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Contents

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ON AJDUKIEWICZ'S INTERPRETATIVE PROBLEM AND SOME PECULIAR FEATURES OF INTERPRETATION

During my work on the English translation of Kazimierz Ajdukiewicz's philosophical writings in the 1970s, I noticed an interpretative problem, which I called Ajdukiewicz's problem, and whose solution lead to a new interpretation of Poincaré's conventionalism. In this lecture I will present my solution to Ajdukiewicz's problem (part 1), followed by some reflections on the nature of textual interpretation, which occurred to me while solving the problem (part 2).

Conventionalism is mainly of concern to philosophers of mathematics and physics, yet the nature of textual interpretation is of interest to all humanists, since interpreting human creations is one of the main methods of humanities.

1. Ajdukiewicz's interpretative problem and its solution: conventionalism and the pluralist conception of theory

In the early 1930s Kazimierz Adukiewicz (1890–1963) put forward a philosophical doctrine labelled by him as radical conventionalism and presented thus in a series of articles in *Erkenntnis*. The term was meant to indicate genetic links to the philosophy of French conventionalists and to emphasize the fact that it was a stronger version of Poincaré's conventionalism.

According to Ajdukiewicz's radical conventionalism, the so called scientific worldperspective is determined not merely by the data of experience, but only by those data together with the choice of conceptual apparatus,

that is, of language; it is assumed that there are languages that are both closed — i.e. cannot be extended in a consistent way — and not mutually translatable (not intertranslatable).

Now, it is easy to observe that, thus formulated, the thesis of radical conventionalism is far from being logically stronger than the conventionalist claim ascribed to Poincaré by the traditional interpretation of his philosophical writings. On this traditional reading, Poincaré's conventionalism states that metric geometries and Newtonian mechanics — in contrast to the popular belief — are not empirical theories but merely terminological conventions, i.e. implicit definitions of primitive terms. A logically stronger version of this view was put forward by Édouard Le Roy, who claimed that all scientific theories are conventions.

So it should come as no surprise that Ajdukiewicz was sceptical about the traditional interpretation of Poincaré's conventionalism, on the grounds that such a reading distorted and trivialized the position. Hence he put forward his own interpretation of Poincaré's conventionalism, which, however, was never fully published. Still, some fragments of this account can be found in various publications of Ajdukiewicz.

According to him, Poincaré's conventionalism involves, among others, the following claims:

(A1) There are arbitrary elements in science, i.e. conventions, in the form the sentencesconventions and conventional decisions; the latter concerns the choice and assertion of sentences and are defined on sets of observationally equivalent sentences (Poincaré 1952: ch. 3, 5, 6).

(A2) There are sentences in science that, in order to function properly, require conventions; for instance, there are *quasi*-empirical sentences which are supposed to refer to reality but are empirically undecidable unless they are combined with suitable sentencesconventions, such as "A metre is a unit of length," "The length of a measuring rod is invariant under transport," "All the beats of this pendulum are of the same duration" etc. (Poincaré 1958: 27, 30–31, 34–35).

(A3) The epistemological status of sentences in science is unstable and depends on the decisions made by scientific communities. Poincaré claimed that scientists often elevate wellconfirmed empirical generalizations to the status of convention and later, once the usefulness of those principles has been exhausted, they strip them of this title (Poincaré 1952: 138). Generally speaking, scientists can take either an empirical or a nominalist approach to each sentence (Poincaré 1958: 110, 118–120, 124).

(A4) Negative results of experiments designed to test a hypothesis are

not univocal, since they can be applied either to the hypothesis or to the so-called auxiliary assumptions (Poincaré 1952: 72–73).

Thesis (A1) — or, strictly speaking, the part of (A1) about conventional sentences — is an existential generalization of a claim ascribed to Poincaré by the traditional interpretation, The remaining theses have no counterpart in the traditional interpretation. So, if we were to regard the latter as complete (as it is usually done), then it would turn out to be incompatible with Ajdukiewicz's reading.

The radical conventionalism of Ajdukiewicz is based on theses (A2) and (A3). Ajdukiewicz's conventionalism is more radical than Poincaré's in the following sense: for Poincaré only some sentences in science (e.g. sentences about geometric properties of objects) require additional conventions in order to function properly, i.e. to serve as empirical sentences; by contrast, according to Ajdukiewicz's radical conventionalism, all sentences call for conventions in order to perform their functions properly (either as empirical or nonempirical statements). Hence the central claim of Ajdukiewicz's conventionalism, according to which the scientific world-perspective is determined not only by experiential data, can be understood as a generalization (radicalization) of Poincaré's claim that the geometry of the world (or its fragment) is not determined by the experiential data themselves but jointly by those data and the choice of a method of length measurement.

This first difference between Ajdukiewicz and Poincaré is reflected by Ajdukiewicz's conception of language and meaning of expressions: the meaning of sentences is determined by their place in the matrix of language, which is the sum of the scopes of meaning-rules (axiomatic, deductive, and empirical) and is invariant under translation. As far as I know, it was the first holistic conception of language; it lead Ajdukiewicz to the idea that there are nonintertranslatable languages — which anticipated the thesis about conceptual noncommensurability of theories, espoused in 1960s and 1970s — and, thereby, to a certain form of cognitive relativism. According to Poincaré, who employed the common-sense notion of language, all sufficiently rich languages are mutually translatable (provided that they are based on the same logic). For Ajdukiewicz, but not for Poincaré, elevating an empirical generalization to the status of conventional principle goes beyond the initial language.

One of the most important theses of Ajdukiewicz's interpretation of Poincaré is (A3). Although it certainly has some textual basis and is crucial for a proper understanding of Poincaré's philosophy, no other commentator (apart from Ajdukiewicz) has noticed it. The extent to which this

element of Poincaré's philosophy has been neglected (outside of the circle of Ajdukiewicz's students) can be illustrated by the fact that historians of twentiethcentury physics (e.g. Gerald Holton) still mistakenly ascribe the idea of elevating an empirical generalization to the status of convention to Einstein, since Einstein adopted this turn of phrase at the beginning of his famous work of 1905, in which he put forward the special theory of relativity. However, the very phrase, together with the idea expressed by it, had appeared in *Science and Hypothesis*, published in 1902 (Poincaré 1952), which had been read by Einstein and his friends even before he formulated the special theory of relativity.

The prevailing, popular interpretation is at odds with Ajdukiewicz's reading. According to the former, the axioms of geometry and the laws of Newtonian mechanics have a permanent conventional status — as though this status belonged to them by virtue of their nature. By contrast, according to (A3), the cognitive status of every sentence is temporary and depends on decisions made by scientists. Neither does the traditional interpretation take conventional decisions into account or include counterparts of theses (A2), (A3), or (A4).

As we have said, Ajdukiewicz endorsed the interpretation (A1)–(A4) and rejected the traditional reading. However, he never explicitly criticized it and did not consider his own interpretation comprehensive or complete. Thus the problem remained as to what was the specific mistake made by the traditional interpretation and what is the true reading (intended by Poincaré or compatible with his intention). I shall call these two questions taken together – Ajdukiewicz's interpretative problem.

Ajdukiewicz encouraged his students and colleagues to study the source texts in order to sort out the problem. Two of his students, Izydora Dąmbska and Halina Mortimerowa, made some attempts in this field.

I will now present my solution to Ajdukiewicz's problem. I will do it in two steps, answering in turn each of the two questions constituting the problem. I will be guided by the assumption that Ajdukiewicz gave partial answers to both questions. The partial answer to the second question consists in his list of four theses of Poincaré's conventionalism, (A1)–(A4). In reply to the first question Ajdukiewicz stated that the traditional interpretation trivializes Poincaré's philosophy. Indeed, if on the traditional reading the conventionalist thesis says that — for some unknown reasons — metric geometries and Newtonian mechanics cannot be given an empirical interpretation, then the thesis is trivially false. If, in turn, it merely states that pure geometry and rationalist mechanics are not empirical theories but (in a certain sense)

conventions, then it is trivially true. However, triviality itself does not prove that it was not endorsed by Poincaré.

I will, therefore, seek to give fuller answers to both questions posed by Ajdukiewicz.

As to the first question — what is the error of the traditional interpretation? – I submit that not only is the traditional interpretation unclear and — on a certain understanding — false, but also, in spite of appearances, it is unfounded, because it violates the principle of complete evidence, which forbids drawing conclusions from incomplete, fragmentary testimonies. It may be based on fragments of three chapters of Poincaré's *Science and Hypothesis* but disregards all of his other texts, especially the passages which contradict it, such as the texts that corroborate thesis (A3), especially chapter 10 (part 3) of *Value of Science* (Poincaré 1958), introducing the distinction between nominalist and empirical approaches, as well as chapter 9 of the same book, the last two pages, where one can find the famous prediction of a new, nonNewtonian mechanics (Poincaré 1958: 110-111).

But why do the supporters of the traditional interpretation choose to violate the principle of complete evidence and why do they only use three chapters of one book, and why do they use these particular chapters to the exclusion of others?

In my view, there are two interconnected reasons for this. First, the traditional interpretation, on principle, avoids additional interpretative hypotheses, without which it is impossible to satisfy the principle of complete evidence. Second, it is a consequence of the interpretative tradition which had introduced the term "conventionalism" understood too narrowly. I will characterize both reasons in a moment.

Poincaré wrote his philosophical treatises in various periods of his life, with various purposes in mind. So they do not constitute a systematic exposition of his philosophical doctrine, or doctrines. Furthermore, the texts are inconsistent, there are real or apparent incongruences between them. In order to be able to consider all of them as a source for reconstruction of Poincaré's philosophy, one needs to adopt interpretative hypotheses that correlate various writings and reconcile one with another. Yet such hypotheses go beyond the published texts and introduce the element of risk as well as — perhaps — some subjectivity. If it is certainty of interpretation that you value most, you must avoid such hypotheses, and thereby you must confine yourself to the texts which do not require interpretative hypotheses.

The adherents of the traditional interpretation believe — wrongly, in my view – that they are able to reconstruct the conventionalist philosophy

of Poincaré on the basis of chapters 3, 5, and 6 of *Science and Hypothesis* (Poincaré 1952) without the use of hypotheses. But why do they believe that? Because they follow the interpretative tradition which originated outside of France after Poincaré's death in 1912 and associated with his philosophy the label "conventionalism," which does not appear in his writings. This label favoured interpretations of Poincaré's philosophy that were based only on the texts in which he used the terms "convention" or "conventional." For this reason the traditional interpretation is confined to three chapters of one book (*Science and Hypothesis*). A close reading of the texts, however, reveals that the appearance or lack of those expressions in Poincaré's writings is just a matter of style. He employs them in talking about conventional sentences, but he avoids them with respect to conventional choices; for in the latter case it is enough to say that a given decision is grounded in (nonempirical) criteria such as simplicity.

The term "conventionalism" favours another distortion of the intended sense of Poincaré's philosophy. Not only does it encourage identifying Poincaré's conventionalism exclusively with theses formulated by means of the explicit use of terms "convention" and "conventional," but it also prompts equating his philosophy with only one, earliest, thesis whose counterpart in Ajdukiewicz's interpretation is given by (A1). Such an approach neglects the later development of Poincaré's philosophy.

Indeed, in his earliest philosophical works, which laid the foundations for chapters 3, 5, and 6 of *Science and Hypothesis*, Poincaré focused on the claim that there are theories in science, traditionally regarded by empiricists as empirical and by Kantians as synthetic *a priori* truths, which actually — to Poincaré's mind — are best described as terminological conventions. In this period Poincaré considered, as the most important property of conventions, their 'insensitivity' to empirical tests or experimental results. Yet in later years, without revoking the first thesis, Poincaré introduced further postulates into his philosophy. Counterparts of some of those postulates are given by theses (A2)–(A4) of Ajdukiewicz's interpretation. However, in 1900 Poincaré put forward a philosophical thesis which is crucial for the proper understanding of the later development of his philosophy, and which was not taken into account by Ajdukiewicz in his interpretation (A1)–(A4).

Around the year 1900 Poincaré's attention was drawn to certain epistemological doctrines, which — on the one hand — seemed to resemble his conventionalist philosophy and — on the other — apparently reduced conventionalism to absurdity. The authors of those doctrines emphasized the fact that at the end of the 19th century theories in physics changed

very quickly, and concluded that science was bankrupt, or at least that the alleged bankruptcy affected the classical ideals of objectivity and rationality of science. The adherents of cognitive relativism began to insist that the choice of one of these numerous and frequently changing theories is merely a matter of taste, while fictionalists — including a former student of Poincaré, Édouard Le Roy – started to argue that "science is artificial," that it consists only of conventions, and that there is no "universal invariant" under the change of those conventions. In this context, Poincaré took the view that these epistemological doctrines are false because they overlook the fact that the changes in theories often involve merely the conventional elements, without affecting the empirical content. Accordingly, in order to distance himself from those false doctrines, Poincaré introduced into his philosophy a thesis which openly contradicts them. It runs as follows:

There is an invariant under change of theoretical conventions. It is the empirical content of the theory determined by the set of empirical laws entailed by the theory.

This thesis was first put forward in a lecture given during the International Congress of Physicists in Paris, 1900, which came to be the basis for chapter 10 of *Science and Hypothesis* (Poincaré 1952), "Theories of modern physics." Another version of this thesis is found in chapter 10 of *Value of Science* (Poincaré 1958), "Is science artificial?".

Since that time Poincaré's conventionalism has been based on three interrelated theses: there are conventional elements in science (thesis A1), changes of convention are brought about by pragmatic decisions made by scientists (thesis A3), but there is as an invariant under these changes, namely the empirical content of the theories.

The first of those postulates is etymologically connected with the term "conventionalism" and — historically — is the source of that label; the second thesis states that conventions are pragmatic *a priori* sentences, while the third is the thesis of invariantism assuming the invariance of the empirical content of theories.

The thesis about the invariance of empirical content constitutes the fundamental difference between Poincaré's conventionalism and Le Roy's radical conventionalism (nominalism, as it was called by Poincaré). It is because the latter denied the existence of an invariant under the change of theoretical conventions (Poincaré 1958: ch. 10).

The supporters of the traditional interpretation might insist that only the first thesis deserves the title of conventionalism. There would be no point in crossing swords over this terminological issue. More importantly,

even if we granted this terminological stipulation (it would suffice to call the first thesis conventionalism in the narrow sense), it would not justify setting aside the other two theses, no matter how they would be called.[1] It is worth noting, however, that the history of the term "conventionalism" is exactly parallel to the history of the term "relativity" (the law or principle of relativity) in physics. The phrase "law of relativity" had been introduced by Poincaré in 1895 — ten years before Einstein's special theory of relativity was published — as a name for the empirical law which states that it is impossible to measure Earth's absolute velocity by means of any physical methods. The law encapsulated the results of numerous experiments, such as the Michaelson–Morley experiment. In his formulation of the (special) theory of relativity in 1905 Einstein elevated this law to the status of principle – motivated by an epistemological and methodological idea put forward by Poincaré in 1902 (though, according to Poincaré, such a decision could only be made by a community of scientists, not by a single author of a theory), and he preserved the name "principle of relativity", although in its mathematical version the principle postulates invariance of the laws of physics under Lorentz transformations. Felix Klein commented on this, saying that what is called by physicists the theory of relativity, according to mathematicians constitutes an example of invariance under transformations.

To sum up, as to the question of the error of the traditional interpretation, I submit that this interpretation is unfounded because it violates the principle of complete evidence and, accordingly, makes two mistakes: incorrectly ascribes a permanent conventional status to geometry and Newtonian mechanics and neglects one of the fundamental theses of conventionalism, which postulates the existence of an invariant under changes of convention (the thesis of invariantism).

I will now move to the second question constituting Ajdukiewicz's problem. In reply to the question about the true interpretation of Poincaré's conventionalism, I argue that, in the light of the thesis about the invariance of empirical content of theories, what is crucial for understanding Poincaré's philosophy of physics are his views on the tasks and structure of physical theories, and that those views amount to a pluralist conception of theory. Again, my position on this matter clashes with the traditional interpretation

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[1]In France, Poincaré's philosophy was called, during his life, commodism (od fr. *commode* — convenient, comfortable) or pragmatism. The latter name would be justified by (A3) and by the theses included in my elaboration of Ajdukiewicz's reading, especially (AG6) and (AG8b). I will talk about Poincaré's relationship to pragmatism at the end of part 1.

of conventionalism, whose supporters maintain that Poincaré did not have his own conception of theory but instead adopted the phenomenalist conception, widespread in the 19th century, which reduced a theory to its empirical consequences. This is, to my mind, the second most serious distortion of Poincaré's views committed by the adherents of the traditional interpretation.

Accordingly, I maintain that the true (intended) interpretation of Poincaré's conventionalism is a result of adding four further theses to Ajdukiewicz's interpretation consisting of theses (A1)–(A4). I will refer to them as (AG5)–(AG8):

(AG5) There is an invariant under the changes of conventions — the empirical content of a theory, i.e. the set of laws entailed by the theory; this invariant is one of the foundations of objectivity and rationality of science.

(AG6) All (non-statistical) physical theories are polytheories, i.e. theories in the pluralist sense. A theory in the pluralist sense is constituted by a family of theories (in the traditional sense) which are observationally equivalent, use the same (or equivalent) set of differential equations, and differ by means of distinct but experimentally indistinguishable ontologies of an extraphenomenal world. For instance, Maxwell's electromagnetic theory is, in this sense, a family of observationally equivalent theories that use the set of equations of the electromagnetic field and differ in theoretical interpretations of these equations (e.g. in terms of an incompressible fluid or in terms of ether, or in terms of delayed forces acting at a distance). Since various ontological interpretations of a set of equations of a given theory are mutually exclusive, they remain unconfirmed. The choice of one of them is conventional. Thus (AG6) entails the thesis about conventionality (relativity) of theories.

(AG7) Physical reality can only be known with respect to the equivalence of rival theories (in the traditional sense) and with respect to the isomorphism of their mathematical structure.

(AG8) (a) Physical geometry is a family of observationally equivalent systems of (pure) geometry *cum* physics which differ in that they ascribe distinct but experimentally indistinguishable properties to the physical reality (e.g. global properties such as infinity). (b) In the framework of a given physical geometry one first chooses the simplest pure geometry and imposes an *a priori* interpretation on it, then reconciles the physical assumptions with this choice.

I will now point out some features of the interpretation of conventionalism consisting of (A1)–(A4) and (AG5)–(AG8).

It is clear that the notions of convention and conventionalism play

a substantial role in these theses, so a philosophical position represented by these theses deserves the title of conventionalism. It is also clear that conventionalism thus understood goes far beyond the first thesis, postulating the existence of conventions in science, as well as beyond the traditional thesis, ascribing the conventional status to geometries and mechanics. Namely, thesis (A2) points to a role played by conventional sentences (insensitive to empirical tests) in sharpening the empirical content of *quasi*-empirical sentences, while thesis (A3) indicates the pragmatic character of changes of the epistemological status of sentences and, thereby, of conventions. (AG5) states that the empirical content of a theory is invariant under changes of convention. (AG6) implies a conventional character of (the choice of) ontology. Finally, (AG8) expresses the conventional nature of geometry.

The pluralist conception of theory in thesis (A6) differs from the phenomenalist view, which reduces a theory to the class of its observational consequences. The phenomenalist view is a border case of the pluralist conception: it is obtained from the latter given an empty class of ontologies of the extraphenomenal world. Both of them are expressions of scepticism about theoretical speculation. In the case of phenomenalism, however, this scepticism consists in depriving abstract (non-observational) assumptions included in a theory of empirical sense, whereas the pluralist scepticism consists in ontological pluralism and in suspending assertion of ontological assumptions.

Thesis (AG8) calls for a special comment.

In some of his philosophical writings Poincaré declared that the general notion of group had been achieved in the process of biological evolution. Within this general concept of group we chose (unconsciously at first, by means of evolution) the most convenient subgroup for (unconscious inferences concerning) orientation in space. This is the reason why space is an *a priori* category — yet not a category of perception but of understanding. In other words, it is an instrument of thinking. We prefer the Euclidean space in everyday spatial thinking because it has brought evolutionary benefits to our species (Poincaré 1956: ch. 1).

Then again, Poincaré frequently entertained the following line of thought concerning geometry and space; a line of thought which is in accordance with neo-Kantian evolutionary epistemology, but is independent from it.

Empirical generalizations of crude facts, such as the motion of solid bodies, would be numerous and complicated, since they require considering corrections and exceptions. To simplify matters, that is, to simplify and optimize our inferences in this field, we interpolate into the crude facts about

the motion of solid bodies some idealized, fictional 'facts' about perfectly rigid bodies, and on this basis we put forward conventional principles concerning those idealized (geometric) bodies. At the same time, those conventional principles (implicitly) define the geometrical space and ideal measuring devices. Like in every process of elevating empirical generalizations to the status of convention, we witness the decomposition of initial sentences (about the crude facts) into the conventional component and the empirical residue. Geometry is the conventional component (Poincaré 1952: 138–139; 1958: ch. 10, esp. 124–125). Such is the origin of geometry, which also accounts for its epistemological status. Thus geometry is not an empirical science but a rigid science, while the geometrical space is not a descriptive category but an inferential tool, a simplifying 'detour' or 'intermediary' (Poincaré 1958: ch. 10, p. 114–115, 124–125; 1952: 49–50). Hence empirical tests of geometry would be a misunderstanding. Of course, we can change our instrument of spatial reasoning, but we cannot do it on the grounds of incompatibility with empirical facts.

So the described views make it clear why Poincaré espoused (A8). This thesis – as a description of the decision-making process in physics — was soon refuted by facts. Namely, in the general theory of relativity physicists adopted a complicated metric geometry (Riemann's geometry of space with variable curvature) in order to simplify physical assumptions. They were still guided by simplicity as the criterion of choice, yet not by the simplicity of pure geometry but by simplicity of the compound system of (pure) geometry *cum* physics. Therefore, such developments contradicted Poincaré's prediction that physicists would always pick the simplest pure geometry and then adjust physical assumptions. In order to allow for this fact in the interpretation of conventionalism, we would have to modify (AG8b) in the following way:

(AG8b') In the framework of a given physical geometry one chooses the simplest systems of geometry *cum* physics.

Nevertheless, (A8b) remains a true, i.e. intended (by Poincaré), interpretation. (A8b') would amount to a correction of Poincaré's conventionalism; thus it would lead to a version of neoconventionalism.

I will now attempt to justify the claim that theses (AG5)–(AG8) constitute the true interpretation of Poincaré's conventionalism, once we add them to theses (A1)–(A4) of Ajdukiewicz's interpretation (for which textual evidence has been given above). Strictly speaking, such a justification is required for (AG6), since textual basis for (AG5), (AG7), and (AG8) has already been provided.

The justification of my claim that (AG6) is part of the intended interpre-

tation of Poincaré's conventionalism is based on Poincaré's texts (Poincaré 1958: ch, 7; 1952: ch. 12) and, in addition, on sources concerning Hamilton's and Hertz's views on physical theories (cf. Giedymin 1982: ch. 2; 1991).

In his lecture entitled "L'état actuel et l'avenir de la physique," given during the International Congress of Arts and Science in St. Louis, 1904 (Poincaré 1958: ch. 7), Poincaré distinguished two phases in the development of physics: the period of "physics of central forces" and the period of "physics of the principles." In the first period the aim was to discover the ultimate elements of the structure of the world; it gave rise to Newton's celestial mechanics and all theories patterned after it. At the stage of physics of the principles this endeavour was not entirely abandoned but temporarily suspended: physicists settled for the quest of finding theories based on general mathematical principles (the principle of conservation of energy, of entropy, of least action), which reduce all known facts and empirical generalizations into the given domain and are true for various hypotheses about the structure of the world. In other words, each physical theory resting on such principles could be expanded into numerous distinct, hypothetical theories which postulate different, but observationally indistinguishable, ontologies of the extraphenomenal world. Consequently, each such theory is a polytheory, i.e. a theory in the pluralist sense. An early example of such a theory was the geometrical optics put forward by Sir William Rowan Hamilton. Hamilton's principle in optics postulates the existence of a function V which has a stationary property:

(H) $\delta V = \delta \int v ds$

The above principle, (H), axiomatizes all empirical laws of geometrical optics. Hamilton showed that function V has a double interpretation: it could be regarded both as Maupertuis' action or as Fermat's time. Due to this fact Hamilton's principle (H) — on the former construal, *qua* Maupertuis' principle — is a consequence of the emission (particle) theory of light, whereas on the latter construal it follows — *qua* Fermat's principle — from the wave theory of light. Thus each of these two theories of light form an extension of the phenomenalist principle (H) into the hypothetical domain of particles or waves of light. Hamilton's principle (H), therefore, expresses the empirical content shared by both theories of light in the domain of geometrical optics. To put it another way, it plays a role analogous to their Ramsey-sentence, which in this case would take the form of an existential (second-level) generalization of the disjunction of the assumptions of the emission theory and the wave theory. Let us assume that the conjunction of the assumptions of the emission theory of light is given by the sentence:

$$F(f_1 \ldots f_k)$$

,

while the conjunction of the assumptions of the wave theory of light is expressed by the sentence:

$$G(g_1 \ldots g_r)$$

,

where $(f_1 \ldots f_k)$ are theoretical predicates of the emission theory and $(g_1 \ldots g_r)$ – theoretical predicates of the wave theory. The Ramsey-sentence of the polytheory comprising both theories will take the form:

$$(\exists X_1) \ldots (\exists X_r) \ (F \, (f_1 \ldots f_k)) \vee \ (G \, (g_1 \ldots g_r)) \, .$$

Hence it is the pluralist conception of theory which, according to Poincaré, is implicit in the philosophy of physics of the principles. Given the additional assumption, which I adopt, that Poincaré's philosophy was intended to express the philosophy of physics of the principles, we arrive at the conclusion that the pluralist conception of theory was the conception espoused by Poincaré.

In *Value of Science* we read: "Such is the second phase of the history of mathematical physics and we have not yet emerged from it." (Poincaré 1958: 95). In the same book he wrote: "The most remarkable example of this new mathematical physics [the period of physics of the principles — *JG*] is, beyond question, Maxwell's electromagnetic theory of light." (Poincaré 1958: 94).

In *Science and Hypothesis* (Poincaré 1952: ch. 12, "Optics and electricity") Poincaré presented his interpretation of Maxwell's electromagnetic theory. Once he had formulated the equations of electromagnetic field, Maxwell tried to derive those equations from the theory of incompressible fluid and then from various mechanical models of ether. Eventually, however, he abandoned those attempts and settled for laying out the conditions under which mechanistic explanation is possible. In every domain of physical phenomena there are parameters — call them parameters q – whose values can be directly measured. The laws (based on experience) governing these values are usually formulated in the form of differential equations which connect together the parameters q and time. A mechanistic explanation of such phenomena consists, on the one hand, in finding a set of differential equations satisfied by the coordinates of hypothetical molecules m (equations which must conform to the laws of physics) and, on the other hand, in determining the coordinates of the hypothetical molecules m as functions of the parameters q attained by experiment.

But consider now only the directly measurable parameters q and let

us express T (kinetic energy) and U (potential energy) as functions of parameters q and their derivatives. Among all the paths that lead from one position of our system to another, there is a single path for which the mean action is a minimum. Thus the principle of least action is sufficient for determining the differential equations (Lagrange equations) which capture the relationship between the variations of parameters q. At this moment, there are two possibilities:

One of two things must now happen. Either for a convenient choice of T and U the Lagrangian equations, constructed as we have indicated, will be identical with the differential equations deduced from experiment, or there will be no functions T and U for which this identity takes place. In the latter case it is clear that no mechanical explanation is possible. The necessary condition for a mechanical explanation to be possible is therefore this: that we may choose the functions T and U so as to satisfy the principle of least action, and of the conservation of energy. (Poincaré 1958: 220)

Maxwell, therefore, had to answer the following question: can we assemble T and U, parameters q, and their derivatives in such a way that the electric phenomena would satisfy the principle of least action?

Maxwell recognised that if we regard the former as the potential energy U, and the latter as the kinetic energy T, and that if on the other hand we take the electro-static charges of the conductors as the parameters q, and the intensity of the currents as derivatives of other parameters q — under these conditions, Maxwell has recognised that electric phenomena satisfy the principle of least action. (Poincaré 1958: 222)

It means that there is a mechanistic explanation of electric phenomena; or even that there are infinitely many such explanations.

As we have seen, according to Poincaré, Maxwell had shown that — by means of suitable definitions — the electric phenomena satisfy the principle of least action. It is sufficient for proving that there are infinitely many mechanistic explanations of electromagnetic phenomena, that there numerous mechanistic explanations of the structure of hypothetical ether which entail field equations; and all that is possible, although no such theory had been actually formulated. As a result, on this interpretation, Maxwell's electromagnetic theory is a family of observationally equivalent theories (in the traditional sense) which operate on the same set of field equations and for which the set of ontologies of the extraphenomenal world — though not specified in detail — is non-empty in virtue of Maxwell's proof (which might be regarded by some as non-constructive).

