believe it is, an effort should be made to perform it, at least in Polish. Further work to be done is to order it in other languages. Otherwise, instead of making the language conform to reality the reality will continue to be deformed in order to correspond to terminology. One who uses a word such as *feeling* without clearly stating what it refers to, will be faced with a vague subject matter of description and the very analysis of phenomena will be more difficult. The objective is to try and avoid a situation where one means feeling but introduces the category of *sensation*, *emotion* or *experience* instead. How one can communicate if someone says *sensation* but means *emotion*, with others saying *emotion* and meaning *emotion*, etc.? It is important to constantly differentiate the meaning of the broader and the narrower senses of the word *uczucie*. In other ways terminological license and the apodictic approach of translators lead to oversimplifications and distortions. To illustrate my point allow me to provide a comparison after a German-Greek dictionary (Schenkl 1873), which is a representative example of a general tendency of an obscuring understanding of feelings in Ancient Greek language nowadays:

German	Greek
Eindruck	[Stimmung] πάθος, πάθημα, διάθεσις
	[Wahrnehmung, Empfindung] αἴσθησις, αἴσθημα
Empfindung	[Empfinden] αἴσθησις
	[Empfundene] αἴσθημα
	[Affekt] πάθος, πάθημα
Affekt,	πάθος, ὁρμή, ὀργή, θυμός
Gefühl	[Wahrnehmung] αἴσθησις, [Tastsinn] ἁφή, [Stimmung] πάθος,
	[Erinnerung] μνήμη
Leidenschaft	[Affektion, Gemüthes] πάθος, ὀργή, θυμός
Regung [des Gemüthes]	ὁρμή, πάθος
Affekt,	see above
Gemütsbewegung	πάθος (τῆς ψυχῆς), ὀργή
Gefühl	see above
Erlebnis	πάθος, πάθημα

The basic question is about the over-occurrence of the word *πάθος*. Is each of the levels in Greek described with this word? Is it really so that the word *πάθος* has such a broad semantic range? Or is the tendency being illustrated a result of

conceptual reductionism, all the more so as there are other words in Greek that refer to feelings than the dictionary in question may make you think?[36]

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I have skipped the issue of what is feeling and how it is understood. I focused on the linguistic level in order to look at the application of the terminology that provides a perspective and in some cases is a silent presupposition that produces psychological and philosophical implications. It is another story to think whether it is language that conditions thinking or whether it is the way we think that channels our linguistic expression. I wanted to point at the difficulties created by the first possibility, if it is in fact occurring, and this is why I am calling for terminological systematization. My proposal for the taxonomy of the categories concerning the world of feelings is this:[37]

[36]Here is an example of difficulties concerning the translation from Greek into Polish: in her translation of *Nicomachean Ethics* into Polish, D. Gromska translates *πάθος* as *uczucie*, *namiętność, afekt*; in *Eudemian Ethics* and *Magna Moralia* W. Wróbleski uses the words *uczucie*, *namiętność*; for *θυμός* Gromska gives *gniew, złość, wściekłość*, with Wróblewski rendering it as *ochota, gniew*. For *uczucie*, Gromska redirects to *namiętność*, where she supplies the counterparts *namiętność*, *uczucie*, *afekt* (*πάθος*), but Wróblewski, on one occasion (*Magna Moralia*) gives *πάθος* where he does not identify *namiętność* but on another occasion (*Eudemian Ethics*) for the entry *uczucie* (*πάθος*) he refers to *namiętność*.

[37]A map of *uczuciowość* (there is a lack of the general word *uczuciowość* in other languages. In French it would be *affectivité*, more than *émotionalité*; *The Oxford English Dictionary* lacks **feelingliness*, but it does supply some alternatives: *affectivity* (= *psychol. emotional susceptibility*), *emotionality* (= *emotional character or temperament*) or *feelingness* (= *emotional quality or character*); in German there is no **Gefühlkeit/Gefühlheit*, but there are words such as *Gefühlsmäßigkeit*, *Gefühlshedingtkeit*, *Gefühlsbetonheit*, *Gefühlsinnigkeit*, *Affektivität*, *Empfindsamkeit*, *Emotionalität* – Scheler used the expression *Schichtung des emotionalen Lebens*, Eng. *stratification of the emotional life*) has been arranged in the following way: the Polish, Greek and French alignment is my proposal; the Latin, German and English are presented after Lalande (1960), except for *vécu*, which was absent from his dictionary.

feelings	Polish[1)]	Greek	French	Latin[2)]	English	German[3)]
[passive]	wrażenie	αἴσθησις	impression	–	impression, feeling	Eindruck
	odczucie	πάθος	sensation	–	sensation	Empfindung
	doznanie		affection passion	affectus, affectio	affection passion	Affektion, Gefühl Leidenschaft
[active]	wzruszenie	θυμός, φρήν	émotion	–	emotion[4)] (broader than in French)	[5)]Affekt[6)], Gemutsbewe gung
	uczucie	θυμός, νόος	sentiment[7)]	–	sentiment, feeling	Gefühl
	przeżycie	λόγος	vécu (experience vécu)	–	–	Erlebnis[8)]

REMARKS

1. Other Polish words are: *popęd*, *odruch*, *pęd*, *poczucie, namiętność* (a mode of emotion), *przeczucie*, *zaczucie* (Słowacki: *zaczarowanie wolą*) as well as *sympatia* (*współczucie*) and *empatia* (*wczucie*).