When Heinrich Hertz was considering in hindsight the impact of his

experiments between the years 1887–1888 on the existing electromagnetic theories and posed his famous question: "What is Maxwell's theory?", his answer was: "Every theory which entails Maxwell's field equations", and thereby each such theory, regardless of whether it postulates — in order to account for the observable electromagnetic phenomena — motions of ether molecules, actions at a distance delayed by dielectric ether (as in Helmholtz theory from 1870), or any other such mechanism (cf. Giedymin 1991: 13–15). So Hertz's answer to the question "What is Maxwell's theory?" implies that Maxwell's theory is a polytheory, i.e. a theory in the pluralist sense.

At the end of this section I will quote two French physicists: Langevin and de Broglie, who emphasized Poincaré's theoretical pluralism in their assessment of his contributions to the philosophy of physics.

Langevin writes that according to Poincaré the aim of science is to construct a language which would enable us to express in a precise and general way the more and more complex relations revealed to us by experience:

Like translations of the same idea into different languages, [. . .] apparently distinct theories allow us to present the same facts. [. . .] Only convenience of use and flexibility are the criteria of choice. (Langevin 1914: 200–201)

De Broglie (1951: 51) says that Poincaré's philosophy of physics — called by him nominalism or commodism — is characterized by scepticism about physical theories:

Poincaré used to stress the arbitrary — to a significant extent – character of physical theories. According to him, there are always numerous logically equivalent theories, which equally precisely account for the observed facts. It is only consideration of convenience that prompts scientists to choose one of possible explanations. (De Broglie 1951: 51)

Those who, by following the traditional interpretation, attribute to Poincaré the phenomenalist and instrumentalist conception of theory, usually point — in order to justify their reading — to short fragments of Poincaré's philosophical writings where he talks, often metaphorically, about the proper function of a theory. So, for instance, they quote a passage from *Science and Hypothesis* (Poincaré 1952: 144) where Poincaré compares science to a library and mathematical physics to the catalogue; or to another passage in which Poincaré writes:

Fresnel's object was not to know whether there really is an ether, if it is or is not formed of atoms, if these atoms really move in this way or that; his object was to predict optical phenomena. (Poincaré 1952: 160)

In fact, these passages are compatible with both phenomenalist and pluralist views on theories, so they are ambiguous and indecisive. The texts

I quoted above (Poincaré 1952: ch. 12; 1958: ch. 7) make up a much more solid ground for the claim that Poincaré adopted the pluralist conception of theory, and that he accepted (AG6).

Before we proceed to part 2, I would like to point out that theses (A1)–(A4) clearly indicate an evolution of Poincaré's philosophy and the direction of this evolution. Thereby they have performed a heuristic function with respect to the theses (AG5)–(AG8) of my interpretation.

Thesis (A3) is incompatible with the traditional interpretation, although they both have explicit textual basis: the traditional interpretation is based on Poincaré's earliest texts (from the last two decades of the 19th century), while (A3) draws on his later works. That points to a certain shift in Poincaré's philosophical views. Yet Poincaré never retracted the claim expressed in the traditional interpretation — simply because he preserved it in a weakened form. This is implied by the first part of (A1), which is the existential generalization of the claim expressed by the traditional interpretation and which — in contrast to the traditional interpretation itself – is compatible with (A3). As we have seen, according to (A3), the epistemological status of sentences in science depends on pragmatic decisions made by scientific communities and thereby strongly associates Poincaré's philosophy with the pragmatist movement while contrasting it with the traditional epistemology of the empiricists or Kantians. The thesis ascribing a permanent conventional status to metric geometries and Newtonian mechanics, on which the traditional interpretation is founded, was the first step in this direction, as it extended the traditional classification of scientific proposition or sentences to include conventions, that is, sentences which are neither true nor false (according to Poincaré). Thus understood, conventions do not describe reality but are instruments, tools helpful in constructing science. Still, if conventions are such instruments, they cannot have a permanent status: tools are selected according to goals and circumstances, such as convenience. Apparently, Poincaré realized this only after he extended his philosophical interests to physics, and thereby to the whole science. (A3) suggests an evolution in this direction — towards a consistently pragmatist understanding of conventions as pragmatic *a priori* sentences.

Ascribing to Poincaré the intention of preserving and eternalizing Newton's theory by bestowing a conventional character on it, seems, therefore, to be misguided. Rejection of the permanent nature of convention (including metric geometries and mechanics) is expressed by thesis (AG5) from 1900, in which the status of an invariant under changes of convention is attributed to the empirical content of a theory. Some echoes, as it were, of the tradi-

tional interpretation are discernible in thesis (AG8b), which lead Poincaré to predict, wrongly, that physicists would preserve Euclidean geometry due to its simplicity. However, (AG8b) — in contradistinction to the traditional interpretation — is clearly pragmatist in character: it says that given that geometry is an instrument of reasoning, it is the criterion of simplicity that determines the choice of a particular geometry. Nor does (AG8) assume that metric geometry cannot be given an empirical interpretation: it would be incompatible not only with (A3), but also with (A2), which postulates the relativity of metric geometries (the dependence of the meaning of sentences about geometrical properties of material bodies on the choice of a method of length measurement). Consequently, the instrumental character is attributed to geometry and to the concept of space not by virtue of an analysis of their nature but based on the observation of scientists' habits (which can change) or for reasons having to do with one's agenda or persuasive goals.

This last statement leads to a reflection about the relationship between Poincaré and the pragmatist philosophy. If by pragmatism we understand – following Rorty — antirealism or anti-essentialism with respect to "truth," "knowledge," "language," etc., as well as "romanticism" — i.e. the programme that recommends replacing the question "Which sentences are true?" with the question "Which language should we choose?" — then it is possible to propose a strictly pragmatist interpretation of Poincaré's philosophy. It is worth bearing in mind that in France Poincaré was counted among the pragmatists and was regarded as a representative of a movement called "utilitarian romanticism" (cf. Berthelot 1911); from there, there is only a small step to counting him among the pioneers or predecessors of postmodernism.

Nevertheless, I think that such a reading would be at odds with some of Poincaré's statements, e.g. with his critique of Le Roy's views, and thereby with thesis (AG5). Poincaré was — to my mind — a moderate pragmatist, not a radical one. In other words, he believed that there are non-descriptive, instrumental components of science (sentences and concepts), but he also admitted that there are descriptive (true or false) ones. Accordingly, he claimed that in the case of those non-descriptive, instrumental elements of science one should adopt the nominalist approach, not the empirical one, and then we would ask, of course, not which of these components are true, but which linguistic tools should be selected (which geometry, which ontology for physics, etc.). Thanks to this moderate version of pragmatism Poincaré was able to steer clear of the cognitive relativism typical of the radical pragmatism of James or Dewey. By contrast, Ajdukiewicz's radical conventionalism was closer to the radical pragmatism, yet it was not identical

with it either.

2. The nature and types of textual interpretation

If there are different, incompatible interpretations of the texts of a given author, it may give rise to a problem of selecting one of them, e.g. to the problem of choosing the best reading. The comparative assessment of interpretations assumes, of course, that they are comparable. Yet, are all interpretations of a given text actually comparable? In order to answer this question, we must first give some thought to the nature and kinds of interpretation. The observations I am about to present occurred to me thanks to the first part of this paper, that is, in the context of certain interpretations of Poincaré's conventionalism. Nonetheless, I will present them in a general form.

By textual interpretation we mean either some intentional action or an outcome of this action formulated as a conjunction of sentences P_1 & ... & P_n. These sentences can be taken straight out of the interpreted text or they can be formulated by the interpreter and contain the text's content (e.g. the epistemological content of philosophical writings of Poincaré); they can also be edited versions of sentences appearing in the text; at any rate, they must be sentences.

However, when we say that an interpretation is true (or false), it does not follow that it is the case if and only if the conjunction P_1 & ... & P_n is true (false). This simple relation does not hold, which suggests that what we have in mind when we speak of interpretation — in the sense of the result of an action — is a complex sentence governed by an intensional operator, say "Int," which has in its scope the conjunction P_1 & ... & P_n. Furthermore, although interpreters often strive to achieve the true (i.e. intended) interpretation, it is not always the case. Accordingly, we will distinguish two distinct interpretations of the "Int" operator — the classical one and the non-classical one. We will read the interpretative sentence (i.e. interpretations) of the form:

(i) Int-A-$(P_1$ & ... & $P_n)$

in one of two ways. In we have the classical interpretation of "Int" in mind, we shall read (i) as: "The intention of (the author) A was to claim that P_1 & ... & P_n" or, in short, "A claimed that P_1 & ... & $P_{n.}$" If, however, we deal with the non-classical understanding of "Int," then we read (i) as: "P_1 & ... & P_n constitute X's interpretation of the text of the author A" or "P_1 & ... & P_n is the result of the interaction between A's text and the interpreter X." It is clear that (i) understood classically is a sentence about the author A and his text, whereas taken in a nonclassical manner it is a

statement about the interpreter *X* and his reaction to the text of the author *A*.

We shall also distinguish interpretations in the narrower and broader sense. By interpretation in the narrower sense we simply mean a sentence like (i), while by interpretation in the broader sense we mean a sentence like (i) together with an explanatory framework consisting of hypotheses connecting the text with the personality of its author and his (hypothetical) intellectual biography (TPB-hypotheses). In the case of a nonclassical interpretation the role of the explanatory framework would be played by the intellectual biography of the interpreter, which however is of less concern to us.

One might say that a classical interpretation is like a naturalistic portrait of the text's author, whereas a nonclassical one might be compared to a record (or a tape) labelled "Perahia plays Mozart" or "Karajan conducts Beethoven's Symphonies."

Interpreters not only can have different aims, but they can also use different methods for achieving their goals. Reflection on various interpretations of Poincaré's conventionalism suggests distinguishing four paradigms or models of interpretations conceived as actions guided by separate aims and employing different methods. Two of those paradigms, which I will symbolize as 2 and 3, are classical paradigms, while the remaining two, 1 and 4, are nonclassical. These four models constitute 'pure types' of interpretation; there are also 'mixed' models, obtained by combining two pure paradigms, e.g. 2/4 or 3/4. I will now characterize each of these pure models.

If the author of the analyzed text in no longer alive, and the text is ambiguous, fragmentary, and contains apparent or real inconsistencies, then — as some claim — it is impossible to find the true (intended) interpretation. In such case the unattainable aim must be replaced by an attainable one, e.g. by means of interaction between the texts and the interpreter. The latter reads the text, and if it is interesting, she gives a suitable commentary. Commentaries differ from each other with respect to the degree of routine and discipline or liberty. This can be illustrated with the following examples: a logical analysis of the thesis of conventionalism in the traditional sense; a religious sermon based on a passage from the Gospel; a philosophical essay commenting on Nietzsche: "Once the sin against God was the greatest sin; but God died, and these sinners died with him. To sin against the earth is now the most dreadful thing." (from the Prologue to *Thus Spoke Zarathustra*).

Interpretations patterned after the first paradigm are not aimed at bringing out the sense intended by the author of the text; they seek to

present the result of the interaction between the text and the interpreter. Hence sentences making up such an interpretation are not pure reports but amount to the outcomes of the interpreter's reaction elicited by the text. Given that they do not explicitly appear in the text, nor do they directly (without additional assumptions) follow from the text, this kind of interpretation is creative in nature. There are no mediating hypotheses either, since the aim is not to achieve the true (intended) interpretation. Finally, the same text could give rise to different, equally good readings; that is why an interpretation in keeping with the first paradigm is pluralist in character. We shall call the first model — the interactive model of interpretation.

The traditional interpretation of Poincaré's interpretation, discussed in part 1, follows a different pattern. The purpose is to obtain the true (intended) interpretation, but the feature which distinguishes this model from the classical paradigms is the deliberate avoidance of nontrivial interpretative hypotheses, and related emphasis on the literal reading of the text. In other words, the interpreter intentionally takes a neutral, non-interventionist attitude towards the text. The point is usually to minimize the interpretative risk and subjectivity. If the analyzed text is fairly lucid, unambiguous, systematic, and internally consistent, then this model can lead to satisfactory results. If, however, at various points the text is ambiguous, fragmentary, and contains apparent or actual inconsistencies, then this paradigm, in its pure form, fails, and the interpreter needs to resort to auxiliary TPB-hypotheses, such as "The author changed his mind" or "The author did not present his views in an orderly fashion," or even "The author was a schizophrenic." In the model discussed here, however, nontrivial hypotheses are avoided, so they are admitted only as an exception and a last resort, as rarely as possible. Thus in this paradigm we can only encounter sketchy biographies of the author. We shall call this standard – the pure classical model of interpretation.

My own interpretation of Poincaré's conventionalism, being an extension of Ajdukiewicz's interpretation (A1)–(A4), shares the aim of the pure classical model, i.e. the endeavour to achieve the true (intended) interpretation. It rests, however, on the assumption that the true interpretation of a unsystematic, fragmentary, and sometimes ambiguous text, can be reached more easily — or exclusively — by means of interpretative interaction and intervention, i.e. through interpretative hypotheses. In this way it is decided which passages are more important and trump the other passages, how to solve the inconsistencies, how to improve the formulation, and so on. In other words, the sentences $P_1 \& \ldots \& P_n$ under the operator "Int" are here

conceived as the text that has been amended and edited in accordance with a postulated detailed intellectual biography of the author, which is supposed to clarify this edited and corrected text. One of the further functions of this biography is to provide a basis for dismissing rival readings: perhaps there is only one true interpretation of the text (although even that is doubtful), but certainly there are many interpretations compatible with the text. So the interpretation patterned after the third paradigm is pluralist, and in this respect it resembles theories in the pluralist sense. The intellectual biography is so important here for the interpretation, that the interpreter must be at the same time a biographer of the author.[2] In contrast to the pure classical model, the third paradigm combines the classical aim (true interpretation) with an interactive and creative method. We shall call it, therefore, the enriched classical model of interpretation.

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[2]To illustrate the point, let me list several of my TPB-hypotheses making up the intellectual biography of Poincaré:

(a) Poincaré's philosophical writing are exclusively concerned with the problems of philosophy of mathematics and physics and with the evolutionary epistemology. So it is a purely secular philosophy.

(b) In his philosophy Poincare sought to represent the evolution of mathematics and physics, as well as their contemporary state. In philosophy of science his intention was to set out a programme of physics of the principles which was considered by him to be the programme of the contemporary stage of the development of physics. In order to capture deeper and long-term tendencies in the development of human knowledge, Poincaré used to invoke Darwin's theory of evolution, associated by him with a range of philosophical positions: empiricism, Kantianism, and pragmatism.

(c) Two ideas which dominated his views on the development and progress of science were drawn from the theory of evolution and the mathematical theory of groups. So he regarded the changes of scientific as analogous to the evolution of species, not as revolutionary or disruptive shifts. The objectivity and rationality of science rests, in his view, on the empirical content which is invariant under changes of conventions.

(d) Poincaré's philosophy was not subject to any radical changes during his lifetime; he never retracted any of his earlier claims, although he did introduce certain modifications weakening the previous theses, so as to reconcile them with the theses put forward later. This applies especially to his views on the status of geometry, which were the starting point for his philosophical thought and were subsequently embedded into his philosophy of physics.

(e) Poincaré developed his conventionalist philosophy of physics in order to show how the continuous progress of science is possible in spite of frequent changes in the theories. So the aim of Poincaré's philosophy was certainly not to preserve and eternalize Newtonian physics.

(f) The style of Poincaré's writings was literary and non-pedantic. Although he sometimes made use of Kantian, empiricist, pragmatist, and evolutionary ideas, he never treated them dogmatically.

There is one more pure model of interpretation, which — like the first model – does not seek to achieve the true interpretation. In this paradigm, the author's text is treated as a starting point, as inspiration for creating a novel, modern, attractive, and useful neodoctrine. So that, for instance, the philosophical writings of Poincaré could prompt one to put forward a neoconventionalist philosophy, related to Poincaré's philosophy only genetically but aiming at resolving philosophical problems of modern mathematics and physics. Such a procedure is creative (in the already specified sense), interactive, and pluralist, just like in the case of the first model, but it has a different purpose. We shall call the fourth paradigm — the model of constructing a neodoctrine.

In the light of this discussion of four models, it is easy to see that interpretations are comparable only if they are guided by the same goal, like in the case of both classical paradigms. Only comparable interpretations can compete with each other. There is no point in comparing interpretations which have completely divergent aims, e.g. interpretations conforming to the non-classical paradigms with the classical interpretations. The situation of mixed interpretations, e.g. 2/4, is more complicated, and we will not discuss it here. Specifying which interpretation is at issue in a given context would spare us a lot of misunderstandings and futile controversies.

From the point of view of the methodology of the pure classical model, the major objection against an interpretation patterned after the third, enriched classical model could be concerned with its hypothetical and creative nature. Critics adopting the pure model could argue that if a given interpretation contains numerous sentences absent — explicitly or implicitly — from the text, then such an interpretation cannot be true: the aim of reaching the true (intended) interpretation and its creative nature cannot be reconciled. The same opponents admit, of course, that an interpretation which fails in the light of the pure classical model can be an intriguing and valuable neodoctrine, and thereby fall under the fourth model. Such a challenge could be raised against thesis (AG6) of my interpretation of Poincaré's conventionalism, since it does not appear in his texts, either explicitly nor implicitly (it does not follow from the text without additional assumptions). These features disqualify it — according to critics advocating the methodology of the pure classical paradigm — as a candidate for the true interpretation, but of course do not dismiss it as a proposal of neoconventionalism. The motivation of such adversaries would be clear: they would rather give me the honour of creating a new philosophical doctrine than admit that my interpretation of conventionalism, incompatible with theirs, is true. Yet what could be the

reason for doubting whether (AG6) is a component of the true interpretation of conventionalism? As I have said, the reason is the creative nature of (AG6).

Of course, in defence of my position, I argue that (AG6) indirectly follows from Poincaré's texts (1952: ch. 12; 1958: ch. 7), that is, we can infer it once we adopt an additional assumption: "The aim of Poincaré's philosophy was to bring out the philosophy of physics of the principles."

Nevertheless, in reply to my defence, the critics advocating the methodology of the pure classical paradigm will pose the following question: if (AG6) follows from the quoted texts once we accept an 'innocent' additional premise, then how can we account for the fact that thousands of physicists, mathematicians, philosophers, and historians who read Poincaré's texts failed to notice the pluralist conception of theory, present in (AG6), but they did notice the phenomenalist view?

So I must answer this question, and to this end I will avail myself of yet another notion of creative interpretation, a notion closer perhaps to the traditional, e.g. Diltheyan, intuitions. I will begin with two analogies.

First, imagine that we are standing in front of a 14th-centure building, and that on one of its walls there is a painting from the 19th century. Now, imagine that some art historian managed to show that underneath the 19th-century painting there is a much older one, e.g. a lost work of Andrea Mantegna.

My second analogy invokes the history of our changing views on diseases. For many centuries it was believed that curses can cause illness or that diseases are a punishment for sins. It took centuries of efforts to popularize the naturalistic account of their origin.

Now, what I have in mind in invoking these two examples is this. My reading of Poincaré's conventionalism — like other interpretations following the third model — is creative in the following sense: its truth becomes discernible only after we remove the influential tradition distorting our understanding of Poincaré's texts, tradition which made the readers reduce this philosophy to a single thesis, (A1) (or its part), and ascribe to Poincaré a widespread phenomenalist understanding of the nature of theory.

How do such influential and distorting traditions emerge?

I think that they are usually a result of superficial, literal reading of complex and unsystematic texts and of assimilating lesser known texts (e.g. philosophical texts, written by non-professional philosophers) into well-known frameworks of major philosophers of a given age. The tendency is very strong, since it guarantees an immediate 'understanding' of the unfamiliar texts

by means of reducing them to the familiar ones, and it is often associated with nationalism ("He obviously took it from Mach," "All of it is old hat – everything can be found in Hume," etc.).

In consequence, the readers of Poincaré's writings failed to notice the pluralist view, but they saw in it the phenomenalist conception of theory, because the latter was the most familiar one in the 19th century and because, in addition, the pluralist account could be recognized in Poincaré's writings only after collating it with appropriate works of other authors representing physics of the principles, especially those of Hamilton, Maxwell, and Hertz.

Against the critique motivated by the methodology of the pure classical model of interpretation, I argue that the aim of producing the true interpretation of a text is not only compatible with the creative character of interpretation (in both senses distinguished above), but some texts — such as Poincaré's – will fail, under the influence of the distorting tradition, to reveal their true, intended meaning unless they are subject to a creative interpretation.

Finally, it must be observed that the symbol "Int," which has been used as a sentencemaking operator that leads to an interpretation in the narrower sense, can also denote a function which maps one set (the analysed text or 'input') into another, i.e. the outcome of the interpretation, or 'output'. The ideal interpretation according to the methodology of the pure classical model would be an identity (nil) transformation that leaves the initial text almost unaltered; whereas the creative character of interpretation according to the methodology of other models allows for an output which is, to a certain extent, different from the initial sentences. In the interpretations falling under the enriched classical paradigm, or even under the model of neodoctrine, there will be some invariants, whereas the interactive model is free from any such constraints. Hence, so long as one admits interpretations belonging to all four types, an arbitrary set of sentences might constitute an interpretation of a given text. One must then settle for a pragmatic condition that states that anything that is offered as an interpretation is an interpretation, although not necessarily of any concern to us.

If we compare the analyzed text to experimental data in science, it is impossible to characterize in advance, in general terms, all reinterpretations of these data admissible in the light of future theories. The demand that theoretical hypotheses should account for experimental data (or corrected experimental data) has its counterpart in the methodology of classical models of textual interpretation: in the enriched classical model it is required that the edited and corrected text, that is, the interpretation in the narrower

sense, should be accounted for in terms of the intellectual biography of the author of the text. Whereas in the methodology of the pure classical model, which discourages hypotheses, a given text is regarded as self-explanatory, and thereby requiring (almost) no interpretation.

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Barbara Starosta
HOW CONSCIOUSNESS SHAPES EXISTENCE

1. INTRODUCTION

For centuries human beings have been accompanied by a sense of the variety of the world they live in. It has been articulated in all the languages through expressions describing variability, diversity, alternation, dissimilarity, multiplicity, mobility. This sense of variety was familiar to the ancient thinkers of Eastern and Western civilizations, shamans and sorcerers.

In order to exist and function, humans, like all other living organisms, need a constant influx of energy and information. There is no action without information. Action, in turn, requires living beings to choose from the infinite reality information that is certain and that allows them to make decisions. Certain information increases the chances for effective actions.

The necessity to deal with an infinite variety has led to the creation of two coping techniques:

1) observation, imitation, classification — various types of languages, i.e. the language of gestures, sounds or smells allows the acquired certainty to be passed on from generation to generation;

2) the search for stability, constancy, unity in variety

a) through contemplation, meditation, investigation, intuition,

b) through intensive mental efforts aimed at creating abstract linguistic patterns of reality. They result in a simplified way of viewing the world and these mental patterns allow living beings to observe, classify and experiment.

Both of these techniques allow one to acquire a sense of certainty. The European manner of thinking, which is based on Greek philosophy, prefers technique b): certainty is achieved through the examination of the laws

of nature, the development of mathematics and logic. The search for the unity of existence which is indivisible, and does not share its unity with nothingness is conducted through intensive mental effort to create abstract patterns in the human mind.

This manner of thinking has led to the development of modern science. It has been accompanied by the conviction that the aim of learning consists in the acquirement of knowledge and information that is certain.

2. CONSCIOUSNESS SHAPES EXISTENCE

The lesser the interference in the information process, the greater the certainty of information. Interference creates information noise and its level can make the reception of correct information completely impossible.

The entire development of humanity consists in the gradual realization that in order to achieve certainty, one must decrease information noise.

The awareness that information noise comes from natural language and the observation that logic and mathematics deliver certain knowledge provided an impulse for the development of these sciences. Logic aims to decrease the noise that comes from language and the enrichment of mathematical language increases the possibility of translating non-mathematical texts into the language of mathematics. The development of mathematics creates a greater number of mathematical patterns, which enable one to acquire consistency and explain non-mathematical problems in a noiseless manner. This way, consistencies and explanations receive the certificate of certainty.

At the beginning of the twentieth century, it has been concluded that information interference and noise arise WITHIN the unformalized language. The introduction of non-mathematical concepts into a mathematical pattern does not reduce the information noise connected with them, which is then transferred to consistencies despite the noiseless manner of reasoning and legitimization. Therefore, when using mathematical patterns, one ought to define the introduced concepts as precisely and unequivocally as possible.

Awareness of the ambiguity of concepts has inspired intensive efforts to invent methods of purifying the language of science, which resulted in moving ostensible problems outside of the realm of science and imposing formal rules upon scientific language.

The effects of these efforts appeared swiftly. The Edifice of modern Science shot up into the skies supported by a solid platform of laws, theories and theses which were certain and free from information noise. Science could deliver certain information which became the foundation of modern technology. The Edifice could start producing golden eggs, from which hatched golden

chickens. It is not surprising that this caused an influx of orders and money, which were readily used. The entire edifice became a subject of examination (science about science), people started creating a technical repository (the methodology of scientific examination) and conducting studies concerned with predicting the future. These studies were greatly enhanced by probability theory. Probability is a MEASURE which allows one to estimate the level of certainty of concepts and scientific theorems. Because probability is determined based on POSSIBLE results of experiments or observation, it is a measurement which rates the level of certainty of all issued predictions. Introducing probability theory into science has enabled scientific divination and opened the way to the development of statistics. The concept of probability enriched modern science with elements of Greek philosophy, connected to the variability (variabilism) and relativity of things (relativism).[1]

Probability theory also brought unease: all scientific estimations ARE NOT CERTAIN, but PROBABLE. Their probability can be estimated numerically on a scale from zero to one. If A indicates an event and P the probability of that event, then $P(A) = 1$ only if the event is CERTAIN. Such events include theorems formulated in logic, mathematics and formalized non-mathematical theories. All other theorems are UNCERTAIN. If the level of uncertainty is small, then the estimations can be ACKNOWLEDGED as certain. In science, uncertainty is limited by the rule of optimum strategy. It imposes a threshold of competence that needs to be crossed in order to create certain estimates and assess their logical value. An estimation is certain if it is created according to a proper action performed on said estimations (scientific examination). The produced estimations themselves become the tools to create further estimations. Estimation is certain if the action is

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[1]The philosophy of Heraclitus: a) The basic property of reality is its ever-present tendency to CHANGE. "A RIVER is a reflection of reality. Everything changes, nothing remains still, 'you cannot step twice into the same stream', because it flows with ever-newer waters. Death is also a reflection of reality. Everything in nature is constantly dying and constantly being born [...] 'We both step and do not step into the same river'; the only truth is that we are changing, [...] there is no being, THERE IS ONLY BECOMING."

b) The shaping of the environment consists in the emergence of opposites. This process causes constant motion, which occurs according to its own set of rules. The constant flow of things blurs the lines between opposites. There are no borders, only constant transformation (in this understanding good and evil are the same). All other values are similarly relative. "Nothing that exists has constant and absolute properties, but constantly changes from wakefulness to sleep, from youth to old age, from life to death. Such is the strange nature of things that OPPOSITES shape their structure" (Tatarkiewcz 1970).

effective. Success guaranties certainty.

In order to determine the optimum action strategy, people constructed an entire apparatus of modern Informatics based on probability theory, which has delivered a new, precise MEASURING TOOL that allows for a more accurate assessment of the certainty of scientific theorems. Scientific examination assigns numbers to the characteristics of the examined objects, which enables one to use the mathematical apparatus to describe these objects and to draw far-reaching theoretical and practical conclusions from theorems that have been ACKNOWLEDGED as certain based on experience or an experiment. Information noise which accompanies scientific measurements can be minimized by replacing human beings with a precise measurement apparatus and computers. It has also been concluded that the informational noise connected with humans does not come only from language, but also from the SUBCONSCIOUSNESS. Informational noise arises as a result of the fact that the human subconsciousness is shaped by the cultural environment in which they have been born and raised. This cultural context has considerable influence on thought processes and thus causes informational noise. The quest for certainty creates a need to shape the human environment in a way to make consciousness free from any experiences, feelings, inconsistencies, anxieties and fears that interfere with thought processes. It has been deemed possible to raise such people. Only their cooperation with computers produces almost noiseless estimations and their certainty acquires a high level of probability.

3. EVALUATION SCALES

The probabilistic model has provided the sciences which examine human behavior, consciousness and subconsciousness with the first precise scale that evaluates the estimation of human behavior and thought processes. The evaluation scale which has been used for centuries is based on juxtaposing opposites — creating pairs of positive and negative adjectives. A multitude of such pairs is used in almost every language in the world,[2] for instance:

evil — good

stupid — smart

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[2]The English language uses 30 pairs of nouns, adjectives and verb antonyms. Scales constructed with polar terms are used to determine the meaning that the users of the language ascribe to the phrases of this language (names in particular). The study of scales based on polar terms and their use for the assessment of phrases is conducted in various languages of the world, for instance in the Chinese language (Osgood, May, Miron 1975).

false — true

dark — light

small — big

This has led to the creation of the following type of scale:

polar   polar
term   term
   3 2 1 0 1 2 3
X |———|———|———|———|———|———|———| Y
       the numbers mean:
          0 — neither X, nor Y
          1 — some
          2 — enough
          3 — definite, extreme

The probabilistic scale introduces two polar terms: zero and one, but it also allows for an INFINITE NUMERICAL gradability:

        0 |————————-| 1
(probability, uncertainty)   (certainty)

The probabilistic scale has led to the division of opposites and their measurement on separate scales:

evil

0 |————————-| 1

good

0 |————————-| 1

stupid

0 |————————-| 1

smart

0 |————————-| 1

The division of opposites and the new scale of measurement have contributed to the development of psychology, pedagogics and other sciences concerned with thought processes.

Human thinking consists of constructing concepts, which in the European tradition are shaped as entities (ideas) . According to the rule of connecting opposites and the battle of opposites,[3] many of these entities are connected into pairs of opposites:

<div style="text-align:center">

evil — good

death — life

hate — love

</div>

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[3]Anaximander introduced the term "beginning" (*arche*). After being used by the philosopher, it immediately lost its colloquial meaning and became not just the beginning, but the "principle" of things — their proper and primary nature. Nature — a term which used to refer to things that change, started to be used in philosophy as something that did not change. Variable phenomena possess a constant nature. The property of the principle is not set based on observation, but through deduction: what the principle must be like in order to create nature.

Perhaps due to Eastern influences, early Greek philosophy frequently referred to the concepts of indefiniteness and infinity. However, later on, when Greek philosophy gained more independence, it became more finite and defined.

The world emerges from infinity as a process of transformation from one thing to another. Anaximander "did not assume that coming to existence occurred through the transformation of elements, but through the emergence of OPPOSITES. The primordial infinite contained all opposites. In nature, they are separate. The process of creating nature consists in the emergence of opposites. This process is caused by eternal motion, which is subject to a proper principle.

Parmenides believed that the proper view of being was created by the results of knowledge, not phenomena; that we perceive reality correctly only if we pass over its variability and diversity and pay attention to its simple, unchangeable, uniform and continuous basis.

Parmenides' teachings overrode Heraclitus' theories. Empedocles, Anaxagoras and the atomists created their systems in order to align his teachings with facts derived from experience. Parmenides' influence caused natural philosophers to consider matter as inert, whereas Zeno's as infinitely divisible. Later, the study of the unchangeability of being was undertaken by Plato in his theory of Ideas.

The Pythagoreans claimed that aside from the boundless, which gave birth to nature, number was the second principle. According to their beliefs, the soul existed independently of the body, could connect to any different body and was more durable than the body. This dualism made them see opposites in every domain – bounds — boundlessness, unity — variety, light — darkness, good — evil, stillness — movement, masculinity — femininity" (Tatarkiewicz 1970).

<div align="center">

falsehood — truth

nothingness — existence

. . . .

</div>

In many cases, these connections lead to paradoxes and antinomies, which induce us to search for solutions to essential logical or semiotic questions. The probabilistic scale allows us to remove many of these paradoxes by dividing opposites:

<div align="center">

evil

0 |————————-| 1

good

0 |————————-| 1

life

0 |————————-| 1

death

non-gradable concept

love

0 |————————-| 1

hate

0 |————————-| 1

truth

0 |————————-| 1

falsehood

non- gradable concept

</div>

. . . .

Concepts such as life and death or truth and falsehood belong to different categories, similarly to concepts such as "devil" or "pin."

More precise measurements showed that the probabilistic scale is not accurate enough because of its limitation of values to the (0,1) bracket. In the case of philosophical problems, such as the purpose of science, the mere idea of existence or knowledge and the use of such a scale allows for the possibility of formulating contradictory statements, such as: "The purpose of science is the acquirement of certain knowledge" and "The purpose of science is the acquirement of uncertain knowledge" or "Science leads to certain knowledge" and "Science leads to uncertain knowledge."

The introduction of an information theory and a new scale of measurement — the INFORMATION SCALE, has allowed scientists to dispose of these semantic paradoxes.

Information that has been unambiguously defined in the axiomatized information theory by the concept of probability is a MEASURE that significantly broadens the possibilities of the probability measurement.

If $I(A)$ indicates the information of event A, then $I(A) = -\log P(A)$.

If $P(A) = 1$ then $I(A) = 0$

If $P(A) = 0$ then $I(A)$ AIMS TOWARDS INFINITY

Information theory has provided science with a new measurement scale by opening the probabilistic scale to the infinity of real, positive numbers:

s c a l e o f p r o b a b i l i t y

$P(A) = 0$ 0 |——— • ——————————————————-| $P(A) = 1$
certainty

$\qquad\qquad$ x

$\qquad$ pragmatic certainty

s c a l e o f p r o b a b i l i t y

$I(A) = 0$ 0 |——————— • ———————————> $+ \infty$
$\qquad\qquad$ x

certainty = ZERO INFORMATION pragmatic certainty

The use of information measurements has not only enabled us to move the point of pragmatic certainty much further than was allowed by the probabilistic scale; it also made this point MOBILE — as science progresses, the point is constantly moving towards infinity.

The information scale is used whenever a shift to more accurate calculations is needed.

This shift is similar to the use of an electronic microscope when the scientific examination requires a much greater magnification than can be acquired by using an optical microscope. However, the introduction of the concept of information into science has many more consequences. The language of information theory allows us to describe reality in a different way than before. This new language shapes a new VIEW OF THE WORLD.[4]

4. THE RULE OF ZERO EXPONENT

The introduction of the information scale has allowed us to formulate a number of certain theorems, that is theorems with the zero exponent concerning science itself:

1. science can fulfill the imperative which has accompanied the Judaic and then Christian tradition for over three thousand years; "Be fruitful and increase in number; fill the earth and subdue it;"[5]

2. science can fulfill the imperative of the full isolation of a human being from the interferences originating from reality;

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[4]We are beginning to realize the enormity of the role that is played by RANDOMNESS and IRREVERSIBILITY on every level of matter organization — from rudimentary particles to the universe at large. Science is rediscovering time. Irreversibility is strongly connected to ENTROPY (a measure of the amount of information). If we wanted to make time run backwards, we would have to conquer the infinite boundary of entropy.

The second law of thermodynamics (an isolated system energy is constant; entropy approaches its maximum value) is its most significant contribution to science. The second law of thermodynamics is a rule of choice. Each initial condition equals a certain amount of information. All initial conditions which have a finite amount of information are allowed. However, if the flow of time were reversed, we would need infinite information. That is the boundary of entropy.

The boundary of entropy is indispensable to give meaning to the concept of communication. Irreversibility and communication are very closely connected. Within each universe where we can communicate time is unidirectional. The endless boundary of entropy is what guarantees the unidirectionality of time (Prigogine, Stengers 1984).

[5]"Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground." Then God said, "I give you every seed-bearing plant on the face of the whole earth and every tree that has fruit with seed in it. They will be yours for food. And to all the beasts of the earth and all the birds in the sky and all the creatures that move along the ground—everything that has the breath of life in it — I give every green plant for food." (Bible, Genesis 1 — NIV).

3. science can deliver recipes for the FREE shaping of the human consciousness and subconsciousness.

The introduction of the information scale has made it possible to formulate the following certain predictions:

1. the current manner of subduing the Earth will soon lead to the destruction of the natural environment (perhaps as early as in the 21st century);

2. if science will aim for the zero exponent while maintaining complete isolation from reality, it will stop developing. The current reserves of the zero exponent will last for a certain limited amount of time and allow for the further development of technology; however full isolation from reality will result in complete stagnation.[6]

Human beings need the zero exponent in order to live and function. A lack of the zero exponent leads to stress, uncertainty, confusion and prevents people from making rational decisions. Action taken without the zero exponent is chaotic — it resembles flailing about or errant wandering. Depending on individual needs, the zero exponent can be acquired from various sources, often from some type of authority. Successful reception of the zero exponent provided by science requires proper preparation, which to most people is available only indirectly. However, it constitutes honest, verifiable and largely dependable information.[7]

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[6]The Platform bearing the mighty Edifice of Science is constantly following the flow of European cultural heritage, but it is growing at such speed that the river it floats on is becoming too narrow and shallow. Although the water in the river has been purified relatively well, in the near future there will not be enough of it to allow the Edifice to keep moving forward. The science, which has spread worldwide from the Greek and Judeo-Christian philosophy, must open itself to the constant influx of new issues from Reality, which is evolving, diverse, unstable, multiple transitory and complex.

One must add water from other rivers and sources in quantities greater than before, but in a manner that will prevent the river from being polluted, while increasing its level and widening its flow. That is the only way to assure further growth of the Edifice of Science and its movement toward KNOWLEDGE.

[7]This poses a challenge for philosophers conscious of the achievements of science and the criteria of competence, but who are also responsible for the reliability and credibility of theorems. The existence of a mobile point of pragmatic certainty opens the door for philosophical problems that have hitherto remained outside of the Edifice of Science, confined to essays and poetry. Philosophers should try to answer questions

The purpose of science consists in answering questions, solving problems, providing evidence and substantiation, in other words: constantly increasing the DEPENDABLE zero exponent. Every researcher, scientist, philosopher aims to acquire the zero exponent — to find at least a partial answer to the question they have posed. The primary condition for the development of science is constant STUDY OF REALITY — and INCREASE, not a decrease in the number of problems and questions. To a large extent, the zero exponent preserves growth through a constant influx of information.[8]

CONCLUSION

In order to exist and function, all living organisms need a constant influx of energy and information. In order to survive and live at a level opened to them by contemporary science, human beings must constantly increase the scope of their CONSCIOUSNESS. The introduction of the concept of information into the scientific language was a step in that direction. This concept was introduced together with such concepts as probability, variability, mobility, variety, energy, entropy.

The introduction of a new measurement of information was an act comparable to that performed 400 years ago by Copernicus. Copernicus replaced the complicated system of calculating the movement of planets over epicycles with one that was simpler and easier to use. However, when the statement *The Earth revolves around the Sun* entered the set of theorems based on the conviction that the Sun revolves around the Earth, it became imperative to reformulate many statements and CHANGE THE VIEW OF THE WORLD. The new measure of information does not change anything. However, the statement that Reality is an ever-changing, infinite variety and that the human being itself is such a Reality leads to a NEW WAY OF VIEWING THE WORLD.

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that rankle today's mankind, but to which science cannot provide a certain answer, to satisfy the need for the zero exponent on the highest levels of human reasoning without hiding behind "the occult," mysticism and non-scientific, irrational beliefs. It is THEIR task to provide a transition from knowledge to WISDOM.

[8]Time is approaching when humanity's profits will start to decrease, when questions directed at things in order to subdue them will become more complex and pointless. This gives humanity a chance to cease their frantic efforts, a chance to end the eternal struggle against nature and an acceptance of unbroken, invigorating peace. Reality shows itself to us only through active creation, in which we participate (Prigogine, Stengers 1984).

People CONSCIOUSLY shape the EXISTENCE in which they would like to live - immobile and unchangeable. Such an existence can be shaped freely, as long as it will have a constant influx of information from Reality.

Human beings will always be shaped by the varied and infinite Reality.[9]

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[9]Humanity is not a mistake committed by nature, however nature does not automatically and self-evidently care for its survival. Human beings are participants of a great game, the result of which is UNCERTAIN. Therefore, they ought to develop all their abilities to their fullest extent in order to stay in the game and not become a victim of chance. (Eigen, Winkler 1982).

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Barbara Stanosz
COMMENTS ON MRS. RENATA GRZEGORCZYK'S PAPER "OPIS LINGWISTYCZNY A OPIS LOGICZNY JĘZYKA" ("LINGUISTIC DESCRIPTION VERSUS THE LOGICAL DESCRIPTION OF LANGUAGE")

The differences the author characterizes as reflecting "the different approaches the two disciplines adopt toward one and the same object, namely language" are in fact differences of the OBJECT of description. The linguist, as presented in the paper under discussion, aims to describe a particular ethnic language; the philosopher of language, as contrasted with the linguist, seeks to describe the conceptual and methodological apparatus that is either applied or applicable in the theory of language. Incidentally, of course, some linguists investigate problems from the philosophy of language in the sense specified above, whereas some philosophers like to engage in what we would call linguistic analyses.

Perhaps, the real problem of the paper should be formulated as follows: Does the linguist describing a particular ethnic language really use the methods and concepts suggested by the philosopher (especially those discussed in my book)? On this question I stand by what I wrote in my book: If the linguist constructs a THEORY of that language, i.e. a description aimed at EXPLAINING the phenomenon of a group of people communicating with one another by means of that language, then she has to use precisely those methods and concepts (though she need not be able to articulate them). If, on the other hand, the description provided by the

linguist is not a theory but rather a kind of handbook that offers guidance on how to learn the language then surely its methodology is different.

Some of the proposed methods and concepts of the theoretical description of language are criticized by the author as inadequate. In one case I must admit failure as an educator: I thought that if I represented the habitual-activity meaning of the sentence *Jan szybko pisze na maszynie* [*Jan types/is typing quickly*] in the predicate calculus, the reader would be able to easily reconstruct the sentence's logical schema under the present-activity interpretation. Clearly, I was wrong. Let me explain then. On the latter interpretation one must use two additional predicates: C — *is a time*, and V — *is (happening) at*, as well as an existential quantifier (see p. 50) like so:

$$\exists x,\, y,\, v\ [\mathrm{S}(x,\, a) \wedge \mathrm{T}(y) \wedge \mathrm{C}(v) \wedge \mathrm{U}(x,\, y) \wedge \mathrm{V}(x,\, v) \wedge \mathrm{W}(x)].$$

This schema would be criticized, I suppose, on the same grounds as the interpretation of the sentence *Odwiedzę cię jutro* [*I will visit you tomorrow*], namely that we do not learn from it that Jan is typing quickly AT THAT PARTICULAR MOMENT. What little I have to add on this point is that the explication I offered of the intralinguistic meaning of the sentence (as opposed to its interpretation in particular circumstances) was intended to encompass all sentences, including those that nobody has ever uttered or will utter, and so it cannot be made relative to the speaker, hearer or time of utterance.

The author has put great emphasis on the notion of presupposition as specific to linguistics, suggesting that it is indispensable to the linguist. My book contains arguments for the notion's reducibility to analytic entailment; none of these arguments has been undermined. Two comments might be in order, though. First, the definition according to which a sentence's presupposition is a proposition that follows both from the sentence itself and from its denial is defective on all known interpretations of the terms *follow* and *denial*, as it implies that any sentence whatever presupposes all and only logical (or analytic) truths. The authors of this definition may be using the terms *follow* or *denial* in some new sense, but as long as they do not explicate it the definition of presupposition will remain either unintelligible or patently inadequate. Second, the linguist is no different in her attitude toward the notion of presupposition from the logician or philosopher of language: the term was coined by a philosopher (who was its enthusiastic supporter), formalized (disinterestedly) by logicians, and linguists either use it or they do not, depending on their methodological proclivities.

As to the author's characterization of the different functions of the notion of truth in logic and linguistics, I must confess that I have trouble

understanding it and the points I do seem to understand are mistaken. It is not the task of the linguist or the logician to establish the truth-value of sentences such as *Księżyc jest krążkiem sera* [*The moon is made of cheese*]; and the fact that the truth of a sentence formed from two other sentences with the copula *and* assumes the truth of both constituent sentences must be of interest to anyone who wishes to describe the meaning of *and* in English. And I fail to grasp the difference between providing "the truth conditions of a sentence" and offering "a description of a social convention that assigns particular phenomena in the world to particular strings of noises;" if the logician is tasked with the former and the linguist with the latter then they are both in the same business, regardless of stylistic differences between the two characterizations.

Yet I suppose that it is such stylistic differences that inhibit communication between linguists on the one side and logicians and philosophers on the other. So I am very grateful to Mrs. Renata Grzegorczyk for making the effort to "enter into a dialogue" with my book. I am also grateful to her for drawing attention to a mistake in one of the examples.

Eugeniusz Grodziński

SOME NOTES AND ASIDES ON *10 LECTURES ON THE PHILOSOPHY OF LANGUAGE* [10 wykładów z filozofii języka] BY BARBARA STANOSZ

The topical book contains an exposition of a number of significant issues of logical semantics. My remarks will fall short of judging the author's deliberations. What I will do is share my impressions on issues that seem important to me even if these should be loosely related to Prof. Stanosz's lectures. The starting point to my discussion is the juxtaposition of logic on the one side and linguistics and philosophy on the other. All three deal with language, but these are completely different languages. The language of logic is artificial on two counts. It uses quasi-mathematical symbols created by mathematicians and, most importantly perhaps, logical propositions, even if expressed by means of a natural language, which is acceptable to logicians, but has little in common with a natural language in terms of content. Natural languages are tools of steady everyday communication as well as most sciences. The compound statements of formal logic are extensional, meaning their sense and logical value depend solely on the logic and sense of the component clauses. The natural language of human thinking and interpersonal communication is an intensional language, though. The compound sentences of this language are intensional statements, that is, their sense and logical value do not depend solely on the logic and sense of the component clauses, but they are equally affected by ties between the content of their component sentences.

I am convinced that — far from attempting to rid the language of the formal logic of its extensionality — the intensionality of natural language should not and must not be questioned as it constitutes the empirical basis of not only linguistics but the philosophy of language too (the competency division between the two is by no means separable). If these two sciences, too, were to be assigned an extensional language as material for research, the possibilities and achievements of the humanities would be greatly reduced and distorted. We would hand over the whole study of language, and the totality of the humanities, too, perhaps, to the domain of extensionality, whereas the language which is being used in real relations between human beings, and without which mankind would not be able to exist, would prove deprived of research and philosophical insight into itself, that is to be rid of all interest and care coming from science.

There is not enough space to prove these propositions in detail. Let us, however, use the method of providing evidence by way of analysing individual complex clauses (a method often used by Prof. Stanosz). Three principal symbols will be used: S_1 for logical symbolism; S_2 for the artificial language of formal logic, formulated in the words of a natural language; N will be used for a natural language, subject to linguistic research and the philosophy of language in the recognised meaning of the terms, that is, an intensional language formulated in ethnic tongues (mathematical linguistics to be put aside as having little to do with traditional linguistics, which has been and will continue to be a major field in the humanities).

Let us first ponder the compound sentence "If two times two is five, then two times two is four." This can be uttered both in S_2 language and in N, but its descriptions will be completely different. In S_2 it will make sense as both component sentences in this language make sense. This sentence constitutes a material implication with a false antecedent, which makes it true in S_2. Things are not so in N. In this language, not only is the statement "If two times two is five, then two times two is four" not true, but it has no logical value as it is nonsensical. The reason is lexically flawed formulation. In N one cannot start a conditional clause with IF given the speaker knows the antecedent is untrue. In the Polish language, the conjunction used for that purpose is *gdyby* (equivalent to the English *should* or the second conditional). In N, the sentence "If two times two is five, then two times two is four" is the same sort of nonsense as "Either two times two is five, then two times two is four." The sentence "If you pass your A levels, a cactus will grow on my hand," but this is about poetic licence, granted by language to some ironical statements, but "If two times two is five, then two times two is four"

is not one of those.

The evidence for the nonsense of "If two times two is five, then two times two is four" can also be founded upon an apparently obvious nature of the claim: *if in any clause, at least one of its members was used in violation of its dictionary meanings, that is, as a nonsense, the whole sentence becomes nonsensical.* The dictionary of the Polish language (Szymczak 1978: 841) says this: "IF: a conjunction starting a clause [...] expressing a condition, cause, reason, justification or circumstances that precede or can precede something." The clause "If two times two is five," is none of those to the main clause concluding that "two times two is four." Thus the conjunction IF was used nonsensically in the sentence under scrutiny, depriving the whole statement of its meaning.

If the above were to be formulated in N in line with the requirements of that language insofar as the selection of words and grammatical forms, it would read as follows: "If two times two were five, then two times two would be four." It would make sense in N, but it would be false and inconsistent.

How about such a statement "William Shakespeare wrote *Hamlet* if and only if Adam Mickiewicz wrote *Forefathers' Eve.*" This statement makes sense in S_2 and constitutes a true bi-conditional logical connective. In N, the statement makes sense as well because those who do not know the contexts in which the two were written may be mistaken to think that the authors were somehow linked by some sort of bond. However, in N this sentence is unquestionably false because Shakespeare lived several hundred years before Mickiewicz and his writing of *Hamlet* could not have been in any way related to Mickiewicz authoring *Forefathers' Eve.*

It goes without saying that the rule of there being a difference in the properties of homonymous compound sentences in S_2 and N is not without exceptions. In a number of cases these characteristics are in agreement. The statement "If it is raining, the streets are wet" is a true material implication in S_2, but in N — a true conditional sentence. However, the extensionality of S_2 and the intensionality of N makes the difference in the properties of the homonymous sentences uttered in the two languages a rather common occurrence.

Completely different, however, is the notion of TRUTH in compound sentences found in N, on the one side, and S_1 and S_2 on the other. N features the everyday, universally human concept of truth as the agreement between linguistic utterances and the facts of reality (falsity being a contradiction between linguistic utterances and the facts). This is not only the universal understanding of truth that is true of all people from birth to old age,

but the main philosophical concept of truth, as well. This was the notion formulated by Aristotle in his famous correspondence theory of truth. Since his day, this has been the main philosophical definition of truth. The other — pragmatic and coherence — philosophical concepts of truth have carried much less weight. S_1 and S_2, however, solely feature the so-called logical truth. As regards tautologies and their translations to natural languages, logical truth involves elements of the pragmatic and coherence concepts. Regarding the truthfulness of the truth functions and their translations, logical truth completely differs from both universally human intuitions and philosophical concepts. Someone who has not studied contemporary logic and has not approved of its directives will staunchly oppose recognising as true statements such as "If two times two is five, then two times two is four" or "William Shakespeare wrote *Hamlet* if and only if Adam Mickiewicz wrote *Forefathers' Eve*."

Whence did logical truth in the field of truth function? This is so solely on account of a convention among logicians. At the very outset, there could have been some intuitions derived from the universal human intuition of truth, but they have since lost all prominence. The truth table of material implication provides that every implication with a false antecedent and a true consequent be true. Where does this originate from? Some logicians once noticed that some conditionals (not yet material implications as this concept was then in its early stages) with such logical values of their component clauses as intuitively true. Referring to today's realities, one can say that the following conditional is intuitively true "If I had graduated twenty years after, I would have received a diploma, too." There, the antecedent is false as it moves the real time of my graduation, but the apodosis is true because graduation always entails receiving a diploma.

The convention of logicians that EVERY conditional with a false antecedent and a true consequent is true was, of course, purely arbitrary. It matters little whether the decision (like the others that laid the groundwork for the actual shape of truth tables in the propositional calculus in contemporary logic) resulted from some monstrous error or a conscious departure from a objective statement of the relationship between the compound sentences of language and the facts of reality. At any rate, the rationale behind it was no greater than a possible justification of a decision that all sentences made up of 30 signs are true (on the basis of an intuitive statement of the truthfulness of some such statements), with all statements comprised of 35 such signs regarded as false based on establishing an intuitive falsity of several such statements.

Let us therefore not interfere in logicians' business and just accept the idea of logical truth which they operate within their mother science, but for goodness' sake let us not allow this empty concept of truth to make its way into linguistics, philosophy of language as well as other humanities or sciences and distort the results of studies within these fields!

Kazimierz Ajdukiewicz was a great scholar who had made a great contribution to the development of Polish and the world's logic, but even luminaries of science can be fallible and make mistakes. Prof. Stanosz defends the reasoning Ajdukiewicz presented in "Okres warunkowy a implikacja materialna" (1956). Although, this argumentation will be shown to be wrong. Prof. Ajdukiewicz set out to prove that the statement "If the moon is a ring of cheese, I will die on a day whose date is an even number" makes sense and is true both as a conditional sentence of natural thinking and a material implication of formal logic. As far as logic is concerned, Ajdukiewicz was certainly right, but I definitely disagree with his interpretation of this sentence in natural thinking. I believe the sentence is nonsensical in *N* on account of the wrong lexical form. If we impart on it an appropriate formulation "If the moon were a ring of cheese, I would die on an even day," it will make sense, and only then will the issue of assigning a logical value to it arise. Several possibilities emerge. It can be assumed that if the moon were a ring of cheese, then even if Earth did exist, the conditions of its existence would be completely different from what they are now. In that situation, I would not exist at all and therefore I would die neither on an even nor an odd day. Thus, the conditional "If the moon were a ring of cheese, I would die on an even day" would be false upon such an assumption.

It could be assumed, however, that if the Earth were encircled by a ring of cheese, life on its surface would go on as usual, and so I would be able to live on it, and then I would have to die one day. But then the problem of the interpretation of the apodosis of the conditional would emerge. My proposition that "I would die on an even day" could be taken as a guess. Then the conditional would be neither true nor false until the day I die, and it would thus have the third logical value. Only on the day I die would it become true or false, and that would be determined by those who outlive me. The same statement "I would die on an even day" might be treated as a statement of something that HAS TO happen under some circumstances, though. With an interpretation like this, the conditional "If the moon were a ring of cheese, I would die on an even day" ought to be described as false the very moment it is uttered because only those with a highly mystical nature believe that such predictions MUST come true.

Prof. Ajdukiewicz certainly would not agree with this reasoning, though. He claimed that sentences in a natural language (here described as sentences of the language *N*, that is, statements of natural thinking as statements of formal logic can also be formulated in words coming from a natural language) perform two functions — those of affirmation and expression — whereas the sentences of formal logic only function as affirmative. According to Ajdukiewicz, the meaning and logical value of a statement are wholly contained within the function of affirmation, and therefore homonymous sentences of natural thinking and formal logic mean the same and have the same logical values.

However, Ajdukiewicz goes on to say that a conditional sentence of natural thinking expresses that a person saying it 1) does not know whether the antecedent is false and 2) does not know whether the apodosis is true. Because the conditional "If the moon were a ring of cheese, I would die on a day whose date is an even number" expresses neither, the addressee who knows nothing about formal logic is not ready to recognise it as true, which it in fact is.

The error in Ajdukiewicz's reasoning is about separating expression from meaning, which I believe is wrong. Meaning and significance are conveyed by language utterances whereas the person who utters these expresses their psychical states. These are expressed in utterances. Separating the two is impossible. If the speaker is sincere, their psychical states are in agreement with their utterances; if they are not honest, they are also reflected in language, though *a rebours*. The statement "If the moon were a ring of cheese, I would die on an even day" expresses nothing (except a conviction that it is a meaningless assortment of words), and that is one of the reasons why it has no meaning and is nonsensical. It goes without saying that the sentence has no logical value in *N*, either.

In conclusion of these brief remarks, allow me to reiterate what I started with. The contemporary formal logic is distinct from all other fields of science in that it has opened up to the extensional language much more. This is not to deny the founding fathers of the discipline the right to shape their field as they please and find it most purposeful even though this has been accomplished at the expense of the degradation of the notion of logical truth. As an aside, the construction of intensional logic, simpler and less casuistic than its extensional counterpart, was possible, as well. None the less, we ought not to forget that the description of both physical nature and psychical states in people and animals in all their countless relations is only possible by way of an intensional language.

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Jerzy Kmita

LOGICAL VERSUS LINGUISTIC DESCRIPTION OF LANGUAGE – SOME ASIDES ON THE STANOSZ-GRZEGORCZYKOWA DEBATE

I am not sure if I know exactly what Barbara Stanosz means when she speaks of the "logical description of language." I can roughly guess the meaning of the term as used by Renata Grzegorczykowa when she juxtaposes it with the term "linguistic description (of language)," which she uses in a way I can only guess, too. The aforesaid is non-judgmental, and particularly so in terms of comparison. I have done that for the sole purpose of justifying why I have devoted the brief outline mainly to the way Barbara Stanosz understands the term. I believe I understand the expression much better and this is what I link the few words I have to say with, hoping that these will be of use to Grzegorczykowa, too, if she happens to be interested in a more precise identification of Stanosz's intentions, which are made all the more difficult by the fact that some hardly negotiable statements on language in general, a distinct language, or some specific component parts of either, have so far been pronounced from the heights of the "tribunal of logic." Prof. Grzegorczykowa erroneously attempts to treat those as fragments of some coherent whole, which she calls the "philosophy of language" (a particularly ambiguous qualification, which she shares with Stanosz, thus confusing me even more).

The issue whether the intimations are about any language or a specific language is of prime importance, the crucial question also being whether these are formulated from the vantage point of a native speaker of the

language or, perhaps, a theorist of any language. On account of the matter being quite complicated, it will not be discussed here. I will focus on two subjects, instead: 1) the usefulness of a logical perception of a language description that draws upon Quine's inspirations; 2) how explanatory the logical description of language is.

THE USEFULNESS OF A LOGICAL PERCEPTION OF LANGUAGE DESCRIPTION THAT DRAWS UPON QUINE'S INSPIRATIONS

There is a reason why I start from Quine's inspirations. Firstly, I think that Stanosz is largely influenced by these. Also, these are of particular importance to me, too, not in so much as a source of truths to be preached but, rather, as a set of particularly convenient co-ordinates.

However, I will start with a remark independent from the above declaration. It is probably quite obvious that calling the description of anything its logical description can be understood in no other way than a description using sentences in regimented notation; I am using the term devised by Quine independently from the inspirations I was talking about before simply for the lack of a better equivalent of a purely Polish descent that were brief enough. Sentences in regimented notation are designed within a specific logical calculus, such as the lower predicate calculus (usually with equation and functions) or a higher-order predicate calculus (with appropriate predicative variables that can be quantified) and subject to the calculus' consequence operations.