2. From Mr. Lech Bobiatyński, Inst. of Classics' library, Univ. of Warsaw I have received the following list for Latin: *impressio, sensus* (impression), *sensatio* (sensation), *affectio, affectus, sensus* (affection, passion), *motus animi* (emotion), *affectio, affectus, sensus* (feeling), *experiri* (to experience).

3. Compare the model, elaborated by Scheler, of *vier wohlcharaktiersierten Stufen des Gefühls* (*four well-delineated* levels *of feeling*): (1) *Sinnliche Gefühle oder "Empfindungsgefühle"* (sensible feelings, *or "feelings of sensation"*), (2) *Leibgefühle (als Zustande) und Lebensgefühle (als Funktionen)* (feelings of the lived body *(as states)* and feelings of life *(as functions)*, also called *vital feelings* (Scheler 1973: 338)), (3) *rein seelische Gefühle (reine Ichgefühle)* (pure psychic feelings *(pure feelings of the ego)*), (4) *geistige Gefühle (Personlichgefühle)* (spiritual feelings *(feelings of the personality)*) (Scheler 1927: 344f = Scheler 1973: 332f). Otherwise in James (1884: 205), who used the expression *pure psychic emotion*.

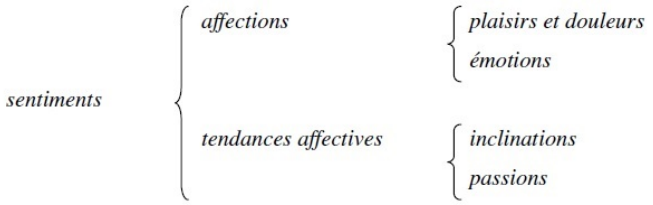
4. Another thesaurus, for the entry *Emotion, Feeling* gives: Gr. *πάθος*, *πάθημα*, Lat. *motus animi, sensus*, It. *sentimento, emozione,* Fr. *sentiment, émotion,* Ger. *Gefühl*, Pol. *(u)czucie*, Sanskr. *bhava-*, and for *Passion* (= *violent*

emotion): Gr. *πάθος*, *πάθημα*, Lat. *perturbatio*, It. *passione*, Fr. *passion*, Ger. *Leidenschaft*, Pol. *namiętność*, Sanskr. *bhava-* (Buck 1949: 1089–1090, as well as the comments appended, to the lists of synonyms, 1089–1091).

5. A. Lalande does not supply under *émotion* either *Regung* or *Emotion*. I give the former after the thesaurus *Bedeulungswthierbuch* (Müller 1985: 283).

6. Concerning the usage of the word *Affekt* in German, Lalande refers to the works of Wundt (Lalande 1960: 29 (under *affection*)).

7. Compare the arrangement in A. Lalande 1960: 30 = 279:



8. The words *przeżycie* and *Erlebnis* depict the difficulties inherent in translating and understanding concepts even more than *uczucie*. One can find their equivalent in French, albeit not without qualifications. The word *vécu* is not common in its nominal meaning and functions as a participle. A. Lalande's dictionary (1960) leaves it out. However, it features in *Le petit Larousse illustré*: "*vécu: expérience réellement vécue; ensemble des faits, des événements de la vie réelle*" (2000: 1057). Using it, P. Ricceur renders *Erlebnis* in his translation of *Idées directrices pour une phénoménologie* by E. Husserl (1950; see also *Glossaire*: *Erlebnis, erleben, Erlebnisstrom = le vécu, vivre, flux du vécu*). It was adopted by other French phenomenologists, too (e.g. Lyotard 1954: 10f). The translation seems even more difficult into English. In his translation of Husserl's work, W. R. Boyce Gibson translates *Erlebnis* with *experience* (Husserl 1931). This is a solution adopted throughout the work and one needs to look in the *Analytical Index* (437), to make sure that the English word *experience* covers two meanings: both (i) *empirical (Erfahrung)* and (ii) *experiential (Erlebnis)*. So, too, did the translators of M. Scheler's *Formalism in Ethics...* (1973); e.g. *positives Erlebnis = positive experience*; *psychische Erlebnisse = psychic experiences*, etc.

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