What we are after, though, is a logical description of language rather than anything else. If it were about an entirely made-up artificial language or a class of languages of that kind, there would be no reasons to enter into a dispute with linguists, who are naturally interested in ethnic tongues (natural languages), their sets or even all of them at the same time. The conflict really stems from the ambition on the part of a number of logicians to provide a logical description to ethnic tongues. Here we enter into Quinean inspirations. According to these inspirations it is essentially possible to reconstruct any such tongue with a language having a regimented notation within a higher-order predicate calculus. Both me and, most probably, Stanosz, too, subscribe to this possibility; what I find problematic, though, is whether we should, and indeed can, limit ourselves to a "reconstruction" in the regimented notation of the lower predicate calculus. The latter aside, a fair question arises whether their "reconstruction" is in itself the logical description of the ethnic tongue or a model example of a description of such descriptions concerning a set of

these languages. In my opinion, and I reckon in Stanosz's opinion, as well, such a ditto copy of the term "reconstruction" would not only be redundant but would also clash with the usual way the term "description" is used. We must then accept that the logical description of the ethnic language E is the description of its "reconstruction" R conducted in metalanguage in relation to R, a metalanguage covering all R sentences (let us skip a more general and complicated situation in which it were about the translations of all R expressions), names of those expressions, etc. — the description of R would thus only be an indirect logical description of E, as it were, mediated by R.

Yet a fundamental problem emerges: what is the relationship of R to E? It is a basic problem also because, for Stanosz, the metalinguistic description of R, and thus a logical description of E, is to be the only source of a scientific explanation of E or its uses in so far as we can abstract from occasional extralinguistic circumstances that condition these uses (she otherwise believes that these circumstances can, in essence, be linguistically categorized within R; D. Davidson presents good arguments for this possibility). The need for a "scientific" quality of the description of E, including its logical description, is also postulated by W. V. Quine, but I am not sure if in both cases there is the same understanding of the something being "scientific." As far as Quine is concerned, the matter is relatively simple: we act scientifically only if we follow the ways of natural sciences, from physics to neurophysiology. Thence his proposal for replacing philosophical epistemology with "naturalized," and thus "scientific" (Quine 1969), epistemology. Is that the same as what Stanosz is after? I am not so sure. As far as I am concerned, I treat the notion "scientific" as something more entangled than what Quine decided to adopt: for me it is an object of historical and cultural analysis rather than a starting point for formulating any decisive epistemological and methodological demands.

The issue of "scientific quality" aside, let us return to the basic question of the nature of the relation between E and R. In *Word and Object*, H. Putnam says at a point, using Quine's expression, that the choice of the R for E would be the choice of "free creation" (Putnam 1988: 57). I believe that Putnam went a little too far in his absolutization of the expression in the discussion of Quine's position. The expression was used by Quine to emphasize that numerous regimented R's fall within a broad range of accepted possibilities of the "reconstruction" of E: possibilities that are equally capable of being corroborated empirically (scientifically). However, he never thought that any reconstructed fantasy falls within this range; one is struck by the fact that Putnam, who otherwise knows about it very well,

should not make it more precise by quoting the expression even though on a number of other occasions he provides proper clarifications when he refers to Quine's ideas. It is only when properly elaborated on that his statement of the relation between R (being a result of free creation) and E makes his position a source of particularly useful inspirations included in the perception of logical description, which was outlined here.

According to Quine's additional discussion or qualifications, what is scientifically (empirically) possible is any such possible R in relation to a given E that retains as true (Tarski's truth-value, interpreted along the lines of Quine-Davidson disquotational principle — seen as a peculiar way of eliminating quotation marks[1]) observation categoricals, that is, conditionals of the kind: "Whenever there is a fire and somebody's watch indicates ten at the time, there is a smoke when the watch indicates ten past ten." Such is then the acceptable reconstruction of E, whose description — the logical description of E at the same time — would assign truth-value to all its observation categoricals that R "reconstructs."

How useful is the concept of the logical description of the ethnic language E thus drawing upon Quinean inspirations?

Firstly, it protects all those who undertake the task of the logical description of the ethnic tongue E in a Quinean vein from lapsing into excessive dogmaticism; R can be conceived in relation to E in various ways as long as the truth-value of the relevant observation categoricals that R reconstructs is retained (I am not sure if Stanosz would agree).

Secondly, it allows us to pursue a philosophy of science that assumes that the knowledge science creates renders itself to a logical description after all (other than that the description does not fit just any philosophy of science, and there is a good reason why H. Putnam calls Quine the "greatest logical positivist" — Putnam 1990).

Finally, the prospect of a post-Quinean logical description of language creates a prospect for an appropriate positioning of what is called linguistics. Linguistics can have theoretical-explanatory ambitions as exemplified by Chomsky's Transformational-Generative Theory of Language (particularly the dichotomy he proposes between "descriptive adequacy" and "explanatory adequacy") but a linguist focuses above all on the task of constructing what Quine refers to as "translation manual." The philosopher by no means neglects the importance of the achievements obtained as part of the task

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[1]Alas, I cannot provide more detail here on Tarski's interpretation of the concept of truth, and even less so supply arguments that set out to prove that it is incompatible with Tarski's intentions.

(and neither does one neglect the explanatory achievements obtained thanks to Chomsky's theory, which incidentally is not in any radical opposition to the logical description of ethnic tongues; on the contrary, it uses the description and gets from it its idea of transformational-generative derivation, which draws upon the logical concept of proof); with a measure of practical usefulness of the linguistic "translation manual," it even estimates the scope of the suitability of the "reconstructions" involved in two respective ethnic languages. The assessment is to be one of the major bases of the selection of these "reconstructions" — concerning either the ethnic tongue $E1$ or the language $E2$. The selection ought to be guided by a range of instrumental-cognitive considerations; leaving aside the most (but not "purely") cognitive criterion of calculating the truth-value of observation-categorical-type conditionals being "reconstructed," the guiding principles should include such considerations as simplicity, operationality, consistency, but within that also by having regard for agreements with the particularly effective "translation manuals."

HOW EXPLANATORY THE LOGICAL DESCRIPTION OF LANGUAGE IS

For Barbara Stanosz, what comes to the foreground is, as far as I can see, the scope of the explanatory role of the logical descriptions of ethnic languages as a criterion of the positive selection of these descriptions, and thus also the "reconstructions" that are their direct subject. Moreover, it is this role, which cannot be played by a linguistic description, that would determine their main value. Incidentally, Stanosz readily uses the expression "theoretical explanation" in this context, which poses a certain interpretative problem: I am not sure whether the issue is that a linguistic description of language may indeed explain, but it never does that "theoretically," or that this description does not explain at all (there are other more complex interpretative guesses, as well). However, because the dichotomy of theoreticalness and empiricalness (often in the sense of observability) does not arouse my trust, often on the grounds of Quine's argumentation, allow me to keep speaking of explanation, leaving aside the questions related to the (dubious) possibility of a proper dichotomization of explanatory procedures. I suspect that Stanosz supplies a "theoretical" qualification to explanations with rhetorical intentions rather than those to do with content and classification.

It is worth asking, though, what E's logical description (acceptable along Quinean lines) would be supposed to explain as regards E? Undoubtedly, it is not the fact of their occurring relevant observation categoricals — these

occur in the hypothetically "reconstructed" form in the direct subject of the description. Even less so is it a syntactic-logical structure of E or its specific features. E is not characterized by such a specific structure "in itself" — it is "devised" by its "reconstruction," which constitutes the direct subject of a logical description of E. What can be explained and anticipated, though, is the kind of uses of E that can be deduced from its hypothetically "reconstructed" observation categoricals and the acceptance recorded (truth-value as per Quine-Davidson) of relevant, also "reconstructed" antecedents of the observation categoricals. It is enough to agree with Stanosz's take on the explanatory value of the logical descriptions of E. Would it be that she agreed to recognize the principle of plurality in relation to these descriptions, of course if properly selected!

Can't the explanatory value of that kind be ascribed to the linguistic descriptions of language, though? An answer to this question depends on whether the sentences of these descriptions will be reduced to the imperative of providing sufficiently effective "translation manuals" (this is what Prof. Grzegorczykowa seems to be driving at). If we decide to adopt this reduction, the answer can only be negative. The fact that we "communicate" rather effectively as native speakers of $E1$ with the native speakers of $E2$, based on the "translation manual" cannot be explained in the light of its findings. On the contrary, the effectiveness of these findings and the accompanying communicative efficacy call for an explanation. Undoubtedly, we can expect it from the respective groups of logical descriptions concerning, on the one hand, and the language of $E1$ and $E2$, on the other.

However, a number of linguists can say that within linguistics, too, one can be content only with a success in providing fairly effectively applied "translation manuals;" also one can construct the explanations of the cases of relative effectiveness of communication between representatives of various ethnic languages: representatives using some kinds of "translation manuals."Agreed! As opposed to Stanosz, I do not believe that only the logical descriptions of ethnic languages can be characterized by an ability to explain (and anticipate) the right uses of the languages and the ability to explain practical successes achieved by the respective "translation manuals." The problem is the linguistic projects of explaining, starting from the most dazzling Chomskyan theory, which is perhaps a peculiar elaboration of a logical conception of language (complemented by the philosophical idea of nativism), have so far basically been designs only.

To sum up, I roundly reject the application of the terror of the term "scientific" (as well as "scientific theoreticalness" etc.), which Stanosz resorts

to in defense of her idea of the logical description of ethnic languages, as the only description that can explain them ("theoretically"). I would not agree to accept her idea even if she abandoned her use of intimidation inherent in the "only scientific." I do agree with her, though, in so far as her belief that the logical description of an ethnic tongue explains some of its uses as well as a relative efficacy of the practical applications of some "translation manuals." Regarding the explanatory sterility of linguistics, which Stanosz sternly affirms, I would say this: insofar as linguistics does not (consciously or not) reduce its task of making "translation manuals" but tries to explain something, too, it should not be *a priori* doomed to failure in its attempts to do so. Let us not absolutize the concept of the logical description of ethnic tongues! The conception functions fairly well in the explanatory mode, but who knows: perhaps one day a linguist that disregards the conception completely will do a better job explaining and anticipating language behavior.

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Wacław Mejbaum
LANGUAGE: THEORY AND DESCRIPTION

Prof. Renata Grzegorczykowa has contrasted the "linguistic" and "logical" descriptions on language. This juxtaposition seems to imply the blurring of the difference between the DESCRIPTION of the subject matter of research and its THEORY, which I consider to be far more important. I will dedicate the first part of my discussion to this issue.

1. I believe I can make a statement that in each scientific discipline, work begins from the initial identification and description of the subject matter. The work to be done by a theorist starts later; they will treat the hitherto description of the field as evidence, used to prove or disprove the theory being designed.

The 20th century analytical philosophy features a permeating question whether a theoretically neutral preliminary description of the subject is possible, and, if so, to what extent it is possible. The question keeps surfacing in its various facets, sometimes in the form of a demand for the demarcation criterion that would allow the positivist distinction between observational and theoretical terms to be upheld, sometimes as a conventionalist negation of the existence of the so-called pure facts. It would be risky to propose an overall resolution of these issues. I only believe that, in many cases, in linguistics in particular, a preliminary description of the subject matter of research is possible without the application of the notional apparatus of the INTENDED theory. Such a description uses casual terms as well as, on a number of occasions, ones derived from earlier theoretical renditions. A logician or mathematician, starting their work on the logical theory of language in the 19th century, had at their disposal some ways of linguistic description that had become consolidated in tradition. They knew that there

are objects called "sentences," that within those, subjects and verbs could be identified; they knew that there are names and that a sentence is something other than a name. So, from a logician's point of view, this knowledge — even if complemented with Aristotle's syllogistic or the medieval patterns of sentential derivation — was merely the "raw material" of the logical construction contemporary to them. So is the case nowadays, when the recognition of the special role played by adverbs in the utterances of a natural language (Barbara Stanosz's example of "Jan SZYBKO pisze na maszynie" [*John types FAST*]) has become the starting point to undertaking intensive theoretical work in logical pragmatics.

The linguistic issue of the semantic distinction between the adjectives *odważny, śmiały, dzielny, mężny and nieustraszony* [courageous, bold, brave, manly and fearless] touched upon in Grzegorczykowa's paper, arises, in my opinion, at the stage of the preparation of the preliminary description of a natural language, which only later can make a theorist interested. However, I disagree with the author's assertion that, for the sake of resolving such descriptive issues, a linguist may abstract from the "philosophical understanding of the basic concept of meaning;" or, to be more precise, can but should not.

The philosophy of language suggests three alternative solutions. First, there is a conception whereby the semantic differences between the adjectives can be rendered only by matching them with counterparts coming from a language other than Polish, be it natural or artificial. This conception can be called syntactic to the extreme; it corresponds in a way to those philosophical approaches in fashion today that insist on language being not so much a means of making statements about the world but, rather, a world in itself. Also, there is a SEMANTIC conception, along the lines of which each of the adjectives ought to be ascribed a different connotation (in the domain of the traits of human personality). The adjective 'brave', understood in the Aristotelian sense, would thus significantly differ in connotation from the adjectives 'courageous' and 'bold'. Third, the emotivist tradition in the theory of language can be called upon and it can be insisted that the differentiation between the meanings of the adjectives should above all reckon with their expressive and persuasive functions in ideological, propagandistic and ethical statements. A philosophical conception of meaning is then presupposed that is rooted in the American pragmaticism. Moreover, a user of philosophy (and an unprofessional one in particular) can freely modify, cross and melt these. In fact, this is precisely what is happening.

In making a claim that every solution to a particular issue of linguistic de-

scription of the expressions of an ethnic language presupposes a philosophical approach, I also uphold the view that the description should *prima facie* be adopted by a THEORIST as theoretically neutral. A theorist can afford this tolerance because theory building is not only the early stage of work on the subject but it does not represent any closing stages, either. It's only when a fragmentary theory in linguistic research is ready when the critical analysis of the "factual material," presupposed before, follows. I agree with Prof. Kmita that at this stage of CRITICAL REFLECTION a theorist should not only correct the mistakes (partially induced by philosophy) that encumber the preliminary linguistic description, but also — having a background in the methodology of science — one ought to explain their origin and try and answer the question why a certain kind of error tends to become, at a certain stage of scientific thinking, ubiquitous. Such an explanation may turn unsatisfactory, but it is a good enough reason to begin a "return to the very thing:" and on the basis of the preliminary "factual material" begin to erect an alternative theoretical construction.

2. For the above reasons, I believe the terms "logical description of a language" and a "linguistic description of a language" to be misleading. As an aside, the expression "linguistic description of language" seems synonymous with the "language description of language." However, can there be a description that is not 'linguistic'?

Indeed, I can agree to the distinction between LOGICAL and EXTRALOGICAL THEORIES of language. A logical theory of language (the syntax, semantics and pragmatics of an excerpt of a natural language) will then stand out in linguistics as it is not only part of general linguistics but, more importantly, a tool for the construction of possible "extra-logical theories." It should play the part of PRESUPPOSITION concerning the other theories.

Among the extra-logical theories of language, first comes the Transformational-Generative Grammar theory. I would include it in applied mathematics. However, I realize the problems involved in making a distinction between the subject matter of logical and mathematical research.

At the heart of the matter is the distinction between the static and dynamic modeling of the peculiar subject matter of research: language. It seems otherwise obvious that that the linguist's attention must at one point be focused on dynamic modeling. Language is then seen as a cultural process situated in a network of economic, political and ideological conditioning. Nowadays we have rich factual material on the process of language formation and transformation thus perceived. However, I do not think we can risk saying that we thus have a coherent theory of that process.

3. My third remark concerns the concept of presupposition, as contemplated by the professors Stanosz and Grzegorczykowa, where I am inclined to side with the latter.

Stanosz sees as flawed the definition of presupposition as judgment that stems from both a sentence and its negation as it would allow us only to count analytical truths as presuppositions. She goes on to suggest that the followers of this definition understand the terms 'implication' and 'negation' in an unorthodox manner.

It is the case, indeed. In considering the conception of presupposition, criticized by Stanosz, a linguist probably means negation as understood in a way that is different from the classic negation of a sentence. To remind us of the old joke, take two sentences casually understood as contradictory: "The Judge Kowalski no longer takes bribes" and "The Judge Kowalski still takes bribes." What follows is a shared presupposition that in the past Kowalski used to take bribes, which otherwise can hardly be called a logical or analytical truth. Another example that is easier to turn formal. If we have a negation of names in a language, then using this functor we can create sentences that are contradictory, such as "Earth is round" and "Earth is not round." I do not think that someone who thinks the latter is a negation of the former can be charged with missing the usual sense of the word 'negation', but is it not the case that from each sentence "a is B" and "a is not-B" usually follows non-analytically, a non-existential sentence "there is an x where x is identical with a?" At least it follows from either of the sentences about Earth that it exists.

This is related to the issue of the logic of questions. Whenever we speak of PRESUPPOSING a question, we must agree that this assumption follows from every linguistically correct answer; in this sense, it is a "presupposition."

For these reasons I believe that the concept of presupposition as a consequence of every element of a set of mutually preclusive judgments does not deserve a hasty refutation (even though I am a follower of another definition of presupposition). The subject matter definitely deserves a separate discussion.

Marek Tokarz
AN APPEAL FOR COMMON SENSE IN LOGIC

In the present article, logic is understood as a discipline which is practiced under the name "logic" in the institutes of philosophy of Polish universities and taught to students of various humanities departments. I am a logician by profession and the observations made below refer in equal degree to myself and my colleagues.

Logic in the sense proposed here is not a study of language. It belongs to the realm of mirages, not the real world. The object of its interests are the abstract "conditions of truth" for the equally abstract creations of unclear status (definitions? judgments?). Practical and theoretical matters are completely foreign to logic. A beginner logician starts to practice the discipline from the metaphysical point of view and with time attains even higher levels of abstraction. Polish logicians still live in the tradition of the golden 1930s and language is entirely superfluous to their subtle formal constructions. In order to feel some form of mental comfort, every person needs to know that they are doing something useful. Thus, the natural and easily understandable self-defense instinct for every logician is to disseminate the idea that understanding his theory will teach every future sociologist, historian and political science specialist to think and reason correctly.

However, if someone were to try and use the rules sanctioned by logic in ordinary life, they would be commonly labeled as a halfwit. If any illiterate farmer from the Polish countryside heard the sentence

Last year, all of Hank's cows died.

he would conclude (with surprising accuracy) that Hank used to have cows. However, a logician with two regular doctorates and one senior doctorate would immediately immerse himself in deep reflection. If he feels he is on

a mission and is not afraid of being stabbed with a pitchfork, he will try to educate the foolish farmer that the formula which constitutes a technological equivalent of the above sentence:

For each x, IF *x is Hank's cow, then x has died.*

cannot lead to such a far-reaching conclusion. The farmer ought to be more careful and refrain from making rash judgments. At the same time, the farmer's grandson who studies pedagogy gets irritated during a lecture on the "simplified binary method" and decides that logic is the most illogical domain of science in the world. It seems it is only a matter of time before logicians will be shooed away from the front door like Jehovah's witnesses.

Similarly to a political system or fashion, language is a TOOL and as such, must adapt to the needs of its users. It is constructed so that in typical, repetitive situations one would not be forced to beat around the bush. Specific expressions and general linguistic mechanisms might be somewhat ineffective in particularly unique and subtle situations, but they shall CERTAINLY be equal to the task in normal circumstances. The elements that are needed will most definitely appear and those which are superfluous will either disappear or never come into existence. It is clearly visible both at the level of natural inference, as well as in syntax and vocabulary. For instance, a mowed field is called *stubble*, whereas a terrain which has recently been cleared of baobabs does not have any special name; a substance made from sand, water and cement is called *concrete*, whereas a blend of equal amounts of soap, sawdust and logic textbooks has not as yet received a separate name. Sixty years ago, the Polish school of thought determined the direction of logic's development for the next two or three decades. It occupied itself with the analysis of the language of exact scientific theories. Nowadays, nobody cares about this sort of thing. Logicians will either adapt to the new conditions or perish in their trenches; the superfluous must leave.

The most worthwhile type of logic is currently practiced by linguists. They do it in a rather clumsy way since they have not studied mathematics, but this is not particularly important — it is better to have an ugly car than no car at all. At the same time, linguists treat logicians with understandable politeness but not necessarily understandable respect, because they could simply laugh them out of town. Their attitude can be explained by the need for formal methods in theoretical linguistics, which have been apparent since the 1950s and the hope that logicians can provide it. However, logicians are otherwise occupied. They have to come up with several new meta-meta-statements about many-valued systems (the Charleston of logic — 1920s), develop a formal methodology of the formal methodology of intermediate

logics and count non-equal formulas with six variables in the S3,752 system. Linguists describe the inferences occurring in natural language the way they truly are: within a specific environment, in motion and in dialogue and they are left alone in their attempts. Thus, even though they face failure after failure, for which they sometimes get a beating from logicians, at least they can say, like Jack Nicholson: I TRIED, and you didn't. A good example here would be Gazdar's formalization of conversational implication and presupposition. His publications are excellent, even though they teem with errors. Of course, there would be no formal defects if they were written by logicians, who, unfortunately, did not have time for this. When Gazdar was formulating his errors, they were busy teaching the "rudiments of model theory and recursive functions" to future librarians.

Such phenomena as presupposition, implicature, linguistic acts and correct understanding of an incorrectly transmitted communication are FACTS. It is of absolutely no importance that they cannot be analyzed according to the concept created by Tarski. Logical semantics is quite simply unable to explain these phenomena. At the same time, these are very crucial mechanisms — without them, language would be suited for communication as equally well as the cardboard box which the TV set was delivered in is suited for receiving satellite channels.

Logicians dislike Hegel, but they seem to reason exactly like him: if the theory is not in accordance with facts, then the facts must be wrong. It is universally believed that relations such as that of presupposition are utterly vague and as a result, logicians will not discuss them until linguists explain the term in detail. The relation of presupposition is admittedly vague, but one might also ask: why should it be linguists who come up with its formal explication? If the task of formalization is added to their duties, what is the use of logicians? Hordes of them receive their salaries each month and have four months of holidays each year, so they should finally get to work. Professor Barbara Stanosz is probably the only Polish logician who shows genuine interest in the usefulness of formal semantics and actually does something to make this domain more palatable. (This, of course does not mean that I share her optimistic attitude with regard to this method.) Let us consider the above-mentioned example of presuppositions. Each Polish speaking person, if they are sober and not feverish, will understand the sentence *John did not stop smoking* as equivalent to the fact that John used to smoke and continues smoking. This implicature does not agree with the formal idea created by logicians who would interpret this sentence the following way (?): John DID NOT smoke in the past OR he is smoking

now! However, such a discrepancy ought to weaken their impetus and infuse them with new ideas instead of leading to a sense of superiority. After all, how in the world was it possible to come up with the ridiculous idea of instructing linguists about the meaning of specific sentences, in other words — telling them how to do their job? All they should do is ask politely about the meaning of various Polish expressions and then accept and memorize the answer.

We create our own perception of the world based on what we hear (although not exclusively). Transferring from a linguistic communication to reality or CONCLUSIONS (if one prefers this term) requires numerous intellectual processes. Neither the speaker, nor the recipient have time to produce and interpret infinitely long sentences. Therefore, the communication will generally be rather short and the listener will have to squeeze as much information out of it as he can in a brief amount of time. The key principle of spontaneous and universal reasoning is the economy of thinking, ignored in the abstract analyses conducted by logicians. Of all the theoretically possible interpretations of a certain text, we choose the one which is the closest, the easiest, the most obvious and requires a minimum of guessing and fussing. If the speaker has some other interpretation in mind, it is his duty to provide the listener with proper hints, because the listener will consider not only what has been said, but also what could have been said but wasn't. If somebody, even a logician, hears the utterance:

I'm terribly distressed. Why don't you give me some peace?

they will take it as obvious that the person is in emotional distress, and the peace they require can only be interpreted as some quiet time to relax or order their thoughts, not for example "world peace." If the speaker meant something else, then it is up to them to clarify any misunderstandings. They might have said, for instance:

I am terribly distressed by this war. Why don't you give me some world peace?

It is interesting that at certain times, logicians do not adhere too closely to the set of rules they themselves have created and keep on promoting. There aren't many occasions for them to do it anyway. After all, how many times in their life, aside from the classroom, will they have the opportunity to use Duns Scotus formula or even the detachment rule? Probably never. Accents in general reasoning are placed differently than in number theory or differential geometry. The techniques of logical semantics and first-order predicate calculus provide a frame for mathematical theories and constitute interesting and well-made tools. They cannot be omitted even during courses

organized for humanities departments. Out of (let us say) thirty lectures, one can be devoted entirely to this topic. When preparing such a lecture or maybe even when choosing his own theoretical preferences, a logician should be aware of the fact that from the point of view of humanities students and natural language users in general, logical semantics is an impossible, unreal, inadequate and even slightly ridiculous domain of science. As an example, let us consider the conclusions which can REALLY be drawn (in contradiction to semantic theory) from the following series of utterances referring to a certain "she." Let us assume that the situational context and the possible co-text is not particularly eccentric. We shall begin with the sentence

(1) *She died after birth.*

Everyone dies AFTER birth, not before (or they might be about to do it). Sentence (1) undoubtedly means that the creature it mentions lived only a few moments, not that it died ninety ears after being born. Sound reasoning, or, in other words the principle of economical thinking tells us to treat (1) as equal to the following utterance:

(2) *She died immediately after birth.*

One must also note that we have automatically (and correctly) inferred another important piece of information from utterances (1) and (2) — namely that "she" was an infant, not a mother. Such a conclusion would of course be impossible on the semantic level because of the possible complement to sentence (2):

(3) *She died immediately after the birth of the child.*

At this point, a logician would probably protest and insist that neither (1) nor (2) TRULY determine which person died: the mother or the child. Would they be right? Everyone who believes so ought to take another look at sentence (3) before reading any further. Then, they should cross their heart and admit with all honesty that they have drawn the (correct!) conclusion that in this sentence "she" was a mother who died after birth. If this is the case, then sound reasoning has prevailed over logic, because theoretically, sentence (3) does not warrant such a conclusion, just as sentence (2) allegedly does not warrant the conclusion that "she" was an infant. In order to confirm this statement, one need only look at the following expression.

(4) *She died immediately after the birth of the child by the sister.*

Let us linger over this sentence for a while. For everyone aside from logicians, it carries a lot of important information, for instance the fact that the dead woman had a sister. However, even this obvious conclusion will be eliminated by the allegedly universal semantic theory, because sentence (4) could have the following addition (and for several other reasons as well):

(5) *She died immediately after the birth of the child by the sister in the neighbouring monastery.*

It seems that logicians never ask themselves what types of skills students ought to acquire during their courses. Logicians teaching courses for students of non-mathematical specializations are somewhat similar to amateur actors, who speak normally in their private lives, but when on stage, start to pronounce each syllable with comical exactitude (which is incorrect!).

Logicians complain that their students' minds are afflicted with immense mental heaviness. However, at the same time, each ordinary person in ordinary circumstances, not including the sophisticated tortures of an exam, can reason in the correct manner. This phenomenon can be explained in the following manner. People think rationally and understand what is said not because they have learned logic, but DESPITE the fact that they have been taught logic. I wonder when Polish logicians will follow the example of their peers in other countries and come to their senses. This will most likely happen only after the deans of humanities departments (warned by their students) eliminate the few remaining logic courses and the irritated vice-chancellors disband logic departments one by one.

Jan Woleński
AN OPINION IN THE DISCUSSION

I agree with Renata Grzegorczykowa's view that the research objectives of language philosophy and of linguistics are fundamentally different. This is the case whenever we consider the relationship of philosophy and any specialised field. Then, a philosopher *qua* philosopher should not make judgements in matters which fall under a specific discipline, and vice versa — experts of such disciplines should not speak about philosophical questions. This does not mean that a philosopher cannot be an expert in a field or vice versa. The core of this issue lies not in "personal unions," but rather in the cognitive roles performed which are usually considered different. Contrary to the widespread opinion, I think that is has always been this way, or if not always, then certainly since Aristotle (it was not by accident that he firstly spoke of philosophy and physics as separate fields of knowledge), at least in natural science. In human science this matter may be more "blurry," but I believe that a similar thing applies to both cases.

Let us reflect on the labels "Cartesian physics" and "Cartesian linguistics." There is no doubt that the former refers to a certain episode in the history of physics, although it is personally related to a person whose domain is chiefly the history of philosophy. The term "Cartesian linguistics," coined by the linguist Noam Chomsky, mainly evokes philosophical associations. However, a closer analysis shows that if linguistic competence is considered inborn in the sense of nativism, then a related discussion is of a philosophical nature; but its relationship to finite state grammar (or any other grammar in the technical sense) does not fall within the interests of philosophy. Somebody may say that such a view assumes the possibility of a sharp distinction between philosophy and specific knowledge, in this case, linguistic knowledge.

It would perhaps be desirable to have sufficiently concrete criteria regarding this matter. Although we do not, it usually poses no greater problem to realise where "philosophy" ends and where "science" begins (or vice versa). *10 wykładów z filozofii języka* [10 Lectures on the Philosophy of Language] by Barbara Stanosz is doubtlessly a multifaceted, partly philosophical and partly linguistic book. This is not a criticism, but simply a statement of fact. However, I do not agree with the view (presented both in *10 Lectures* and in the commentary to Renata Grzegorczykowa's article) that philosophy of language is

principally the structure of the philosophical basis of LANGUAGE THEORY *understood as a theory explaining the phenomenon of human communication by means of systems of conventional signs (most of all, usual ethnic languages), built similar to other empirical theories and respecting the widely acknowledged standards of scholarship … Language philosophy understood in this manner is programmatically a laboratory of methodological tools of the future language theory: its task is to carry out a critical analysis of traditional, naive concepts of language theory and to design new conceptual frameworks; to examine their explaining capacity and to indicate fields where further enrichment of the pool of notions and methods is necessary; to identify types of empirical data relevant for the language theory and adequacy limits of predictions based on such a theory; to distinguish its various levels and components and to identify the indispensable assumptions. Thus, it neither tries to criticise or reform the language nor claims to be a source of knowledge about language, independent of science; it is in a way a serving institution of science, proposing to it various research instruments together with a documentation which presents their merits as well as their limitations.*

(10 wykładów z filozofii języka: 8-9)

Since the Authoress speaks, in the cited excerpt, of a linguistic theory built "similar to other empirical theories," I shall use the following analogy. Let us reflect on the relationship of physics, the philosophy of physics and natural philosophy. Firstly, the description by Barbara Stanosz lacks a distinction between the philosophy of language (which is a counterpart of natural philosophy) and the philosophy of linguistics (which is a counterpart of the philosophy of physics). Even if we consider the philosophy of physics (or linguistics) to be somehow a component of natural philosophy (or the philosophy of language), I think that this component is worthy of a special distinction. Indeed, the cited excerpt refers rather to the philosophy of linguistics than to the philosophy of language. Of course, the Authoress might reply that the entire philosophy of language can be reduced to the

philosophy of linguistics, but it would be (to put it gently) a slightly arbitrary statement. Nevertheless, it is not the question of the philosophy of linguistics and its relationship towards the philosophy of language that seems the most important here. Let us replace the term "philosophy of language" with "natural philosophy" (or "the philosophy of physics") in the cited excerpt. My opinion is that a text resulting from such a procedure expresses a view which can by no means be accepted by physicians. They will most probably protest fiercely against such a role being assigned to natural philosophy (or the philosophy of physics).

In fact, the programme of the philosophy of language depicted by Barbara Stanosz is only a seemingly descriptive one. This is revealed in such expressions as "naive," "adequacy limits" or "indispensable," which assume the attribution of certain values and not only a sober reflection. I do not claim that the philosophy of language (or of any other thing) must refrain from such value judgements. However, it is my impression that the representatives of specific fields of knowledge will always protest against interventions of philosophers into their professional duties. The last argument is as follows. Physics as a discipline developed in a different situation than the fledgling theoretical linguistics, which has to use critical methodology. My answer to that is: the history of science does not prove the thesis that any discipline needed help from philosophical methodology to develop, and if linguistics needs such help, then, apparently, it does not meet the "widely acknowledged standards of scholarship." To be clear, let me emphasise that my view is in no way contrary to the frequent situations where philosophical motives (mostly unconsciously) lie behind the construction of empirical theories. In particular, it seems to me that Chomsky's theory of grammar took much more advantage of automata theory than of its Cartesian affiliations. To put it briefly: the internal needs of a given branch of knowledge are much more important for its development than the criticism of its philosophical basis. This applies to theories of physics as well as of linguistics.

Agreeing with Renata Grzegorczykowa regarding the difference between the objectives of the philosophy of language and of linguistics, I must express my objection against Her other views. Firstly, it seems that according to Her opinion the only linguistic theory acceptable is one that accurately describes the actual mechanism of language. But every theory is an idealisation and as such examines an object quite different from the object of everyday experience. The so called actual language is not an object of a linguistic theory, just as the object of theoretical dynamics is a highly abstract construct given to it by its main principles and not the movements of "real" people

going shopping. Barbara Stanosz's comments regarding this matter should be thoroughly considered by linguists acting as philosophers of linguistics. Secondly, I demand a clear distinction between logic and the philosophy of language. For example, I do not agree that the concept of meaning is an object of a logical analysis if no relevant qualities are added. In particular, the term "logic" refers either to the so called formal logic, or to a compound comprising formal logic, semantics and methodology of sciences. In its latter, broader meaning logic also comprises the questions of the philosophy of language. However, when a theorist (not a philosopher) of language says that logic is the basis of language syntax as an object of a linguistic theory, then he/she obviously means formal logic and not the heterogenous compound called "logic in the broader sense." The question whether formal logic is really an adequate tool of linguistic theories can be settled by linguistics and not by philosophy.

Jerzy Pelc

AFTERWORD TO THE DISCUSSION CONCERNING LINGUISTIC AND LOGICAL DESCRIPTIONS OF LANGUAGE

1. Barbara Stanoszowa's concise, one-hundred-page book *10 wykładów z filozofii języka* [*10 Lectures on the Philosophy of Language*] has been written, at least in part, with students in mind. This is confirmed not only by its title, *10 Lectures*, but also by the fact that each chapter closes with a questions-and-tasks section. It is not, and it was never meant to be, a theoretical treatise or the *summa* of Stanoszowa's views on language, linguistics, the subject-matter of the philosophy of language, and the approach of logic to language.

From those laconic lectures, Renata Grzegorczykowa has extracted everything that, in her opinion, constitutes Stanoszowa's credo. At the same time, she treated the approach to the philosophy of language as identical with that of logic, and Barbara Stanoszowa's standpoint as that of logic in general. Thus, a dialogue between two Authoresses was transformed into a contest between linguistics and logic. Even if a confrontation of the views of one linguist with the views of one specialist in philosophy of language and general logic does not offer grounds for such a generalisation, it is good this generalisation occurred, or at least that it was perceived as such by other participants in the discussion, as it spurred them to voice their own views on essential issues. At the same time, however, it would not do any harm to bear in mind that both Stanoszowa and Grzegorczykowa expressed, among others, their personal views, not necessarily shared by all and sundry,

especially as some of those views are radical, and that neither of the two Authoresses spoke entirely in the name of the entire discipline, even if in the eyes of her adversary she seemed to be the representative of this discipline and the expresser of the general specialist opinion.

Renata Grzegorczykowa is concerned with the difference between the approach to language from the point of view of logic and the linguistic approach. Concurrently, she is of the opinion that the point of view of logic is the same as that of the philosophy of language, and that the subject of the logical, philosophical and linguistic approach is the same, namely, language. The professional division of interests, entrenched in the structure of academic faculties and departments, causes philosophy — especially philosophy of language and logic — viewed from a distance, to appear as a single entity. In reality, both the subject and the approach to that subject not only distinguish the philosophy of language as an apparent single entity from logic as an apparent single entity, but also are different in diverse types of the philosophy of language on the one hand, and in various systems of logic on the other. The differences between traditional linguistics and mathematical logic of the late 19th and early 20th century were striking indeed, and concern not only the approach to language in each of the disciplines, but also their subject. Later on, however — with the development of logical semantics since the 1930s and logical pragmatics since the 1960's, and with the development of theoretical linguistics, particularly since the 1950s — a gradual rapprochement took place with regards to the research subject, research aims and research approaches in the scope of theoretical linguistics and in the scope of logical analysis of natural language, as performed by general logic encompassing semantics and pragmatics.

Yet, contrary to what Renata Grzegorczykowa has written, even a traditional linguist specialising in some ethnic language, be it Polish, German or French, cannot fulfil his tasks "independently from the philosophical interpretation of the fundamental concept of meaning." Quite the opposite: he makes use of this interpretation, or more precisely from one of the many differing ways of interpreting it, and he applies the concept of meaning as a tool in deciding "to which objects in the world the language signs refer." On the other hand, neither a logician nor a philosopher of language is "professionally" obliged to analyse sentences in separation from their linguistic and situational context, and to treat their informative contents as limited to merely that which in *Wykłady* (p. 78) is called the intra-lingual meaning of a sentence. As a consequence, a logician as such does not have to deny himself considering the presupposition of a sentence; neither does

a philosopher of language, for the sole reason that he is speaking as a philosopher of language.

In the opinion of Renata Grzegorczykowa and many other linguists, the dependence of the truth or falsehood of a complex sentence on the truth-value of its clauses is immaterial from the point of view of linguistics. Expressing an oft-repeated view, Grzegorczykowa writes: "A linguist's task is to describe the efficiency of the tool people use to express both truths and falsehoods [...] What is important to him is the description of the meaningfulness of sentences: a sentence which is a conjunction of two false sentences, *The moon is a round of cheese and Warsaw lies upon the Volga*, to a linguist is a strange sentence, due both to the semantic disruption in the first sentence and to the incoherence of the whole construction. But the falsehood of both sentences (and the whole construction) makes not the slightest difference whatsoever to a linguist."

I think that if the concept of the sentence's meaningfulness was made more precise; if the relationship between the sentence's meaningfulness and the conditions of its truth were shown; if a consensus as to what constitutes semantic coherence of a complex sentence, and how this is linked with its syntactic coherence, was reached — this would result in a weakening of the view that the role fulfilled by the concept of truth value in logic, when the latter analyses natural language, is essentially different from its role in linguistics.

2. Barbara Stanoszowa, answering Renata Grzegorczykowa in a short essay entitled *Uwagi do artykułu Renaty Grzegorczykowej „Opis lingwistyczny a opis logiczny języka,"* expresses her view that a linguist describes a given ethnic language, whereas a philosopher "describes the conceptual and methodological apparatus applied, or applicable, in the theory of language." What is at stake is the difference in the subject of the description.

It seems to me that this does not apply to all sub-disciplines and trends in linguistics, and if it does, than to a varying degree. For example typological, functional linguistics is not limited to a synchronic analysis of one language, but attempts to comparatively review as many living and dead languages as possible, in order to reach conclusions regarding some language groups or even language in general. Comparative historical linguistics, in turn, is based, among others, on the concept of phonetic laws, understood as dependences exceeding the range of one ethnic language. Structuralism as a trend, among others, in linguistics analyses functions of linguistic elements in an abstract linguistic system, not in a concrete language. Additionally, in the above examples, a linguist concerned with the theory of language does

not fulfil a role borrowed from a philosopher of language, but acts in his own name. A philosopher of language, on the other hand, while describing concepts and methods applicable in the theory of language, repeatedly draws some material from this or that concrete natural language, which influences the theory being formulated. For instance, the theory of descriptions grew in the grounds of the English language and would be surprising in the Polish philosophy of language; similarly, the lack of differentiation between the semiotic function of a common noun and semiotic function of a proper name, which does not arouse doubts among Polish philosophers, is not at all popular in the English philosophy of language. I think that the subject matter of a linguist's enquiry is closer to the subject matter of a philosopher of language's enquiry than either of them thinks when considering his counterpart's field of interest. In fact, their interests are often parallel; for instance when, determining the referent of a given phrase, they both take the conditions of the truth value of the correspondent sentence under consideration.

3. In his *Uwagi na marginesie książki Barbary Stanosz „10 wykładów z filozofii języka,"* Eugeniusz Grodziński has enclosed, as he says, "impressions on the issues he deems essential, not an evaluation of the Author's reflections and theses." He contrasts logic to linguistics and philosophy of language, on the grounds that the language of logic is artificial and extensional, while natural language "constituting the empirical basis for reflection not only in linguistics, but also in the philosophy of language" is intensional. At this point in Grodziński's reflections, it is necessary to recall the distinction between the language of a given discipline's analysis and argumentation, and the language which is the topic of its analysis. Natural-language expressions can be, and are, a topic of logical analysis.

The second issue on which Grodziński focuses is, as he writes, the fact that such natural-language sentences as *If two times two is five, then two times two, is four* are nonsensical and devoid truth value on the grounds of "faulty formulation in the lexical aspect [. . .] it is not permitted to begin a conditional phrase with the conjunction *if* whenever the speaker is aware that its antecedent is false." This part of the discussion requires clarification of the Author's understanding of 'nonsense.'

The following part of Grodziński's considerations focuses on various concepts of truth, including the one which he calls the logical truth. It is immediately noticeable that the definition of logically true formulation A in language J, given by Barbara Stanoszowa on p. 73 in her *10 Wykładów*, differs from the description accepted by Grodziński.

The essay concludes with a debate with Ajdukiewicz as the author of

the treatise *Okres warunkowy a implikacja materialna*. Grodziński questions the distinction between what a sentence states and what it expresses. He seems not to accept that the fact that a sentence (to use that personification) concurrently states and expresses something which does not signify nor allows the application of the useful distinction between the two functions, the semantic and the pragmatic one, in an analysis.

4. In his article entitled *Logiczny a lingwistyczny opis języka — kilka słów komentarza na marginesie dyskusji między R. Grzegorczykową a B. Stanosz*, Jerzy Kmita writes: "I am unsure whether I know what precisely B. Stanosz has in mind in speaking of 'logical description of language'; I can only broadly guess the meaning of the term when used by R. Grzegorczykowa as contrasting to the term 'linguistic description (of language)'." He also gives notice that his comments would focus on the views of Barbara Stanoszowa, which are much more understandable to him. He addresses to both Authoresses his doubt on whether the term "philosophy of language," which they both use, describes any concrete whole. I share his doubt and subscribe to his critical assessment of the fact that "views, difficult to agree upon, on the topic of language in general, a detached concrete language, or components of one or the other, have at times been pronounced from the 'tribunal of logic' height." It is with some satisfaction that I have read this ironic comment, since I find the arrogance of some logicians' statements offensive when those scholars take the floor with respect to developments in particular disciplines, which are methodologically less advanced and not always up to standard regarding precision and clearness.

Jerzy Kmita concentrates on two issues: the usefulness of the conception of logical description of language inspired by Quine, and the explicative value of logical description of language.

By "logical description of language" he resolves to understand a description of the reconstruction of ethnic language consisting of sentences formulated in the framework of a definite sentential calculus and subordinate to the operation of the consequences of this calculus. Additionally, Kmita poses the problem of whether "we may, or we should, limit ourselves to reconstruction in a language regimented with respect to the elementary predicate calculus," but passes this issue over; myself, I consider it pertinent. The already-mentioned meta-linguistic description of the reconstruction of ethnic language includes all its expressions, names of those expressions etc. Kmita emphasises that to Barbara Stanoszowa "only the meta-linguistic description of R [reconstruction], that is the logical description of E [ethnic language], is to constitute the only source of the 'scientific' explication of

E or its particular applications — as far as the extra-lingual occasional circumstances conditioning those applications are disregarded (incidentally, she is of the opinion that those circumstances can essentially be categorised lingually in the framework of *R...*).'' Kmita, however, is inclined to treat scientificity as a subject of historical and cultural analyses. I assume those analyses would take the above-mentioned extra-lingual occasional circumstances under consideration; if my assumption is correct, then Kmita's position is closer to mine.

An ethnic language can be reconstructed in many ways. Following Quine and Davidson, Kmita is willing to accept any reconstruction that retains "truth of observational ascertainments, eliminating inverted commas in conditional sentences expressing the observed dependences.''

The second issue mentioned by Jerzy Kmita is the explicative role of logical descriptions of ethnic language and the selection of descriptions, as well as reconstructions being the subject of those descriptions, on the basis of this role. According to Kmita, such a description is to "explicate [...] and predict [...] such applications of *E* as can be deduced from its hypothetically 'reconstructed' observation categoricals and the noted acceptance (of truth in the Quine/Davidson sense) of the respective, also already 'reconstructed,' antecedents of those observation categoricals.'' According to Kmita, this task can be fulfilled not only by logical, but also linguistic, descriptions of languages on condition that the linguist does not limit himself to giving a translation of phrases in one ethnic language by means of phrases in another ethnic language.

It seems to me that the broadening of research tasks and explicating and predicting language behaviour is the direction in which contemporary linguistics is heading, and that in this field it will be successful.

5. Wacław Mejbaum joins in the discussion by reflecting upon the differences between description and theory (*Język: teoria i opis*). He poses the question whether a theoretically neutral introductory description of a subject is at all feasible, and answers that in the case of the investigation of language, such an introductory description of a research subject is feasible without the application of conceptual apparatus of an INTENDED theory, and that colloquial concepts and concepts deriving from earlier theoretical approaches, such as the words 'sentence', 'predicate' or 'name', occur in such a description. He also notes that differentiations regarding the meaning of adjectives *odważny, śmiały* [courageous, brave] cited by Renata Grzegorczykowa are an example of such a description. According to Mejbaum, it may be viewed as neutral with regard to theory, but nevertheless it does presuppose a

certain theoretical stance. A theoretician subjects actual material to critical reflection, correcting the errors, indicating their origin and explaining "why a certain type of error grows prevalent at a certain stage of development of scientific thinking." Mejbaum reaches the conclusion that the distinction between the "logical description of language" and "linguistic description of language" is misleading; instead, he proposes a distinction between the logical and non-logical theories of language. Additionally, he is of the opinion that the logical theory of language, that is syntax, semantics and pragmatics of a section of natural language, is concurrently an element of general linguistics and an indispensable tool in the construction of its non-logical theories, e.g. theories of generative and transformational grammars; according to Mejbaum, the logical theory of language should be a presupposition in relation to those non-logical theories. At this point it is necessary to underline that the above conception of presupposition differs from that applied by both Stanoszowa and Grzegorczykowa.

Mejbaum emphasises the dynamic nature of language modelling in linguistic theories and maintains that, so far, there exists no consistent theory of how language emerges and transforms.

In reference to the concept of presupposition reviewed by Stanoszowa and Grzegorczykowa, Mejbaum supposes that, in this case, the linguist's conceptualisation of sentence negation is different from the standard one. He also notes that in this sense, stipulation of a question is a presupposition. He concludes with the observation (a correct one, in my opinion) that "the conception of presupposition as a consequence of each element of some set [. . .] of mutually exclusive judgments does not deserve a too-hasty refutation."

6. Marek Tokarz presents a mettlesome plea for common sense in logic (*O zdrowy rozsądek w logice*). What he has in mind is logic taught to students of various disciplines of the humanities, where, as he writes, "the focus of interest is not language, but abstract 'conditions of truth' [. . .] of equally abstract creations having an unclear status (of formulas? of propostions?)." The hope that a logician is able to teach a student of any particular science to correctly draw conclusions in his/her own discipline or outside is, according to Tokarz, an illusion. He is of the opinion that applying rules sanctioned by logic in real life would be a misunderstanding. He maintains that a language is a tool and, like every tool, it adjusts itself to the needs of its users. Sixty years ago, by developing the analysis of the language of rigorous scientific theories, the Polish school pointed out the path for the development of logic over the following two or three decades; today, in Tokarz's opinion, only

logic pursued by linguists describing inferences in natural language "as they are in reality: in a definite environment, in motion, in dialogue," is worth anything.

"Such phenomena as presupposition, implication, linguistic act, correct understanding of a false statement," writes Tokarz, "are simply a FACT. That they do not yield to analysis in the framework of Tarski's conception is beside the point. Very simply, logical semantics is unable to explain these phenomena. Yet they are mechanisms of absolutely crucial importance." With regard to the concept of presupposition, Tokarz shares Renata Grzegorczykowa's view that the sentence *Jan nie przestał palić* [John has not quit smoking] is equivalent to *Jan palił dawniej i nadal pali* [John smoked in the past and still smokes], and not — contrary to what a logician would say – to *Jan nie palił dawniej lub pali teraz* [John did not smoke in the past or smokes now]. "Whence, in the first place, has come this whimsical idea to instruct linguists on the subject of the meaning of concrete sentences, that is on the subject of their profession?"

Tokarz thinks that economy of thought is the principle that plays a crucial role in thought processes conducted ordinarily and spontaneously, while ignored in abstract logical considerations. He also maintains that in practice, logicians rarely subscribe to the tenets of the code they have laid out, and which they propagate in theory. "After all, how many times is it possible to apply Duns Scotus's Law, or even the rule of inference, in real life, not at the logic lesson?" Hence Tokarz advocates that, in the course of logic for students of the humanities, the number of lectures on the techniques of logical semantics and predicate calculus should be greatly reduced. Also, in choosing a logician's own theoretical preferences, says Tokarz, "it would certainly do no harm to be aware that, from the point of view of the needs of a humanist and generally of a user of natural language, logical semantics is an impossible, impractical, irrelevant, and also slightly ludicrous discipline."

He concludes his essay with the words: "People's thinking is reasonable, and their understanding of what is being said to them is correct, not because they have learnt logic, but IN SPITE of having been taught it."

It is generally known that in the heat of debate some views get exaggerated. This, however, is no reason to ignore the grain of truth they contain. A logician by education and profession, Tokarz is not trying to undermine the value of his own discipline as an autonomous science with distinct research subject, methods and aims. He voices his opinion mainly regarding two issues: the teaching of logic to non-logicians, humanists in particular, and the usefulness of logical knowledge and the methods of logic in

analysing the subjects of particular disciplines, especially lingual statements as the subject of linguistics.

The subject-matter of the 'utility' logic, logic for humanists, is outside the scope of this discussion; yet on its margin I wish to declare my solidarity with Tokarz's critical assessment of it. Many teachers of 'utility' logic, probably following the path of least resistance — and perhaps also the line of their own interests as specialist logicians — administer to students of the humanities, and not only the humanities, a course in mathematical logic which is entirely useless to them. At the same time, however, I am of the opinion that a course of logic which would be properly adjusted to the needs of a particular field of study and would contribute to the development of students' general logical culture, their methodological awareness, critical thinking and general intellectual prowess, ought to be one of the most important elements of general education not only on the academic level, but also on the level of secondary school. Due to the effort, authority and influence of Ajdukiewicz and Kotarbiński, the teaching program at almost all academic faculties used to feature an obligatory course of logic. At many faculties, however, this course has been cancelled or greatly reduced, much to the detriment of society's general intellectual culture. Partial blame for this lies at the door of the logicians themselves, as Marek Tokarz is quick to point out; partially it is due to pedocracy, which permits students to get rid of classes that require effort, and partially to bargaining between particular faculties for additional teaching hours for their respective subjects. I suspect that the gibberish found in ever-increasing amounts of academic and journalistic texts, and perhaps also the growing predilection for all things irrational and obscure, are due in part to those "improvements" in teaching programs. I am also worried that these undesirable phenomena will grow increasingly entrenched if no defensive and preventative measures are taken.

In reference to the other issue commented upon by Tokarz, the usefulness of logic in the analysis of language, I quite agree that such facts as presupposition, implication or linguistic act should not be removed from the area of investigation; I would only add: of investigations carried out by logicians with tools developed in logic adjusted to suit the subject of investigation, i.e. natural-language utterances. It is necessary to recall, however, de Saussure's venerable differentiation between ethnic language as an abstract system and speech as a concrete act, sometimes recorded in writing. The subject of both Authoresses' reflection, especially that of Renata Grzegorczykowa, are mainly lingual utterances, i.e. pieces of speech. Barbara

Stanoszowa, considering an utterance in the so-called empty pragmatic context, transfers it from the domain of speech to the domain of language, described by linguists as a set of signs and rules determining their use.

As the subject of his reflections, a logician may take either language (or rather its elements, especially rules and concepts) or speech, that is lingual utterances. Reconstructing the latter in his own manner, a logician may attempt to de-pragmatise them, at the same time increasing their semantic value. For instance, the sentence *Open the window* may be reconstructed by a logician in the form: *In the instant t, the speaker turns to the recipient with the request that, in the instant directly subsequent to t, the latter open the window in the location the message was sent in.* It seems, however, that incorporating pragmatic situational context into the text of the utterance (that is providing the utterance with semantic elements due to which its communicative situation appears on its surface) threatens with *regressus ad infinitum*, because this reconstructed utterance, too, being an utterance directed by someone to someone else, somewhere, at some point in time and for some reason, is embedded in some pragmatic context. On the other hand, if the pragmatic and linguistic context was ignored, the meaning of the words *Open the window* would be reduced and deformed. A reconstruction with an appended description of circumstances, sometimes also with a quotation of neighboring utterances and enumeration of presuppositions, seems therefore more rational. If the logician used "regimented notation" in the reconstruction itself, he should avoid bending actual material which he is reconstructing to suit it; for instance, if elementary predicate calculus does not find the answer, the reconstructing logician should try to apply a different tool: higher-order predicate calculus. If all else fails, it is not a crime to abandon "regimented notation" altogether, while applying the conceptual apparatus offered by logic.

Describing language as an abstract system, a logician or philosopher may analyse such semantic concepts as meaning designation and denotation, or such pragmatic concepts as expressing, asserting (in contrast to the semantic concept of stating, referred to by e.g. Ajdukiewicz) or understanding. He may also analyse the rules of language, for instance by seeing whether among the rules of a given ethnic language there are no contradictory rules.

It is perhaps worth adding that a logician who considers natural language or speech not always does it in order to bestow the results of his work on linguists or on ordinary language users. At times, he does it *pro domo sua*, and then he needs not worry that the results he reaches are not useful to the linguist or the speakers.

7. Jan Woleński agrees with Renata Grzegorczykowa that research aims of the philosophy of language are essentially different from those of linguistics. He maintains that cognitive roles of a philosopher and a specialist in a particular discipline have been different since at least the times of Aristotle.

I think that even though it was indeed usually so, significant exceptions did occur that should not be forgotten, for instance Greek and Roman rhetoric, the medieval trend of investigation concerning the properties of terms, or those scholars who on the foundation of the study of an ethnic language, usually Latin, not only developed the pragmatics of that language, but on its basis attempted to discover universal grammar or determine the construction of universal language. But this is not the main topic of debate.

Woleński considers Barbara Stanoszowa's book *10 wykładów z filozofii języka* to be partly philosophical, partly linguistic. He argues against Stanoszowa's view that the philosophy of language means, "by definition, constructing philosophical foundations for the theory of language, understood as the theory explaining the phenomenon of people's communicating by means of [...], above all, ethnic languages" and that this theory is modelled on other empirical theories, as well as the view that the philosophy of language is, programmatically, a laboratory for the development of methodological tools of the future theory of language. In relation to this characterisation of the philosophy of language, Woleński – correctly, in my opinion — claims that it is necessary to supplement it by taking the philosophy of linguistics into consideration, because, in his opinion, this characterisation fits it better than it fits the philosophy of language.

At this point, I would add that asking a theoretician of language to go and find his models in other empirical theories is tantamount to directing him to an unknown address, since, on the one hand, satisfactory "standards of scientificity" are held mainly by theories of mathematical physics (see Sneed 1971, Balzer 1985), and on the other hand, existing theories of empirical sciences give very little hope that they, or their elements, could be applied to the theory of language or to the theory of linguistics, or to humanistic disciplines in general (Stegmüller 1976 and, in Poland, books by Marian Przełęcki and Ryszard Wójcicki), not to mention the fact that it would be difficult to find a general model of an empirical theory (Suppe 1974).

Woleński also questions Stanoszowa's view expressed in *10 wykładów,* that the task of the philosophy of language is to construct philosophical foundations for the theory of language. He points out that "the history of science provides no documentary evidence for the thesis that in order

to develop, all any discipline has ever needed is help from philosophical methodology; if linguistics does require such help, it obviously does not subscribe to the generally accepted standards of scientificity," respect for these standards Stanoszowa requires from the theory of language.

Woleński disagrees with Renata Grzegorczykowa's view that the subject of a linguistic theory is the actual mechanism of language. He argues that every theory pertains to some idealisation. I have a feeling that Grzegorczykowa and Woleński's views do not essentially differ on this point; the ostensible divergence arises from Grzegorczykowa's abbreviated formulation of her thought.

I subscribe to Woleński's demand to make a clear distinction between logic and the philosophy of language, and also formal logic from logic in a broader sense, encompassing, apart from formal logic, logical semantics (by now also logical semiotics) and methodology of sciences.

8. Curiously, only philosophers and logicians have so far taken part in the debate over the exchange of views between Renata Grzegorczykowa and Barbara Stanoszowa. It is to be hoped that this debate shall continue and include linguists as well. With this eventual continuation in mind, I shall itemise the issues on which the exchange of views has focused.

The juxtaposition: linguistic description of language — logical description of language provided the starting point for several trains of thought. The question arose whether the linguistic approach should be juxtaposed to the logical, or to the logical or philosophical approach. Thus, not only linguistics, but also logic and philosophy enter the arena. But is it just the one logic of language and one philosophy of language, or more, in particular: formal logic, together with logic in a broader sense, encompassing formal logic, logical semantics (or semiotics), and methodologies of sciences on the one hand, and more than one philosophy of language on the other?

In both phrases: 'logical description of language' and 'linguistic description of language,' language is the subject of description. Yet is it always language as an abstract system that is being described, or the theory of which is being constructed — or perhaps in some cases concrete lingual utterances as pieces of speech, i.e. exchange of linguistic communications, are the subject of the description? And even, perhaps, in some cases what is at stake is the philosophy, theory or description not of language or speech, but of linguistics or some elements of this discipline.

The next issue is the differentiation: description or theory of the above-mentioned subjects (or one of them). And if it is theory, should logical theory be juxtaposed to the linguistic or to the non-logical theory?

Further on, if the subject of the description or theory is a piece of speech, that is a lingual utterance, should they be isolated from the pragmatic context or should this context be taken into consideration — also in the logical description or logical theory?

Finally, is it only the logical description and logical theory that explain and permit to predict the types of uses possible to deduce from reconstructed utterances — or do the linguistic description and linguistic theory have a similar explicative value and open the path to predictions?

These are some of the questions that have so far emerged over the course of the debate. More will undoubtedly appear as it progresses.

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Henryk Hiż
CAN WE SPEAK THE TRUTH

If one cannot speak the truth, then there is no use in speaking at all; or at least in listening. Because conveying information is an important role of linguistic communication. If this information were unreliable, if it constantly led us astray, we would have stopped using such a fallacious instrument. Language is not an evil demon who lies to us. Because most of the information we received has not failed us, we learn to speak a language from when we are little. Because it benefits us. This fact should be taken into account by those who draw far-reaching, but vague conclusions that grammar is congenital from the commonness of speech and the alleged speed with which children acquire language skills. We learn, because people usually do not lie, speak quite clearly and the things they say help us all the time.

However, we have been repeatedly warned that language deceives us. Ambiguity, vagueness, the liar paradox, deceptive metaphors, Bacon's *idola fori* have illustrated the difficulties and illusions of using language. Out of all the reasons why it is hard to decide whether someone is telling the truth or not, one is particularly vexing: the inability, or even impossibility of answering the following question: if and how sentences match what exists and what is happening? This question can be divided into two parts: what are we saying? Is it the truth? The first one is difficult, the second one: hopeless.

Let us first consider briefly what can be true, what is the carrier of truth. Tarski ascribes logical value to declarative sentences. Some possess the value of truth, that is they are true. Other logicians claim that it is not the sentences themselves that are true, but what is said in them. This refers to the stoic "lecton," Polish "sąd," English "proposition," Frege's "Gedanke." It

is best to avoid these historically loaded terms. Instead of "someone uttered the proposition that *p,*" we ought to use a simpler phrase: "someone said that *p.*" For instance:

(1) Mary uses the Polish sentence *dziś jest piątek,* to say that today is Friday.

Or more generally

(2) Person *A* uses the expression α to say that *p.*

In (2) *p* is a translation of the expression α into English, just as in (1) *today is Friday* is the English translation of the sentence *dziś jest piątek.* The Polish sentence (1) does not contain such a word as "sąd." It has been dispersed within the context. Let us take note that (1) and (2) describe a certain act of linguistic communication. This might not be enough for some philosophers, who want to discuss propositions as such, not propositions used in speech acts. How one should obtain this sort of abstraction from expression (2) is their own affair. Let us note that neither (1) nor (2) contains the word "language." Saying that a certain expression is an English sentence is less than saying that it is a sentence of the English language, thus an element of some abstract, complex structure . And that is enough.

Of course, the Polish sentence *dziś jest piątek* is true if and only if saying that today is Friday is indeed the truth. We shall therefore formulate the general rule L ("L" as a remembrance of the ousted term "lecton").

R u l e L. If someone uses the form α to say that *p,* then α is true if and only if *p* is the truth.

One might also replace the phrase "if *p* is the truth" with "if that someone is telling the truth that *p*" or "if that someone is telling the truth."

It is nice to regain the noun *truth* and use it next to the adjective *true*, which has been the only admissible term since 1931. The grammatical functions of such phrases as *it is true* or *someone says* are similar in the sense that each one can be followed by a complement in the form of a declarative sentence preceded by *that.* There are many such verbs, for instance: *thinks, conceals, supposes, reckons, announces, insist, hints, writes, denies, proves, it is false, it is possible, is of the opinion* plus several hundred more. Most of them are characterized by a certain epistemological loftiness. Russell used these verbs to present his studies of *propositional attitudes.* All such verbs refer to our attitude towards a certain situation or event. I call them verbs of immersion, because they immerse the sentence. Some of the readers might

argue that the phrase *it is true* is not a verb. However, it fulfills a similar function to a verb; besides, before someone demonstrated that 101 is a prime number, they first made sure that it was in fact so. Such relations can be noticed in other cases. When someone think that p, then they claim that p. Falsehood presents certain difficulties, because it comes from Latin. However, the Latin word *falsus* is derived from the verb *fallo, fefelli, falsum* ('overthrow', 'fool', 'deceive'); *me fallit* means 'I am wrong' or 'I don't know'. When someone utters a falsity, then they are lying. To a certain degree, the theory of truth and lie can be a part of the theory of immersion verbs.

Tarski emphasised that we do not only want to say that the sentence *Today is friday* is true, but that the first sentence of this paper is true as well. He would also insist that each sentence of this paper is true; α may not only be a symbolic name, but any name of an expression and it is quantifiable. I, on the other hand, would like to say that not only is each sentence of my paper true, but also that everything said in this sentence is true.

Semanticians say that p is the semantic value of α and transcribe it in the following way:

(3) $[|\alpha|] = p$

Thus, they pass over the speaker. We can retain the speaker:

(4) In Mary's view $[|He\ was\ resting|] = Odpoczywał.$

Or the listener:

(5) For Stephen $[|He\ was\ resting|] = Odpoczywał.$

Mary is here considered at the moment of speaking, Stephen at the moment of listening.

The expression *says that* is the fundamental term of semantics from expression (2). The study of what is written on the left side of *says that* will refer to the used language forms, whereas the elements written on the right side of *says that* are realistic or possible situations, events and facts. Due to the rule L, there exists a large degree of parallelism between the truthfulness of the expressions and the truth of their value. We often confuse them without any ill consequences, but sometimes such consequences appear.

Complete sentences, in which all evident and insinuated variables are related to any quantifiers that may even be conjectural, belong to the

minority. Speech is dominated by open functions, such as the function "odpoczywał." The term "function" has two meanings: either it is the function word "odpoczywał" or its value, a function in the mathematical sense: odpoczywał. The function uses the notation: $\lambda x \; [f(x)]$. In this case: $\lambda[x$ odpoczywał (he was resting)]. The Polish language does not contain such letters as x or λ. There is only "odpoczywał" with or without quotation marks. Common language contains sentence functions in the form of declarative sentences. They have normal sentence intonation and result in consequences.

Language is not only used for speaking and listening, but also for reasoning. We draw conclusions from sentences and functions. Conclusions drawn from what was said are called the content of what was said. The term "content" in this function comes from Frege (*Inhalt* — but in his studies it was used only in reference to semantic values). The fact that Poland has a president allows us to conclude that Poland is not a monarchy. Things are similar with regard to functions. If he was resting, then he was tired. If x^2 is even, then x is also even, $x = 2y$ and $5x = 10y$. Conclusions drawn from one sentence are usually trivial and uninteresting. They do not say much more than the sentence itself. We usually draw conclusions from several sentences together — from the sentence and its assumptions. Assumptions consists in our previously acquired knowledge, the fragment of text we have read so far, part of an utterance we have already heard or sentences describing the common surroundings of the speaker and the listener. Most assumptions are not spoken, because we assume — either correctly or incorrectly — that the listener also has these assumptions or is ready to accept them. Frege claims:

(F) With the assumptions X the content of the sentence α is the set $\mathrm{Cn}(\{\alpha\} \cup X)$.

This formula needs some correction, because, according to Carnap's observation, according to (F), the content of α contains as its part all the consequences X. Thus, it may contain various sentences which have nothing to do with α. Carnap introduced the following:

(C) With the assumptions X the content of α is $\mathrm{Cn}(\{\alpha\} \cup X) - \mathrm{Cn}(X)$.

However, Irena Bellert observed that (C) is faulty in that if α was among the assumptions X, then according to (C) the content of α The content of all assumptions is empty. (C) should rather indicate what we have found out from α, but what we didn't know from X alone. Instead of (C), Irena

Bellert proposed:

(B) With the assumptions X, the content of α is $\mathrm{Cn}(\{\alpha\} \cup X) - \mathrm{Cn}(X) \cup \{\alpha\}$.

However, (F), (C), and (B) have one more fault. For a logician, if X contains one false sentence, then all the sentences in $\mathrm{Cn}(X)$ are false. Then (C) results in an empty class and (B) results in only α. Neither conclusion is satisfactory. One can omit this problem by making a clear reference to the reasoning of person A. According to A, some β is a prerequisite for α if A used β as one of the prerequisites for α; in other words: if A used an utterance starting with β and ending with α. A set of such prerequisites shall be described as $\mathrm{Pr} < A(\alpha)$. Then

(6) According to A, with the assumptions X, the content of $\alpha = \mathrm{Cn}(\{\alpha\} \cup (X \cap \mathrm{Pr} < A((\alpha)))$.

(6) is more in harmony with the style of my earlier remarks. We are talking about a person who thinks, whereas (F), (C) and (B) overlook the reasoning person. If the listener has received and accepted the information, then they have included it into their assumptions the way they have understood it. According to (6), accepting the information can change the content of many of the listener's earlier beliefs, even if he still maintains them. Conversations constantly change our view of the world and they do so to a greater degree than we usually realize.

People sometimes say untruthful sentences and, less frequently, their reasoning is incorrect. It would seem that the logical correctness of utterances is much more deeply rooted in culture than truth. Not everyone is a master of speeches, but there are very few bunglers and even bunglers rarely make serious mistakes in reasoning. Usually, the appearance of incorrect reasoning is caused by using a false premise. People differ in opinion, but there are no significant differences in their logic. We constantly base our reasoning on certain premises while not knowing whether they are true or even while knowing that they are false. We want to examine what these premises lead to. We also reason using sentence functions as premises. Then the course of our reasoning resembles that which is based on complete sentences. The difference consists mainly in the possibility of mixing up free variables. For instance the fact that x^2 is even might lead us to conclude that $x = 2y$ only if y is not present in any other premises as a free variable. In the opposite case, one would have to use a new variable. Otherwise, we could

have an earlier premise $y = 1$ and conclude that if x^2 is even, then $x = 2$. Such instances encourage us to be careful when speaking. The text: *The dog entered the kitchen. Mary killed the cockroach and patted it* contains an erroneous reference of the pronoun.

In a way, the patterns of reasoning are elements of language structure. Someone, who makes errors in reasoning might be suspected of a certain linguistic disability. We may think that someone who proclaims a false opinion is incompetent in the domain about which they are speaking; we may correct them, but there is no reason to suspect them of having a lack of linguistic skills. The saying that the best orators are notorious liars is a truism. In formalized languages, grammar and logic are one and the same. It is very similar in the case of natural languages. Obviously, one should not equate the logic of mathematical languages and the logic of everyday English language. I very much doubt that anyone would use Peirce's law: *CCCpqpp* even in the most sophisticated conversation or monologue. Furthermore, it is doubtful whether even the word-for-word translation of Peirce's law into Polish is adequate. A formula, in which three implications are subsequently contained within each other (*CCC*) does not seem translatable. It would also be difficult to interpret it: *"CCpqr"* can be understood as: "If the fact that *p* means that *q*, then *r*." Such an interpretation of the triple implication would require us talking about drawing conclusions from conclusions drawn from conclusions. This would create a type of meta-meta sentence, which, I believe does not exist in natural language. The interaction of logical functors is limited in everyday language. One may say in Polish: "Logik, używając prawa Peirce'a, mówi, że jeśli z nie-*p* wynika *p*, to *p*." ("*Using Peirce's law, a logician may say that if non-p equals p, then p.*") Or: "Jeśli z negacji tego, że *p* wynika, że *p* to *p*." (If negating *p* means *p* then *p*."). Negation is not iterable in Polish. The sentence *Piotr nie nie jest nauczycielem (Peter is not not a teacher)* is incorrect. In Polish, negation is binary. The negation of a declarative sentence is its denial. The negation of a denial is a declarative sentence. In order to become useful to natural language, logic must be reformed.

We not only have to suppress certain laws of logic, but also enrich it with a lot of new material. There are very general rules, for instance those which govern the relations between active and passive voice or those stating that a question and a short answer form a complete answer (*Where is Mumbai? In India* leads us to conclude that Mumbai is in India.) Other rules of inferential grammar refer rather to specific words. Many implicational laws are binding not only for "is true," but also for many immersive affirmative

verbs: *proclaims, knows, supposes, says, believes.* It is also possible to a certain degree to intertwine these verbs. For instance: "If someone knows that if p then q and supposes that p, then they suppose that q." These verbs can be arranged according to their affirmative strength in the following manner: *suspects < supposes < says < proclaims < thinks < believes < knows < it is so.* The implicational law demands that the weakest verb be the first one, thus preceding the final verb in the configuration. The more a certain law of inferential grammar depends on particular words, like in the example with immersive verbs, the greater the probability that people will make mistakes in reasoning. Rules which are formed solely based on grammatical constants, such as: *and, or, no, each, if, he, which,* or grammatical endings, certain prepositions (needed to express so-called dependent cases) are broken only in pathological situations, for instance when the speaker is drunk. Grammatical constants occur in almost every type of speech, in newspapers, novels, chemistry, court procedures. There are exceptions which we immediately identify as differing greatly from everyday language: legal codes, math (only in formulas, not in comments), logic.

People differ in their convictions, knowledge, experiences, superstitions. Hence, our assumptions concerning the comprehension of the content of utterances are different than those of someone else. Because these assumptions are usually not specified, or perhaps even impossible to specify, the linguistic message is always imperfect, uncontrolled. We do not know the entire content of what we are saying. In a dialogue, the situation is even more glaring. Person A uses form α to say that p. The person has experiences which force them to have convictions X. For A, the content of α is a certain set $T(A)$, described according to (6). Even if person B, the listener, receives the form α and even if $[|\alpha|] = p$ to them, then they will assume Y, which is different in certain aspects to X. For person B, the content of using form α will be $T(B)$, and $T(A) \neq T(B)$. Because we assume that the convictions of different people are equally accurate, in this case the source of interference were the different assumptions X and Y. A different recipient, D, would receive the content $T(D)$, which will also differ from the previous ones. Since people do not control all of their assumptions, this interference cannot be removed. Furthermore, people are not aware of the differences in their assumptions. Obviously, human experiences, opinions, knowledge, superstitions, feelings are similar to a certain degree. Otherwise, our species would not survive. One might also try to set some common assumptions for a certain social group. However, it is a difficult task and may not yield very precise results. This is the reason that justifies a skeptical approach to conveying truth

or any other information. Furthermore, discovering that the text contains hidden, enthymematic assumptions can be a fascinating task for a linguist, who notices that the reasoning conducted by the author of a given text seems incorrect. One may demonstrate that it lacks proper premises and often deduce what these premises should refer to. Sometimes, one might also find the appropriate sentences somewhere else in the same or a similar text.

When dealing with sentence structures, we usually want to know which arguments they derive from in the given utterance. Who was resting? The previously mentioned Mary was translating a fragment of a Polish text: "A ów groźny lew położył się na progu zbuntowanego kraju i odpoczywał. Siły zbierał." (*That dangerous lion lay down at the border of the rebellious country and rested. He was gathering its strength.*) Reading several of the previous pages reveals that the dangerous lion is prince Wiśniowiecki and that the sentence does not refer only to him, but also to his army. The word 'lion' is used metaphorically. It functions as an epithet and a reference, a pronoun of sorts, a reference to the name Wiśniowiecki. The epithet is clear, because we know — not from the text itself, but ever since we were little — that lions are dangerous beasts. Similarly, the word 'country' is a quantifier and a reference to Zaporoże (Zaporizhia). He was resting to gather his strength. This fragment of text contains a condensed message that Zaporoże rebelled. Wiśniowiecki was dangerous; Wiśniowiecki positioned his army near Zaporoże; Wiśniowiecki was resting; Wiśniowiecki was gathering his strength. However, it is not everything that this message contains. In order to grasp how much we put into this text from ourselves, we would have to read it to an average Englishman, which is what Mary did in order to complement it with the information I listed above. What is this country Zaporoże? It's not even on the map, not even on a historical map of Australia. Against whom or what did it rebel? Who was Wiśniowiecki? For whom was he dangerous? For Zaporoże or its enemies? When did it happen? It was probably before our time and before the text was written. Perhaps it is a novel, a fairy tale and there is no point in asking when it happens. Placing the action in time is always particularly difficult. It is not helpful to say that the event takes place in the year 1684. Because anyone might ask: counting from when? From the birth of Christ. When was that? Forty-four years after the death of Julius Caesar. And when was that? A year before the death of Cicero. Such questioning can go on and on. Perhaps it would be better to say that the event took place "344 years ago." However, this solution is very relative. If time were always measured from the present moment, one wouldn't be able to preserve a universal criterion of measurement.

Text interpretation is largely dependent upon studying references, discovering enthymematic assumptions and drawing conclusions. Obviously, no context can explain all references, reveal all of its hidden assumptions, specify all conclusions or present the entire content. There is always an unspecified something, someone, somewhere or someday. Therefore, everything we say is suspended in nothingness, just as the measure of time. One might formulate Polish grammar in such a way that the only arguments which are not also functors would be: me, you, something, someone, somewhere, someday. All other utterances are functors deriving from functors deriving from functors, all the way to functors deriving from arguments, which consist in these unspecified pronouns. ”Someone constantly walks behind me. — Someone walks before me all the time.” The first ”someone” is walking behind a second ”someone.” The text explains further, that the first someone is a journalist and the second someone a clown, etc. The alleged dialogue, the time when it happens and the participants of the conversation form a system of co-ordinates in several dimensions. We find ourselves in these coordinates at least throughout the entire scene. It is no different in less fictional dialogues. The creation of the coordinates system is based on an equally indefinite foundation. Again, the fact of the conversation happening establishes what is here and what is far or to the left. It establishes the present and the end of the past. As the conversation develops, it introduces marks to this grid. It is difficult to resist the impression that the conversation creates a universe, or a fragment of one of the universes.

There is no reason to assume that there is one world , which is completely described by everything one says or writes. Chemistry texts are governed by different rules than Latin poetry. Assuming a common model for them introduces disorder. The ontological unity of knowledge is an anachronism derived from the story about the creation of the world. Therefore, in order to return to the subject introduced in the title of this work, one ought to speak about the truth of chemistry and truth of poetry. However, even this would be far from the truth. A closer look at chemistry texts shows that they also contain various ”conversations” and different paths which only occasionally converge into a wider road.

Eugeniusz Grodziński
SEMIOTIC TERMINOLOGY USED BY GOTTLOB FREGE. A CRITIQUE.

Frege never used the word "semiotics" in his writings even though it had been known to authors one (Lambert 1764) or even two centuries earlier (Locke 1690). Neither did Frege use the term "semantics," but this one appeared only in 1897 (Breal 1897) when most of the essential work done by Frege had already been completed and published. Even so, Frege was not only a semiotician but a great revolutionary in semiotics as he imparted new meanings on nearly all key semiotic terms as well as introducing ones that had not existed before.

This is not to deny Frege greatness, which he duly deserves, even though in my opinion his main achievements lie in the philosophy of mathematics and mathematical logic, with natural language semantics much less indebted to him. Frege's semantic and logical coinages have, for the most part, failed to earn a lasting place in semantic terminology. The significance of the revolution he unleashed in it has been about it becoming the starting point for an argument-rich discussion. This paper sets out to offer some contribution towards it.

Let us start from a remark, which is not to be treated as a criticism of Frege, that the term "sign" [Zeichen], a focal term in most semioticians' studies, hardly plays such a part in Frege's writings.

"It is clear from the context that by 'sign' and 'name' (*Name*) I have here understood any designation representing a proper name (*Eigenname*), which thus

has as its reference (*Bedeutung*) a definite object (this word taken in the widest range), but not a concept or a relation[....]. The designation of a single object can also consist of several words or other signs. For brevity, let every such designation be called a proper name." (Frege 1960: 57)

It can be concluded from this that the basic term for Frege is "designation of a single object" and that this term is a definiens whereas the terms "sign," "name" and "proper name" are synonymous and all of them are defined by means of the same aforementioned definiens. However, in this arrangement, the term "sign" not only occurs as a synonym of the terms "name" and "proper name" but also in another meaning — as a partner of the term "word." We can only speculate that in speaking of "words" (*Worte*), Frege meant words of a natural language whereas in reference to other signs, he meant mathematical and logical symbols.

Therefore, a clear definition of the term "sign" as an unambiguous term that encompasses all the entities that researchers from various fields mean when using the term cannot be found in Frege's writings.

It is also hard to agree with what Frege identifies as "name" and "proper name." It would appear that if Frege recognises the existence of proper names, he would have to recognise the existence of other, non-proper names, too, whereas the term "name" (no modifier) would be treated by him as superior to "proper name" or "non-proper name," and thus one having a content other than the two. By equating a superior term with one that is inferior, Frege makes a mistake.

Does Frege need the term "proper name" at all? He does not recognise names other than the ones he labels "proper names," which means that all Frege would need is the term "name" (*Name*), whereas the modifier ([Ger.] prefix) "proper" (*Eigen*) serves no purpose and as such should have been rejected.

Let us remember, however, that alongside the term "proper name" Grammar uses a no less important term "common name" (Gemeinname). Did Frege forget about or deliberately ignore this one? He did not forget about it but he chose to disregard it. He kept *Gemeinname* away from his scholarly terminology.

"The word 'common name' leads to the mistaken assumption that a common name is related to objects in essentially the same way as is a proper name, the difference being only that the latter names just one thing whilst the former is usually applicable to more than one. But this is false, and that is why I prefer

'concept-word' to 'common name'."(Frege 1979: 124)

What was the basis of Frege's weird conviction, is it false that a common name is applied to a bigger number of objects? Let us provide an example that comes from someone other than Frege but which faithfully reflects the course of his thinking. In Frege's opinion, the proper name New York means (*bedeutet*) a singular object, made up of a great number of streets, buildings and squares on the river Hudson in the United States of America. He believes the word "city," called by grammarians a common name, does not at all mean, as grammarians would have it, New York, with its set of buildings, streets and squares on the river Hudson, and neither it means London, with its corresponding set of buildings, streets and squares in the UK, nor any other set of streets, buildings and squares, situated anywhere else in the world on any other river; it means no multitude of beings at all: what it does mean is one being, and an immaterial one at that — the word "city" signifies the concept (*Begriff*) of "city." The same holds true for all the so-called common names. The word "horse" means no actual horse — it means the concept of horse. The word "stone" signifies no stone — it signifies the concept of "stone." Likewise, the word "state" means no state — it means the concept of "state." If no common name means a multitude of beings but, rather, a singular notion, then the modifier "common" does not befit it at all. As any such name means a concept, Frege believes that it quite aptly ought to be called a "concept name."

Is there, however, no link between "concept words" and the objects of the external world? Indeed, there is such a link, but it is indirect and more complicated than one between proper names and the outside world. The latter is direct and consists in proper names meaning (*bedeuten*) the objects of the external world. Each concept word means a concept, but concepts do not signify any objects, which just fall under the concept (*unter den Begriff fallen*). In Frege's understanding, "falling under a notion" is something completely different from "being denoted by a proper name (or a concept word)." This is what the complex character of the bond between concept words and the objects of the outside world is in Frege's opinion.

A question can be asked: if a number of objects fall under a notion, can't the term "common name" refer to a notion? No, it cannot, as "common name" is a term from a linguistic vocabulary and "notion" if not a linguistic entity.

In his avoidance of the term "common name" Frege impoverished not only the terminology of grammar but of logic, too. In Polish scientific terminology,

the term "imię" (name) is essentially used in grammar (common and proper names), and in logic it corresponds to the term "nazwa" (in English translated as "name," too). In German and English, the term "name" (*Gemeinname, Eigenname,* common name, proper name) is used in both grammar and logic. If, then, Frege's injunctions were to be applied to the Polish logical terminology, an indispensable term such as "nazwa ogólna" (generic name) would have to be removed from it.

Can the great complication introduced by Frege to the relation between common names, which are called "concept names" and the objects of the external world, be explained in rational terms? Apparently a rational justification is missing here. What then is the nature of the relation of denotation that obtains between the words of language and the objects of extralinguistic reality subordinated to it in the language? Other than the vital notion of onomatopoeia, there is no natural bond. The only connection is that words of a language serve people in the expression of thoughts about the objects attributed to them in the language and passing these thoughts on to others who share the same language. This is the very same way in which all categorematic words designate in a language, and it does not matter that in pronouncing or hearing a proper name we think of one specific object and when pronouncing or hearing a common name we think of one of the many similar objects. Anyway, the one-designation nature of proper names is non-existent. Most proper names (people's first and second names, the way we call animals, geographical names, entertainment premises, clubs, etc.) have a number of designations: from several to millions. Frege should have called all these proper names "concept words," but, as far as I know, he did not do that.

Had the authors of grammar course-books and the teachers of the subject followed Frege's directives and replaced common names with "concept words," they would have rendered grammar completely indigestible to students. The idea of common names is easy even for elementary students, who are taught the basics of grammar. Explaining the notion of "concept word" to them, which requires that the terms "concept" "signify" and "fall under" be elucidated first, is, needless to say, impossible. And even though logicians are much better prepared than elementary school students, changing the term "generic name" to "concept word" would not do logic any good.

Frege assigns a much broader meaning to the term "proper name" than is customary amongst grammarians and logicians. As Frege put it, "The designation of a single object can also consist of several words or other signs. For brevity, let every such designation be called a proper name" (Frege 1960:

57). If a single object is designated in a language with one word, it is its proper name (e.g. John, Smith, France, Geneva). Here, Frege is in agreement with grammar and logic. But when an object is designated by several words, it can also be a proper name in both logical and grammatical aspects (Adam Mickiewicz, Józef Ignacy Kraszewski). So, neither does Frege depart here from the arrangements made before. Not so, however, when the designation of one object having two or more words is not a name attributed to it in the language for good but is provisional and adapted to the context and is, grammatically, made up of common names or combinations of common and proper names (the woman we have just spoken about, the 1992 world champion in chess, the highest summit in the Himalayas, Józef Piłsudski's eldest daughter).

These sorts of language designations of single objects are not called proper names by logicians (or individual names) but they refer to those as "individual descriptions" or "definite descriptions." Apparently there is no grammatical term assigned to these descriptions. By extending the scope of the term "proper name" to include those, Frege introduced another revolutionary terminological innovation. Despite the term "individual descriptions" being extremely useful for logicians, and grammarians potentially as well, Frege's inclusion of an individual description into the term "proper name" ought to be treated as a lesser fault in his terminology than the removal of the term "common name."

This is more right as Frege distinguishes between the traditional proper names and individual descriptions, but he does so in ways that are different from those commonly applied in logic. He writes "In the case of an actual proper name such as 'Aristotle', opinions as to the sense may differ" (Frege 1960: 58). If traditional proper names are actual proper names in Frege's terminology, individual descriptions are for him virtual proper names (*nich wirklische Eigennamen*), even if he does not use the term in his works.

The deficiencies in Frege's terminology result in consequences he probably would not have accepted had he anticipated their occurrence. From the definition of sign and name as a proper name, it follows that concept word (*Begriffswort*) is no sign at all, either linguistic or any other, as Frege staunchly contrasts concept words with proper names. If, then, any sign is a proper name, no concept word is a sign.

In another article Frege does use the term "concept-sign," (*Begriffszeichen*; Frege 1971: 140, 141, 150), but in doing so he gets even more entangled in terminological inconsistencies because the term "concept-sign," ought to be synonymous to the "proper name of the concept (*Begriffseigenname*)" in

Frege's understanding of the term. On the other hand, "Begriffseigenname" is at odds with the whole system of Fregean semiotic terminology: objects (*Gegenstande*) have their own proper names, but they never have their concept.

How did Frege distinguish between concept words and proper names in a text? It cannot have been a problem for him when it comes to traditional proper names which, as we know, he described as *wirklische Eigennamen*, but this did not address the problem in Frege's eyes because he counted as proper names all expressions that we are now calling "individual descriptions." What criteria did he apply to make a distinction between concept words and this sort of proper name? He wrote:

"A concept-word combined with the demonstrative pronoun or definite article often has in this way the logical status of a proper name in that it serves to designate a single determinate object. But then it is not the concept-word alone, but the whole consisting of the concept-word together with the demonstrative pronoun and accompanying circumstances which has to be understood as a proper name. We have an actual concept-word when it is not accompanied by the definite article or demonstrative pronoun and is accompanied either by no article or by the indefinite article, or when it is combined with 'all', 'no' and 'some'." (Frege 1979: 213)

So, for Frege, a permanent division of categorematic words of a language into proper names and concept words (a Fregean counterpart of common names) does not exist at all (except for the scarce group of "actual proper names – *wirklliche Eigennamen*").

For a traditional user or language, and for a scholarly grammarian too, such words as *Mann, Frau* (man, woman) are always common names, but for Frege *ein Mann, eine Frau* are concept words whereas *der Mann, die Frau, dieser Mann, diese Frau* (the/this man, the/this woman) are proper names. Such groupings of words as *alle Manner, einige Frauen* (all men, some women) are expressions for a concept (*Begriffsausdrucke*) rather than proper names.

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One of the peculiarities of Fregean semiotic terminology is the lack of the essential term "mean." Frege does use the term 'bedeuten' (and its derivative 'Bedeutung' even more often), but whereas in the German non-Fregean scholarly terminology (and colloquial German, too) 'bedeuten' refers both to

"refer to/stand for" and "mean," in Frege's writings it only stands for "refer to/stand for." If Frege had said "Der Eigenname dieser Hund bedeutet das Tier, welches neben mir steht," and "Das Begriffswort ein Hund bedeutet den Begriff Hund," these would need to be translated "The proper name 'the dog' refers to an animal standing next to me" and "The concept word 'dog' stands for the concept <<dog>>." No Fregean occurrence of *bedeutet* would warrant being translated as "means."

A number of disputes and uncertainty has arisen around the Fregean term 'Bedeutung'. In the non-Fregean tradition and scholarly German, 'Bedeutung' is "meaning." In Frege's writing, though, it is about something completely different. The difference between Fregean and non-Fregean 'Bedeutung' is even greater than between Fregean and non-Fregean 'bedeuten'. In non-Fregean German, 'bedeuten' is translated either as "stand for/refer to/denote" or "mean" 'Bedeutung', however, is solely rendered as "meaning" in non-Fregean German, and this one meaning was removed by Frege, who imparted another sense to it, which it had probably never had before: "object designated by this word or linguistic expression." Contemporary semiotics has a number of terms that render this concept: designation, denotation, extension, nominatum, reference, but even German semioticians (except staunch followers of Frege) do not use the word 'Bedeutung' to name this concept.

Did not Fregean semiotics know the term "meaning" like it did not know the term "mean?" It did. "Meaning" in Frege's writings was *Sinn* even though this is usually translated as "sense" into English.

Should the Fregean understanding of 'Bedeutung' as the "object being designated" be perceived as a mistake? It would have been a mistake — a great mistake — if Frege had claimed that this is the analytical definition of 'Bedeutung', that is, that the terms commonly used in German to render the thing signified. However, Frege does not make this claim. In defining 'Bedeutung' as the designated object, Frege makes it clear that it is him who describes the term in this way — that it is his arbitrary definition. Each author has great liberty insofar as formulating arbitrary definitions, those being false only when their creator describes as existing something that does not exist or cannot exist. One cannot, therefore, charge Frege with making a mistake in his definition of 'Bedeutung', but one can reasonably state that, with his definition, he introduced great confusion into semiotic terminology. This confusion proved great due to Frege's scholarly repute.

German commentators of Frege proved best able to cope with Frege's 'Bedeutung'. They easily realised that Fregean and scholarly/colloquial 'Be-

deutung' were two terms with different contents. This proved more difficult to the translators of Frege's literature. Let us have a look at Fregean translations into English and Polish. The first prominent enthusiast of Frege's in 20th century logic and semiotics — Alonzo Church — translated 'bedeuten' as "denote" and 'Bedeutung' as "denotation" (Church 1956: 25) For Clarence Lewis 'bedeuten' also meant "denote," but 'Bedeutung' — "extension" (Lewis: 1950: 33).

In the last decades of the 20th century, the Fregean 'Bedeutung' was usually translated as "reference." That was the translation used by Geach and Black as well as the English commentators of Frege, such as Ignacio Angelelli (1967: 56), David Bell (1979: 26–27), E.H. Kluge (1980: 17), R.B. Brandom (Haaparanta, Hintikka 1986: 259), Tyler Burge, however (Haaparanta, Hintikka 1986: 98) translates 'Bedeutung' as "denotation." Contemporary translations by English semioticans, too, provide a variety of translations of Fregean "'bedeuten': to denote, to refer, to stand for."

Which translation of the Fregean 'Bedeutung' is used by Polish scholars? Jerzy Pelc uses the term *nominat* (Eng./Lat. nominatum) (Pelc 1982: 59). Ryszard Wójcicki (1984: 5–6) and Witold Marciszewski (1987: 70) use the word *denotacja* (denotation).

What about the English translation "meaning" and the Polish "znaczenie?" These would be the right translations if Frege understood 'Bedeutung' in a traditional manner. However, he uses the term in a unique way as a designated object. Are there, however, no other concepts, on top of Fregean, which equate meaning with the designated object? Indeed, there is, originally devised by J. S. Mill and then reinvented by R. Carnap. Because it is about equating the meaning of a linguistic phrase with the object the expression designates, it will be called a "meaning-objectivizing conception."

For Mill, the meaning of any connotative name (one that has a connotation) is about the very connotation. Connotation is a set of features of the object designated by the name, that is, the very object. The difference between connotation and denotation is simply about denotation being the object the name refers to in the language, perceived without its characteristics and connotation consisting in the object being considered together with its characteristics. Mill's concept of meaning has the following scheme, then: the meaning of the name=connotation=the set of characteristics of the object described by the name = the object designated by the name. (Mill 1962: 49–63).

In Carnap's rendition, the meaning (intension) of a name is the concept, the meaning of a sentence — a proposition. As regards the term "concept,"

as Carnap writes, is:

"... not meant as [...] but as referring to something objective that is found in nature and that is expressed in language by a designator of non-sentential form." (Carnap 1956: 21)

"Some remarks may help to clarify the sense in which we intend to use the term "proposition." [...] it is used neither for a linguistic expression nor for a subjective, mental occurrence, but rather for something objective [...]. ... by the proposition that this table is black we mean something that actually is the case with this table, something that is exemplified by the fact of the table being as it is." (Carnap 1956: 27)

Carnap's rendition of meaning has, in brief, the following paradigm: the meaning of the name = concept = something objective that occurs in nature = designated object.

However, there are a number of concepts in semiotics that do not equate meaning with the object designated (materialistic and Platonizing concepts, one that sees meaning as a way of using an expression in a language, as an operation, as the situation in which an expression is used and others). This is why the translation of the Fregean 'Bedeutung' (=object designated) as the English "meaning" ad Polish "znaczenie" should be seen as flawed. Carnap does not translate 'Bedeutung' as "intension" (meaning), but by the term opposite to "intension," that is, "extension" (Carnap 1956: 1).

Despite these seemingly unquestionable findings, some English Fregeans do translate 'Bedeutung' as "meaning." Some Polish scholars, by the same measure, translate the term as "znaczenie." The authors of the English translation of Frege's Posthumous Writings P. Long and R. White were convinced that only in that way could the German 'bedeuten' and 'Bedeutung' be translated. In the preface to the translation, they wrote:

"First and foremost we have parted company with all previous English translators of Frege by rendering 'bedeuten' and *'Bedeutung'* as 'mean' and 'meaning'. [...] 'Meaning' is, after all, the natural English equivalent for *'Bedeutung',* and renderings such as 'reference' and 'denotation' are strictly incorrect and have only been adopted by other translators for exegetical reasons. We have thought it better not to beg questions of exegesis by suggesting through translation a certain view of what Frege meant in his later writings by 'Bedeutung', leaving it rather to the reader to form his own judgement of the contrast Frege intended by his

'Sinn-Bedeutung' distinction. If his later use of 'bedeuten' and 'Bedeutung' reads oddly in German, this oddness should be reflected in translation and not ironed out by mistranslation." (Frege 1979: VI-VII)

White and Long's position on the subject matter cannot be accepted. They have the readers forming independent opinions on Frege's treatment of the German language disregarding the fact that they cannot always do that and thus they can be in danger of misinterpreting the texts. It is the translators' duty to protect readers from that. E.B. Cociarella, too, translates 'Bedeutung' as "meaning" in the paper "Frege, Russel and Logicism." (Haaparanta and Hittinka 1986: 229). Prof. Joan Weiner provides an illustration of the kind of confusion Frege caused among translators by his unique understanding of 'Bedeutung'. She authored a paper "Putting Frege in Perspective" (Ahhparanta and Hittinka 1986: 229) and a book *Frege in Perspective* (Weiner 1990). In the first work she translates 'Bedeutung' alternately as "reference" and "meaning." In the other, she announces that the Fregean 'Bedeutung' is untranslatable into other languages and should therefore appear as the original German term. She wrote that she had decided to leave the term in its German form to avoid attributing obvious absurdities to Frege (Weiner 1990: 128). However, in the course of writing the book she must have become convinced that leaving 'Bedeutung' leads to nothing good either, and went on to resume translating the term as "meaning."

Among Polish translators and commentators of Frege , there were also those who deemed it right to render 'Bedeutung' with a term similar to "meaning:" first and foremost Bogusław Wolniewicz. He has no little merit in facilitating the reception of Frege among Polish readership. In 1977 he released the first Polish collection of Frege's essential papers on semantics, preceding his book with a highly informative introduction. However, we cannot agree with Wolniewicz's rendition of 'Bedeutung' as meaning. His argumentation is similar to Long and White's (albeit done independently): he seeks no clarification of Frege. Translating 'Bedeutung' as "znaczenie" is a distortion: Frege meant something else and translators should not do that.

Adam Schaff is not very clear about this (1960: 322–325). For him the Fregean 'Bedeutung' is in one context an object designated (in line with Frege) and, in another, "meaning." Apparently, Shaff treats an object designated as a form or element of meaning.

The term "meaning" is not absent, however, in Polish commentaries to

Frege. J. Pelc (1982: 249) and J. Kopania (Marciszewski 1987: 272) rightly translate the Fregean Sinn as meaning, with Pelc using a compound term "sense, that is, meaning."

If Frege's shift of the meaning of the term 'Bedeutung' ought not be treated as a mistake but, rather, as license, acceptable within the rights of an author even if it entails major consequences, I believe the way he uses the term 'Bedeutung' in a completely different context can be regarded as nothing else other than completely wrong.

"We are therefore driven into accepting the *truth value* of a sentence as its referent ['Bedeutung']. By the truth value of a sentence I understand the circumstance that it is true or false. There are no further truth values. For brevity I call the one the true, the other the false. Every declarative sentence concerned with the referents of its words is therefore to be regarded as a proper name, and its referent, if it exists, is either the true or the false." (Frege 1948: 216)

Before we move on to further deliberations, let us explain the mode of the translation of Frege's 'Bedeutung' that we have adopted. When it comes to the 'Bedeutung' of a name, that is, the object designated by the name, the generally acepted term "desygnat" [designation] is used in this case. Regarding "denotacja" ["denotation"] and "denotat," ["reference"] we have preferred "denotat." Why? Because denotation is characterised by its multi-element quality: it is usually a set of designations of a generic name. In Frege's writings, though, 'Bedeutung' is always linked to a singularity of elements: it is a single object designated by a name or a single object designated by a sentence. Therefore, in translating Frege's terms, we have chosen the "denotat" of a sentence rather than the "denotacja" of a sentence as pendant to the designation of the name.

We consider Frege's claim that the reference of a sentence is either being true or false to be particularly wrong. Russell was the first to notice that as early as 1903. He wrote that a direct insight seems to prove that the relation of the sentence to being true and false is completely different from, say, the relation of the expression "the present King of England" to Edward VII (Russell 1937: 504).

A number of well-known researchers of Frege whose overall attitude to the master was very positive, were no less critical of Frege's concept of the reference of a sentence (e.g. Bell 1979: 28). In considering Frege's attempt to prove it, I. Angelelli wrote that the proof was *obscurum per obscuriora* (Anelelli 1967: 59). R. Wójcicki wrote:

"Sentences of the same truth value need not mean the same thing. It is a fact that Wittgenstein knew Frege, and it is a fact that Wittgenstein corresponded with Russell, but these are different facts, so the sentences reflecting these facts differ in reference even though they do not differ in truth value." (Wójcicki 1984: 5–6)

Despite these and other criticisms, the bizarre concept of Frege's conquered the minds of most specialists and became a dogma of sorts. Rudolph Carnap spoke for it staunchly, and in doing so he went against his deeply analytical mind even though its weirdness was indeed noticed by the author of *Meaning and Necessity*, "At first glance, it may perhaps seem strange to call a truth value an extension, and perhaps there may be a feeling even against saying that equivalent sentences have the same extension" (Carnap 1956: 26). Despite these reservations, Carnap is in unison with Frege's position. A vast majority of contemporary books and courseware in logic and semiotics perpetuate the Fregean proposition that the truth value of a sentence is its reference without an attempt at proving it as if one could take this for granted. *Logika formalna* [Formal Logic] by W. Marciszewski puts it briefly: "the reference of a sentence is its truth value" (Marciszewski 1987: 272). One may wonder what kind of spell Frege had cast on authors who followed him a century later that made them accept one of the most controversial constructs ever to appear in semiotics.

However, we would be making a mistake if we claimed that Frege never tried to make his definition of reference plausible in the eyes of his readers and his own, too. Indeed, he tried to do that, which is totally understandable as he did believe in the insightful and relevant nature of the definition in the same way as he believed in the relevance and insightful novelty of all his numerous semantic coinages. He began his discussion of that from the reference ('Bedeutung') of name rather than of sentence, that is, using his vocabulary, the reference of a proper name. He wrote "The reference of a proper name is the object itself which we designate by its means" (Frege 1969a: 44). Frege's definition of designation by names corresponds to Mill's definition (Mill 1962: 51) and raises no doubts.

In formulating the definition of Bedutung (reference) of a sentence, Frege was convinced he had succeeded in blending it into his definition of proper name. Eventually, the Fregean definition of the 'Bedeutung' of a sentence was this: the 'Bedeutung' of a proper name (here a sentence) is the object (sentence being true or false) that is denoted by this name.

However, in order to make his definition of sentential denotation *salonfähig*,

Frege had to make two somersault operations: call a sentence a "proper name" and the true/false quality of a sentence — "an object."Most probably, as long as grammar has existed as a science, there has also been the fundamental distinction between words (names) and sentences. Words are linguistic equivalents of objects and phenomena whereas sentences correspond to facts, events and states of affairs. A homonymous language form may be perceived as a word (member of a sentence) on one occasion, and a verbless sentence on another. "Pali się" [Eng. approx = "[...]burning"] may be a member of a sentence in one context "There is fire burning in the fireplace" or a verbless sentence (Fire! Approx. = "It is burning!"). The difference between a word and a sentence is realised by any user of language, even illiterate.

Frege, however, thought it was acceptable to abolish this difference. More than that. Not only did he call sentence a name, but he went even further calling sentence a "proper name." Of course, such a claim cannot fail to cause a shock to an unsuspecting reader. Creative license in sciences is not unlimited, though, and equating a sentence with a proper name must be called none other than false.

When it comes to expressing sentences as true or false as objects, Frege himself seems to be embarrassed. "The designation of the truth values as objects may appear to be an arbitrary fancy or perhaps a mare play upon words" (Frege 1948: 216). However, without this "arbitrary fancy" the Fregean definition of the reference of a sentence is impossible to uphold and this is why he stubbornly defends it.

"An object is anything that is not a function, so that an expression for it does not contain any empty place. A statement contains no empty place, and therefore we must regard what it stands for as an object. But what a statement stands for is a truth value. Thus the two truth values are objects." (Frege 1891: 18)

This proof is utterly unacceptable, though. Frege claims that 1) no object is a function, 2) a function contains empty places, 3) a sentence contains no empty places. Only one conclusion can be drawn from these premises: according to Frege, a sentence is an object, not a function. One cannot conclude, though, that a truth value of a sentence is an object. One more thing. The proposition that sentential truth values are objects is treated by Frege as a member in the proof for the proposition that the truth value is what the sentence stands for. However, by proving that sentential truth values are objects, Frege treats the proposition that the reference of a sentence is its truth value as already proven, and thus he makes a logical fallacy of

circular reasoning.

Designation is a direct relation between a linguistic expression and an excerpt of reality. Such was a conviction embraced by Mill and Frege's starting point, too. In the case of a name, this is a language expression whereas the excerpt of reality it designates is an object or phenomenon which the name is subordinated to in the language. Regarding the designational function a sentence performs, Frege looked into it, and indeed this is his only claim to fame as Mill, whose achievements in investigating the relationship of designation are undoubted, failed to notice the designational function of sentences. In designation by sentence, it is a language expression that designates and there is no need to call a sentence by a proper name to assign the function to it. The excerpt of reality a sentence designates is the fact (occurrence, state of affairs) the sentence talks about. The truth value of the sentence, being a relation between the sentence and the fact talked about by that sentence, that is, between two excerpts of reality, is not such an excerpt of reality for sure (if the fact occurs, the sentence is true and if it does not, it is false).Therefore, the truth value of a sentence cannot be what it stands for, whatsoever.

Frege has an inalienable right to dwell upon the relationship between the sentence and its truth value, but he had no right to call it a relation of designation because it indeed has nothing to do with the relation of designation by names and if both these relations were to share the term "designation," their essence would need to be shared as well. Frege did have a right to call the relation between a sentence and its truth, say, a relation X, and the relation between the sentence and its falsity a relation Y. But a question arises of what content the relations would have and how science would benefit from identifying these.

Establishing the truth value of every sentence we are taking interest in for whatever reason is a very important activity, but when we already know this value, comparing the sentence with its truth value as two opposing members of a relationship cannot introduce anything new to our knowledge and appears completely redundant. In conclusion, we can say that Frege's claim that the truth value of a sentence is the reference of a sentence was a false proposition and the procedure Frege undertook to build a relation between the sentence and its truth value (when both are known) was completely unnecessary and did not benefit science in any way.

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Now onto the assessment of Frege's concept of truth. "Truth" is not a semiotic concept but an epistemological one, but its significance is paramount for all humanities, natural and technical sciences, and among them, semiotics, too. It needs to be stated right away that in his rendition of truth, Frege reached the peaks of inconsistency, which is hardly becoming of a scholar. On the one hand he repeatedly demonstrated an attachment to truth as the basis of sciences and an objective of any scholarly activity. On the other hand, he betrays a weird neglect for the part truth plays in science. Most strikingly, though, Frege refuses to make any attempt to explain what truth is and what the substance of the concept is, as well.

Allow me first to quote several statements by Frege which seem to imply a full understanding of the role of truth in science and human life. "What is distinctive about my conception of logic is that I begin by giving pride of place to the content of the word 'true"' (Frege 1979: 253). In another article, he elaborated on this thought in the following way:

"The word 'true' can be used to indicate such a goal for logic, just as can 'good' for ethics and 'beautiful' for aesthetics. Of course all the sciences have truth as their goal, but logic is concerned with the predicate 'true' in a quite special way, namely in a way analogous to that in which physics has to do with the predicates 'heavy' and 'warm'. To discover truths is the task of all sciences; it falls to logic to discern the laws of truth." (Frege 1967: 17)

These words were spoken by the logician Frege.

Some of his other statements, however, have a reverse overtone. "One can, indeed, say: 'The thought, that 5 is a prime number, is true.' But closer examination shows that nothing more has been said than in the simple sentence '5 is a prime number."' (Frege 1970: 64). In this way Frege states it is unnecessary to use the word "true" in this and other similar cases. In other words he suggests a far-reaching reduction in speaking the truth in both everyday speech and the language of science. But Frege is wrong. The meanings of both sentences are not identical at all. To speak of facts or real phenomena in the language of the subject is not the same as to discuss the thoughts about these facts and real phenomena in a metalanguage. When speaking of facts, we do not use the predicative attribute "true" because it is sentences rather than facts that are either true or false. However, in ascertaining facts, we know for sure that if these facts did take place, we would be telling the truth; if not, we declare a falsity. In this way the words "truth" and "falsity" are constantly present either in our speech or

subconsciousness.

However, Frege not only advises a substantial limitation of the use of the word "truth" but he goes even further and anticipates the onset of a period in the existence of the human psyche when the very concept of truth will become unnecessary. He says:

"How is it then that this word 'true', though it seems devoid of content, cannot be dispensed with? Would it not be possible, at least in laying the foundations of logic, to avoid this word altogether, when it can only create confusion? That we cannot do so it is due to the imperfection of language. If our language were logically more perfect, we would perhaps have no further need of logic, or we might read it off from the language." (Frege 1979: 252)

One can hardly, if at all, be in lockstep with Frege here and imagine mankind using such a perfect language that it will make logic as a science and the concept of truth itself unnecessary. Frege contradicts himself again when he says that every truth is eternal (Frege 1979: 174).

Another proposition Frege makes that is incompatible with his conviction that the truth is the focus and purpose of any science is his oft repeated claim that that the truth is utterly impossible to discover. In Frege's paper "*17 Kernsatze zur Logic*," we read that he thinks it is impossible to explain what is true (Frege 1973: 25).

Frege knew two ways of explicating concepts: 1) defining, 2) in the case of concepts so simple that they cannot render themselves to definition, giving some directives concerning these concepts.

On the introduction of a name for something logically simple, a definition is not possible; there is nothing for it but to lead the reader or hearer, by means of hints, to understand the words as is intended.   (Frege 1970:43)

In this very way, without formulating definitions, Free resolved to explain such fundamental notions as concept (*Begriff*), object (*Gegenstand*), function (*Fuktion*). Of "concept" he wrote "a concept is a function whose value is always a truth value" (Frege 1970: 30). Of "object" he spoke, "the singular definite article always indicates an object" (1970: 45). Of "function:" "the function by itself must be called incomplete, in need of supplementation, or 'unsaturated."' (1970: 24).

Regarding the concept of truth, Frege not only wrote that "the content

of the word "true" is unique and indefinable" (1967: 19), but he never gave any guidelines, allusions on what ought to be understood as the truth. This was a premeditated attitude, and only in this way Frege's words that it is impossible to explain what he truth is need to be interpreted.

In treating he truth as something that cannot be discovered in any way, Frege defied a myriad of epistemologists, logicians and theologians who over centuries and millennia created a vast array of conceptions that set out to find what truth is. All these many theories have a certain common denominator: statements and sentences are true if they correspond to some extralinguistic beings. The most prominent Aristotelian concept sees truth in *adequatio rei et intellectus*; the moral truth is about the agreement between human judgements and actions with the injunctions of a moral code; the religious truth – their compliance with the Divine Thought and Will. Pragmaticist concepts of truth consider those statements to be true which are in agreement with human needs and vested interests whereas in the coherence concept truth sentences are true if they fit into a logical system of premises and conclusions. Frege decisively refuted seeing the truth of sentences in their agreement with an extralinguistic being. He claimed that "In any case being true does not consist in the correspondence of this sense with something else, for otherwise the question of truth would reiterate itself to infinity" (1956: 292).

Frege must have been unaware that in affirming the absolute incongizability of truth, he was hitting a mortal blow to all sciences, which he himself assigned finding the truth as their main objective. He did not suspect that in destroying sciences he was also annihilating his beloved logic, which he had tasked not only with the cognition of truth but also of the laws governing the truth. How can one find out about the laws governing something whose very essence is inaccessible to the human mind. Frege also did not realize that in defining what the sentence stands for as it being true or false he was lapsing into a fallacy known as *ignotum per ignotum*. How can one describe definiendum by an unknown and undefinable definiens?

Frege revolutionized the theory of definition. However, he revolutionized it so radically that it would be no exaggeration to say that he largely destroyed a theory that had existed for centuries. From the earliest stages of human intellectual development, which occurred alongside the articulation of speech, formulating definitions has been very significant in storing the knowledge of the world. Formulating definitions never initiated the human cognition of an object or phenomenon. Not knowing anything about the object encountered did not allow for formulating its definition. The beginning of the discovery

of an unknown object X always followed the same course: characteristics typical of a class of objects were noticed first and they were known to the members of the community under the name N. So, object X was also called N. That was the first stage of building a definition of object X, and it was later called *genus proximum*. It was also noticed, however, that object X (as single object or element of a class of objects X) also had (a) characteristic(s) that was/were not inherent in the rest of objects named N. Thus object x was described as N with extra Y/Z characteristics. The additional traits Y and Z make up what was later called *differentia specifica*. This is how the ANALYTICAL definition of object X was already there (long before the establishment of the terms referring to the theory of definition) and the growing resource of all analytical definitions in all ethnic languages has constituted an essential component part of the human knowledge of the world.

A SYNTHETIC definition emerges when its author introduces a novel, unknown word but not for the purpose of designating a recently discovered object or phenomenon but in order to bequeath on the word the content composed by the very author of the word or to give new contents to a word already existing in the language. A synthetic definition serves cognition only when an object exists in the world whose characteristics correspond to the content of the word composed by the author of the definition. If an object like that does not exist, though, a synthetic definition (whether the author knows it or is unaware) constitutes a figment of their imagination only. It follows that the human knowledge of the world could do without synthetic definitions (even though this would cause its measurable impoverishment), but it could by no means exist without a broad resource of analytical definitions.

The operation performed by Frege on the theory of definition was actually about whatever was most essential to it — analytical definitions – being removed. It also left by far the less essential part — synthetic definitions. This is how Frege defines the term "definition:" "We construct a sense out of its constituents and introduce an entirely new sign to express this sense. This may be called a 'constructive definition', but we prefer to call it a 'definition' *tout court*" (1979: 210). It is clear that Frege's definition encompasses synthetic definitions only.

However, the term "analytical definition" is not entirely foreign to Frege. He devotes to it the following discussion:

"We have a simple sign with a long established use. We believe that we can give a logical analysis of its sense, obtaining a complex expression which in our opinion

has the same sense. [...] No doubt we speak of a definition in this case too. It might be called an 'analytic definition' to distinguish it from the first case. But it is better to eschew the word 'definition' altogether in this case, because what we should here like to call a definition is really to be regarded as an axiom." (Frege 1979: 210)

Frege defines axioms as "truths for which no proof can be given in our system, and for which no proof is needed." (1979: 205). It follows that "false axioms do not exist" (1979: 205). Thus, in Frege's understanding, numerous propositions are false treated by scholars from various fields as axioms. These are all the analytical definitions Frege does not agree with. And so, false, too, is the Aristotelian definition of truth even though for its creator it was an axiom. However, the definitions Frege created himself would have to be subjected to heavy criticism if he had been consistent. He writes, "The designation of a single object can also consist of several words or other signs. For brevity, let every such designation be called a proper name" (1969a: 41). This is Frege's definition of a proper name and it is no doubt an analytical definition because Frege did not introduce the term "proper name" into science but it had been around long before Frege; neither did he try to bequeath a new meaning on the term. So, Frege treats this definition of his as an axiom that requires no proof. As things are, in Frege's opinion, the expression "the tallest man in Europe in 1993" falls under the concept of proper name by axiom and with no proof as it designates a singular object and is made up of several words. However, the way a number of scholars see it, the expression not only is not a proper name by axiom but is no proper name at all but, rather, an individual description. In the light of this and other like examples, Frege's whole conception of the truthfulness of analytical definitions not needing a proof as these are not definitions but axioms is found to be wrong.

Frege's activity in pursuit of making the theory of definition a "scientific dwarf" did not end up with analytical definitions being swept beyond the realm of definitions proper. He introduced two drastic limitations into his conception: 1. "Part of the mathematician's activity, besides drawing inferences, is to give definitions. Most disciplines are not concerned with the latter at all; only in jurisprudence is it of some importance" (1979: 203) 2. "A DEFINITION of a concept (of a possible predicate) must be complete; it must unambiguously determine, as regards any object, whether or not it falls under the concept" (1970: 139). The latter of the two propositions was more far-reaching as it implied that even mathematical and legal terms were undefinable if they are vague. Therefore, according to Frege, terms such as

crime, transgression, offence, punishment or guilt are undefinable (and hence useless) for science as all of them are vague. This is, indeed, a negation of the whole science of jurisprudence.

As regards the first of these propositions, Frege was himself inconsistent with it, such as when he defined a sentence as a proper name with the term "sentence" belonging to the science of linguistics rather than mathematics or jurisprudence. Also, this was in Frege's opinion a synthetic definition, that is, "constructive" since no one had defined the concept of sentence before.

In conclusion, we cannot agree with the Fregean vast reduction of the part played by definition — one of the most important concepts in the whole of science.

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Our goal in this brief study was to conduct an analysis of Frege's scientific terminology, predominantly in semiotics, but, due to the limitations of space, this is only a rudimentary, selective analysis. Indeed, we dwelt upon some of the particularly important terms used by Frege, but other no less important ones such as "object," "concept," "function," "subject" or "predicate of a sentence" were either barely mentioned in connection with other analyses or omitted completely. We hope that we will be able to continue the study of Frege's semiotic terminology in *Studia Semiotyczne*. We want to emphasize that we do not desire to ridicule or humiliate Frege, who was possibly the most learned humanist at the turn of the 19th century. Precisely because he was a great scholar, he also could legitimately make serious mistakes that could destroy the academic stance of a lower-ranking scholar. The complete exposure of these mistakes — on top of bringing to light his achievements — is a duty for the generations following Frege.

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Andrzej Łachwa
TEXT AND ITS STRUCTURE

1. Preliminary definition of a text

The objects which I will be dealing with below are the so-called "communications for," their parts and aggregates[1] fixed in writing and perceived within the frame of the "type-token"[2] dichotomy as types. These objects will in short be called LANGUAGE FORMATIONS.

The abovementioned "communications for" are understood as utterances to be received many times in any place and at any time by a closely unspecified group of addressees (and not a person or a group of persons taken into consideration in advance) (Gizbert-Studnicki 1979: 55; Lalewicz 1976: 68; Studnicki 1978: 112-113).

The smallest language formations of interest to me shall be words, i.e. those language formations, whose form is a sequence of alphanumerical signs (letters or figures) separated as a whole by typographical means. In normal printing practice this is most often a sequence of such signs limited from both sides by spaces or punctuation marks.[3]

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[1] It is impossible to study language (the language system) in any other way than by starting from the collection and generalisation of language facts, i.e. from examination of LANGUAGE COMMUNICATIONS. A distinction between a language behaviour and a language-system has been introduced by many authors, i.a. F. de Saussure (*parole, langue*), L. T. Hjelmslev (process, system), N. Chomsky (performance, competence), cf. e.g. Lyons 1984: 28-34, Chomsky 1982: 14-16, Helbig 1982, Heinz 1983, Sgall 1978: 7 *et seq.*

[2] Within the meaning ascribed to the terms of "type" and "example" ("token") by Ch. S. Peirce, cf. Lyons 1984: 17-21 and Sgall 1978: 10-11.

[3] I will distinguish a word from a lexeme, i.e. what is an element of the dictionary from what is an element of the language-system. Cf. Lyons 1984: 22, 26.

Examples of language formations, within the meaning introduced above, are: the title of this paragraph, i.e. the expression *initial definition of a text*, the grammatically incomplete expression *I will be dealing below*, being a part of the first sentence of this paragraph, this entire sentence, this entire section, everything that has been written on this page, the formation composed of the two preceding sections, this paragraph, this entire text, as well as the object composed of the all works quoted in this paper.

I assume that the language formations described in this paper are objects constructed from the same "matter," i.e. certain meaningful graphical elements. These shall in particular be alphanumerical marks, punctuation marks, spaces between the words, as well as formal means used for distinction of certain language formations as wholes. However, I do not mean here the features of tokens of language formation, e.g. the font, the colour or the size of the letters, but solely the distinctive features of language formations perceived as types. What I mean is the fact that certain language formations differ from one another with respect to the size of the alphanumerical and punctuation marks used therein, with respect to the sizes of the spaces between the lines, the typeface, and the shape of the font. I perceive these differences (these distinctive features), apart from the alphanumerical and punctuation marks and spaces, to constitute meaningful graphical elements. I will not go into any greater detail either with respect to these elements or with respect to their mutual relations.

One type of language formations of varying sizes and forms are, among others, TEXTS.

The term "text" is a polysemic term and many of its meanings are fuzzy (even according to the theory of text).[4] Thanks to these features it is a highly functional and useful term.[5] Therefore, in order to make it a tool useful for our further deliberations, I suggest adopting one of those

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[4]Cf. the definitions of the text proposed by Z. S. Harris, G. Helbig, H. Isenberg, R. Harweg, E. Agricola and Z. Wawrzyniak in: Wawrzyniak 1980, as well as by J. Petöfi, A. Bogusławski, J. Wajszczuk, M. R. Mayenowa and P. Sgall, respectively in: Petöfi 1981; Czarnawska 1982; Bogusławski 1983; Wajszczuk 1983; Mayenowa 1979, 1976; Sgall 1978.

[5]As J. Pelc claims, "if [natural language expressions — addition: A.Ł.] are to be used by us in numerous various situations, then we need to accept their framework character, fuzziness and ambiguity, as well as their obscurity, since thanks to these features they are elastic, functional and handy. If however, the situation or domain where these natural language expressions are to be used is already known, if we therefore know what kind of material we will treat with the use of expressions-tools, then we need to adjust them for this purpose, sharpening them, and making them clear and precise, so that obscure expressions transform into precise terms" (Pelc 1982: 180).

meanings and "sharpening" it a little. I thus assume that the term "text" will cover with its denotation only those from various language formations (i.e. written "communications for" understood as types), with respect whereto a competent language user will be willing to say that they are correctly constructed texts (within the ordinary, common understanding of the word "text"). In view of the topics tackled by me in the research I carried out, I shall limit myself solely to legal[6] and scientific[7] source texts.

2. Text components

2.1. Formal wholes

Neither single sentences nor sequences of sentences can be considered to be language formations, which I called texts in the preceding paragraph. Source legal and scientific texts are always equipped with certain designations. Moreover, these texts are usually composed not only of those designations and sentences, but also of larger language entireties distinguished by formal means (e.g. sections or sub-chapters), often equipped with their own designations.

The abovementioned formal means used in order to distinguish parts of language formations as certain entireties include above all the so-called typographical means. They include i.a.:

– use of so-called lights (unprinted space), for example: indentations, spaces between the lines, placing certain parts of the materials "on the axis", so-called vacancies (unprinted pages) and other,

– use of oppositions — capital letter — small letter, Roman type — italics, compact print — spaced-out print, ordinary print — bold, etc.

– use of initials, i.e. letters at the beginning of language formations, different with respect to size and shape (in particular a rich and colourful ornament was used in the past for distinguishing the first letter of the text),

– use of colour (varying colours of the background and various colours of the print),

as well as

– introduction of minor graphical decorations in order to separate larger parts of the text.[8]

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[6]What I mean here are in particular statutory laws, resolutions, decrees, orders, etc.

[7]Under the theory of law one usually adopts the assumption on the correctness of the legal source texts, cf. Stabrawa 1986: 23; Gizbert-Studnicki 1985: 81. It seems that such an assumption may be made also with respect to scientific texts. In both cases we are obviously dealing with a certain idealisation of reality, whereby in the second case we idealise the reality to an extent greater than in the first place.

[8]These issues have been discussed in Trzynadlowski 1983.

Other formal means include for example the use of the so-called enumerations (such as applied in the preceding sentence) as well as the above-mentioned designations (e.g. such as the designation of this paragraph or designation of this point).

Hereinafter, each language formation formally distinguished within another language formation, as something independent, will be called a FORMAL WHOLE. Moreover, I shall call a formal whole for each such language formation, which in view of pragmatic criteria is not a part of any other language formation.

I assume that a text (a correctly constructed source legal or scientific text) is not always a formal whole (Łachwa 1986, 1990). Moreover, I assume that such a text always has some designation.

Formal wholes, are — apart from text — among others words, sentences, sections, points, sub-clauses, paragraphs, chapters, columns and other parts of texts, as well as parts of texts being designations of the mentioned language formations or text designations.[9] Formal wholes are also some language formations, i.e. formations being neither texts nor properly distinguished parts of texts. An example of such a whole may be an issue of "Dziennik Ustaw" (*Journal of Laws*).[10] Formal wholes are not for example multi-word expressions constituting formally undistinguished parts of sentences. Also the language formation composed of two subsequent sentences of a section consisting of three of more sentences is also not a formal whole.

2.2 Semantic wholes

I shall call a language formation a SEMANTIC WHOLE, if such formation is perceived by competent language users as a "semantic entirety", and not as a "multiplicity", i.e. when its meaning (sense)[11] is constructed

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[9]I believe that a designation (heading) of a text is not something external with respect to the text, but quite to the contrary, that it is an integral part thereof. Cf. Studnicki 1986; Stabrawa 1986: 41-47; Dobrzyńska 1978.

[10]In particular, I believe that this object is a language formation, but is not a text (or even less a part of a text) and that it is a sequence of texts equipped with designation, and therefore, this is a certain formal whole.

[11]The word "meaning" is used here, similarly as in J. Lyons' work (1984: 10), in its intuitive, common sense. In order to clarify this sense, J. Lyons indicates three more or less separate functions of the language: the descriptive, social and expressive function. These functions indicate three types of information capable of being coded in language formations. The meaning of a given language formation is the information corresponding to the descriptive function, i.e. the so called descriptive or cognitive meaning (*ibidem*: 97-100). I also take from J. Lyons the distinction between sense,

upon the meanings of its parts, and is not a simple sum of these parts,[12] and when it is a single word.

Semantic wholes are therefore, apart from words, i.a. reference and predicative expressions, sentences, sequences of sentences and certain larger language formations. As for entire texts (correctly constructed texts), I assume that they are always semantic wholes. An example of a language formation, which is not a semantic whole, is the Journal of Laws mentioned in the preceding paragraph. Moreover, language formations whose tokens are in the previous page of this article and the last three lines on this page are not semantic wholes.

2.3. Formal-semantic wholes

If someone is reading a multi-sentence text, divided only into sentences, i.e. such a text in which formal wholes larger than a sentence have not been distinguished, then one usually divides such a text spontaneously into certain multi-sentence semantic wholes. This division may be varied in various cases (depending, for example, on the recipient and circumstances of the receipt). In the case, however, when language wholes larger than sentences have been distinguished with the use of formal means, the recipient is usually ready to accept that each such formal whole is at the same time a certain semantic whole.[13] It seems that such an assumption is fully justified, at least if we are

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reference and denotation. The term "sense" is defined by J. Lyons in the following manner: two or more expressions will be defined to have the same sense over a certain range of utterances if and only if they are substitutable in the utterances without affecting their descriptive meaning (*ibidem*: 198-199). This definition may be, as it seems, extended, to any language formations. As to the remaining terms, by a gross simplification, reference is a relation between the language formation and the thing to which it pertains in a given context (as its referendum), denoting, on the other hand is the relation between this formation and what it can refer to by its various uses (its denotation). Obviously, not every language formation may be connected with a reference and a denoting understood this way. Cf. Lyons 1984: 176-218.

[12]Cf. the following definition of a sentence as a semantic whole proposed by R. Ingarden (1960: 168): "Sense of a sentence is a functional-intentional unit of meaning of a particular kind, which is constructed from many meanings of properly selected words adjusted to one another to form a closed whole. Although the meanings of particular words are included in this case within the sense of the sentence since they are parts or components of the text, yet the sentence is not a simple sum or multiplication of the latter, but a formation totally new with respect to the latter, with separate properties."

The concept of various kinds and various levels of language wholes discussed hereinafter has its source exactly in the quoted work of R. Ingarden. Cf. also the interpretations of this work by Trzęsicki (1983) and Jadacki (1974).

[13]Cf. Remarks of W. Marciszewski (1970 and 1975) on thematic text partition.

dealing with such language formations as scientific, technical or legal texts. With respect to literary texts such an assumption would often be doubtful, and sometimes even erroneous. Yet we are not going to deal with such texts here.[14]

FORMAL-SEMANTIC WHOLES,[15] i.e. wholes both formal and semantic are: words, referential and predicative expressions formally distinguished in sentences (e.g. constituting an element of an elaboration), sentences, sections, points, sub-clauses, paragraphs, chapters, volumes, parts, books and other types of fragments of correctly constructed texts, such entire texts as well as designations appearing in these texts (numbers, titles, etc.). I will call a formal-semantic whole to be MULTI-SENTENCE, if it is constructed – directly or indirectly, of sentences (or potentially of designations). For example this section is a whole constructed directly of sentences. Points and paragraphs of this text are composed of sentences indirectly.

3. Texture, i.e. the system of text components

I will remain interested in the relations between certain formal-semantic wholes. These will in particular be multi-sentence wholes and sentences functioning in the text as designations of other wholes, as well as expressions having their own designations and constituting proper parts of sentences. I will hereinafter call such wholes TEXT COMPONENTS.[16]

Components of this text are i.a. sentences, sections, points and paragraphs. Designations of paragraphs and points, as well as terms distinguished

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[14]The above remarks also concern other assumptions regarding the correctness of the text formulated in this chapter. As for the above assumption, I would also like to remark that it does not refer to a reverse situation – certain semantic wholes may not be distinguished as formal wholes in a correctly constructed text.

[15]The concept, presented in this paper, of the text as a language formation composed of formal-semantic wholes, and in itself being such a whole, has been developed by the author of this work for several years now, cf. Łachwa 1984, 1986, 1987, 1990. The term "formal-semantic whole" was also used by E. Stabrawa (1986), not providing, however an explanation of its meaning, and referring to R. Ingarden's ideas (1960). R. Ingarden did not however use the term "formal-semantic whole." In the context of interest to us, there appears, however, the following terms: "semantic whole," "linguistic phonetic formation" and "set of sentences" (*ibidem*: 52, 53, 58, 83, 164 *et seq.*)

The authors who notice in the text objects larger than sentences use the following terms to name them: "a partial text," "a set of sentences," "a macro-structure," "a sub-text," "a text" and "a text component" — cf. Stabrawa 1986; Daneš 1983 and Graustein, Thiele 1983.

[16]I understand the text as a collective set of components. Therefore, it is possible to claim that also a text is a text component. I will continue to distinguish the text from its components (the proper components).

in the text with the use of italics are not components, although they are formal-semantic wholes.

I will understand the structure of a given text to mean that all relations between the elements of the set composed of this text and its components. THE FORMAL STRUCTURE consists of the formal relations between the elements of the abovementioned set, and THE SEMANTIC STRUCTURE, shall consist of content relations between these elements.

I suggest using one technical term for the system composed of a set, which constitutes a certain text, as well as all components thereof and the formal and semantic relations between the elements of this set, namely the term TEXTURE.

4. Formal structure of the text

4.1 Order of components

Components in a text are ordered partially in two ways: on the basis of the CONTAINING relation and the SUCCESSION relation.[17] Some groups (sets) of those components are, on the other hand, ordered in a linear manner. In particular, we may speak of a linear order in accordance with the succession relation only with respect to those components of a given text, which have been distinguished in a larger component, directly containing them. In other words, components constituting sequences are only direct constituents of another component (e.g. the entire text). Examples of linearly ordered groups of components of this paper are the sentences comprising this section, the sections of this point, the points of this paragraph, etc. In my opinion however one cannot speak of a linear order of all sentences of this text or of the linear order of all sections. It would seem at least strange to claim that the first sentence of this point is (formally) a consequent of the last sentence of the preceding paragraph. It would seem strange because between these two sentences there appear certain designations. I believe that it would be similarly ridiculous to claim for example that this entire paragraph is the consequent of the last section of the preceding paragraph or the consequent of the last sentence of that section. An example of a group of components directly contained in another component and not ordered linearly in accordance with the succession relation, is the group composed

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[17]When I say that a language formation contains another such formation, then the word "contains" is understood by me in the common sense (i.e. in the same way as for example, when I say that fruit contains vitamins), and not as a term from the distributive sets theory.

of two sentences directly contained in the third sentence and separated from one another with some proper part of the third sentence.

Each multi-sentence component (cf. point 2.3) is in the text a sequence of components from the lower level of division of this text, i.e. a sequence of components directly contained therein and ordered linearly in accordance with the succession relation. To be more precise, such a component is a sequence of components formed in a certain topographical shape and sometimes equipped with a certain designation. Components comprising such sequences may be in this case under discussion sentences or multi-sentence components. The entire text is constructed in the same manner as a multi-segment component is, i.e. it is a topographically formed sequence of sentences or multi-sentence components equipped with a designation (the fact that the texts with which I deal with in this paper are always equipped in some designation has been discussed earlier). As for the sentences in a text, they may also contain certain components, but such components contained directly in a sentence never constitute an entire sentence and cannot succeed one another directly. We may speak of the components directly contained in a sentence that they are EMBEDDED (cf. point 6.2). Other components may be embedded in an EMBEDDED COMPONENT, and there may sometimes be several such subsequent "embeddings".

I will hereinafter call the ordering of text components in accordance with the relations of succession and containing described herein the HIERARCHICAL-LINEAR ORDER. And if I say that some object has a HIERARCHICAL-LINEAR STRUCTURE,[18] what I will mean is that the distinguished parts of this object are ordered in the abovementioned manner.

The hierarchical-linear structure of a text may be presented graphically with the help of a relevant tree-shaped diagram. The knots of such a diagram represent the text components, whereby the top knot represents the entire text. Single arrows mean in this diagram the elements of a relation of direct containing, and double arrows a relation of direct succession (cf. Fig. 1).

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[18]I introduced this notion in: Łachwa 1986. On the multilayered text structure see i.a. Studnicki 1986; Daneš 1983; Graustein, Thiele 1983; Stabrawa 1986; Studnicki *et al.* 1990.
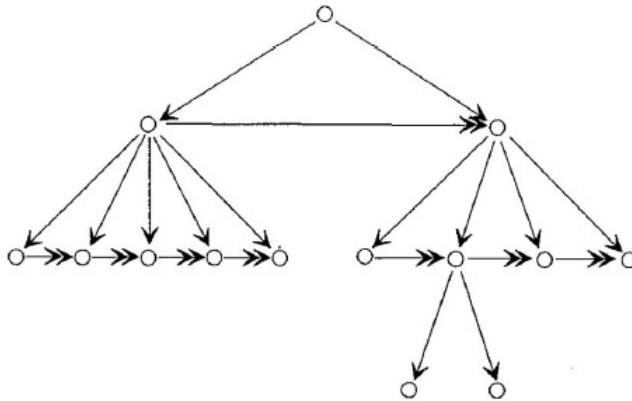
Fig. 1. A fragment of a pattern of the formal structure of a certain text (the knots in subsequent rows represent respectively: a chapter, 2 sections, 9 sentences and two expressions-components embedded in a sentence).

4.2. Types of components

Components of a certain text may be language formations of various kinds, various sizes and various forms. Components OF THE SAME KIND will be understood as components distinguished with the use of formal means of the same type, i.e. by the use of the same topographical means and the same type of designations (if any). For example, all components of this text marked with one-number designations are components of the same kind and are herein referred to as paragraphs. Components whose designations are composed of two figures are also of the same kind, but I call them POINTS, since they are of a different kind than the paragraphs.

4.3 Series and chains of components

Sequences of components ordered linearly in accordance with the relation of succession and belonging directly to the same component of a higher level of the (formal) structure of a given text (e.g. the entire text directly) will be called a SERIES by me. An example of a series shall be a sequence of points which this paragraph is composed of.

Components of a series may be, similarly to any other text components, language formations of varying size and form. Most text series are however composed of components of the same kind. Cases when components of a series are not components of the same kind, shall be discussed further on (cf. point 6.1.).

I will call sequences of components of given texts ordered linearly in accordance with the containing relation, a CHAIN. Each element of a chain, apart from the first element, is contained in the preceding element (cf. Fig. 2). The first element of the chain is contained in the text or is the text itself.

An example of a chain is the sequence composed of this paragraph, point, section and sentence (one contained in the other subsequently).

Components comprising a chain are always components of smaller and smaller sizes and simpler and simpler forms, and moreover, they are always components of various kinds.
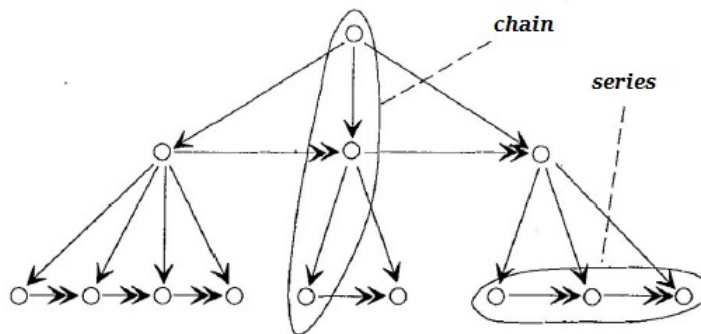
Fig. 2. A chain and a series in the formal structure of a certain text

5. Semantic structure of a text

Components of a text, which may be considered to be a coherent text or a cohesive text,[19] are not entirely self-contained and propositionally independent, quite to the contrary — they are PROPOSITIONALLY LINKED[20] in various ways. In understanding the PROPOSITIONAL INDEPENDENCE of a given component as a feature consisting in that a given component is capable of being properly understood without the need to take into account the propositions located outside of this component.[21] This feature is obviously gradable and therefore we may speak of a smaller or greater degree of propositional independence. Full propositional independence is usually not a

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[19]Cohesion (coherence) of a text was discussed i.a. by: Wajszczuk 1983; Trzęsicki 1983; Mayenowa 1979, 1976; Wawrzyniak 1980; Stabrawa 1986: 51 *et seq.*; Sgall 1978.

[20]The theory of propositional links between the text components presented herein has been developed i.a. under the influence of R. Ingarden's work (1960) and the ANAPHORA research project; cf. Studnicki 1982a, 1982b, 1983, 1990; Łachwa 1984, 1986, 1987, 1990.

[21]Understanding of utterances was discussed by: Studnicki 1983; Studnicki *et al.* 1990.

feature of components, it may however be a feature of whole texts, although this often is not the case either.[22]

As far as sentences in a text are concerned, they contain independently, finally shaped content relatively rarely. Most often, the sense of each sentence is the continuation of what was said in the preceding sentences, and is subject to modification by what is said in the sentences to follow,[23] in a certain series of sentences. Larger components, similarly to sentences, may be and usually are propositionally linked with the components which precede them in a given series or which succeed them in a given series. I propose calling such propositional links occurring in the text between two or more components directly succeeding one another within a given series of components HORIZONTAL LINKS.

Horizontal links do not exhaust all propositional links occurring between the text components. The sense of each component in a text which is discussed here, i.e. in a text which may be called coherent or cohesive becomes richer, fuller and more precise, when one is considering such a

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[22]Finding a text of which one could say that it is fully propositionally independent is not an easy task. Even if we exit the realm of scientific texts this task does not become any easier.

[23]The issue of the relations between sentences in a text was handled i.a. by the representatives of the Prague school of linguistics. They examine a text, analysing subsequent sentences appearing therein. In those sentences they distinguish two semantic constituents: the topic, i.e. what is already known (or what has already been said or introduced in the text) and the comment, i.e. what is new. They claim that the comment of a given sentence of a text becomes the topic of the following sentence, and in this way a topic-comment wave occurs, which runs through the entire text. Cf. Weinsberg 1983: 225-228; Mathesius 1971; Sgall 1978; Cervenka 1976; Mayenowa 1979. To find out more about the role of these works in the text structure research, cf. Mayenowa 1976.

The issue of the relations between sentences in a text is also handled by R. Harweg. He claims that sentences in a text are cohesive because the nominal expressions used in them are often linked by the relation of co-reference and that the chains of co-referential expressions extend throughout the entire text. R. Harweg calls the first expressions of such chains substituenda, and the following expressions — substituensa, and the entire phenomenon — syntagmatic substance. Cf. Harweg 1977, 1979, 1984 and Stabrawa 1986.

The most formal approach to the discussed issue is represented by the Russian authors engaged in automatic text analysis. They indicate, i.a. that certain words (such as: *and, therefore, this, since, moreover, furthermore*) may generate inter-sentences links and therefore the text is divided into sequences of sentences linked with such connectors. Each first sentence of such a sequence is thereby, in their opinion, propositionally independent to such an extent, that it may in such a sequence have the function similar to the function of a title, i.e. the role of content designation in such sequences. Cf. Bierson *et al.* 1981, 1984.

component in components of higher levels of a given text's hierarchy, i.e. in subsequent components in which a component is directly or indirectly contained.

On the other hand the sense of each multi-sentence component is added over the senses of the components from which this component is composed of (similarly, the sense of a sentence is added over the meanings of words and expressions of which a given sentence is composed) (Ingarden 1960: §§ 3, 11, 17-19, 23). As for sentences in which other text components are embedded, the sense of each such sentence is added over the meanings of the words and expressions constituting proper parts of this sentence and the senses of the components embedded in this sentence. The propositional links between the components which are subsequently contained in one another, i.e. propositional links occurring in chains of components will be distinguished from the horizontal links described above and shall be called VERTICAL LINKS.

Horizontal and vertical links seem to be the most NATURAL semantic links to me, and therefore I will hereinafter call them so.

Apart from horizontal and vertical links, the coherence of a text is considerably affected by the propositional links occurring between such components thereof which are not in a relation to direct succession or direct containing. In particular, these may be components located quite far away from each other in a given text. The sense of these components may, similarly as in the cases discussed above, supplement, alter and co-form one another. The propositional links between components located in such a manner "cross" the formal structure of the text (the hierarchical-linear structure) and for this reason I propose calling them CROSS LINKS.[24]

Natural links (i.e. horizontal and vertical links), as well as cross links constitute the SEMANTIC STRUCTURE of a text, understood as defined above. This structure is considerably different from the formal structure of the text (hierarchical-linear structure) discussed above. The principle difference between these structures consists therein that being in a semantic relation is a fuzzy feature, whereby being in a formal relation is a clearly defined feature. It even seems problematic to claim that a semantic relation is a fuzzy relation.[25] In this case it would be possible to characterise the semantic structure of a text by means of a fuzzy relation matrix, where each element of the matrix would be the measure of the strength of the propositional link between two components. Yet, the decisions which pairs

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[24]This term was introduced in: Łachwa 1986.

[25]Fuzzy relations were discussed for example by Czogała, Pedrycz 1985.

of components are more strongly linked and which are less strongly linked in a given text, would always be subjective, and therefore more often wrong.

The coherence, and as some prefer, the cohesion of a text is a gradable feature. Incoherence[26] of a text seems to consist therein that certain components of such texts are fully propositionally independent, i.e. are not propositionally linked with other components. Components having such features could therefore be slightly rearranged, without any change in the sense of the entire text. Texts to which I refer (i.e. properly constructed texts) are coherent texts. Therefore the semantic structure of each text is sufficiently rich not to allow any change of the formal structure (e.g. rearrangement of the order of the components), which would result in a change to the sense of the entire text.

6. Certain anomalies and marginal issues

6.1. Series of heterogeneous components

A typical situation when components comprise a series in the structure of a given text are not components of the same kind which consists therein that the first and potentially the last of these components are different from the remaining ones. In such a case these border elements of a series shall be called the INTRODUCTION PART and the END PART, and the object composed of the remaining components — the PRINCICAL PART of the component, in which they are directly contained (Łachwa 1984). With respect to properly constructed texts I assume thereby that these border components of a series, have the character ascribed to them by the above names, i.e. the introduction and the end of the component comprising of a given series.

A second typical situation when the components of a given series are components of various kinds occurs when some of the sentences or some of the sections of a given text have been formally distinguished from the remaining ones due to their different semantic or pragmatic features. An example of a series of such type is a fragment (a multi-sentence component) of a mathematical work in which components of five kinds: paragraphs designated as definitions, assertions, proofs, examples and undesignated paragraphs intertwine with each other in an irregular manner, forming a series.

In such situations as in the example described above, it is sometimes convenient to take into consideration sequences of components of the same

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[26]Incoherence means poor coherence.

kind within a series of components of varying kinds, e.g. sequences of definitions, sequences of assertions etc. I suggest calling such sequences SUB-SERIES.

6.2. Succession or embedding?

When a given text component is composed of an introduction part and a principal part, then in many cases this introductory part is of a distinctively meta-language character with respect to the principal part. In order to emphasize such a character to the introduction part it is sometimes ended with a colon. A reflection comes to mind that such constructions with a colon is similar to the construction of a sentence where after the main part ended with a colon there is one or several components embedded in the sentence. Perhaps therefore, in case of a component in which we have distinguished an introduction part (ended with a colon) and a principal part, we are not dealing with the succession of these parts but with embedding. And if this was to be an embedding, would we be dealing with embedding of what I previously called the principal part of the component in the entire component, or only in the sentence ending with the colon? A solution to these dilemmas is obstructed by the fact consisting therein that many texts have the structure with the features of both of the abovementioned constructions. In particular a text of a normative act (source legal text) often begins with the sentence containing the legal basis for the issue of the act and a metalinguistic expression in the following form "it is now therefore stipulated as follows:", after which there follows relevant provisions formed in the so-called legislative units (Stabrawa 1986: 92 *et seq*). In many scientific texts on the other hand the components of considerable sizes are embedded in sentences. Sporadically it also happens that in one sentence there is embedded an entire different text.[27]

For example, I believe that for the purposes of automated information processing a solution taking into account the size of relevant components and the topographical centres with the use whereof those components have

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[27]This sentence, called intra-sentence text constitution, was described by R. Harweg (1986). It is however not the only case of appearance of a text in a text. A sequence of adequately selected text shaped typographically and equipped with a designation may form a new formal-semantic whole with the status of a text. If we look at this question from the other side, it will turn out that determination which components of a given text have the status of a text, and which may not prove difficult. These problems (called text delimitation problems) were described i.a. by: Harweg 1979: 285-286, 368, 1984; Stabrawa 1986: 72-85 *et seq.*; Mayenowa 1979 and Dobrzyńska 1978.

been distinguished may prove convenient. In particular, if we are dealing with components with respect whereto we are not certain, whether they are embedded in some language formation, or are the successors of another word formation, I assume that if the components jointly comprise a relatively small object, then they are embedded in such a language formation. With respect to larger components I assume that the topographical means used for distinguishing those components indicate unambiguously whether in a given case we are dealing with embedding or succession.

6.3. Additional components

In the hitherto deliberations I have proceeded as if (correctly constructed) texts did not contain such objects as bibliographies, footnotes, drawings, tables, acknowledgements, dedications, author's or editor's introductions to the text, etc. Presently I will outline a solution making it possible to acknowledge the fact of the occurrence of such objects in texts (or "beside" the texts), and at the same time not violating to any considerable extent the constructions introduced before. First of all I need to state clearly that the text to which I am referring is often composed not only of various language formations, but also graphical formations of various types, such as drawings, charts, photographs etc. Therefore, I would say that a text is either a language formation or a LANGUAGE-GRAPHICAL FORMATION.

I will start my remarks with bibliographies and footnotes. A bibliography, and to be more precise — an appendix bibliography, is a language formation constituting a formal whole, composed of a designation and formal parts ordered linearly, hereinafter referred to as POSITIONS. Each position contains a set of bibliographical data (designation of the author or editor, title, designation of the publisher, date of publication, etc.), as well as its own designation, which is either independent from those data or is partially composed of those data. FOOTNOTES, similarly to the positions of an appendix bibliography constitute a formal whole ordered linearly in accordance with the succession relation. Each footnote is composed of a designation and the designated part, which may be composed in various ways: it may be an expression, a sentence and a larger formal-semantic whole (I assume that footnotes are always language formations).

Other objects, which may appear in texts as their components, are various graphical (non-linguistic) and graphical-linguistic formations: drawings, maps, figures, charts, tables, specifications, etc. I suggest calling these objects, as well as particular bibliography positions, the whole bibliography,

each of the footnotes, as well as the object composed of all footnotes as ADDITIONAL TEXT COMPONENTS.

It may be assumed that in the texts which I herein discuss, each additional component has a certain language designation, that these designations are unique in a given text (unambiguous in such text) and that the additional components, apart from the whole bibliography and all footnotes, are linked propositionally[28] with the ORDINARY text components. I suggest calling such semantic links PERIPHERAL LINKS.

The only thing left to do is to refer to appendixes, tables of contents, indexes, abstracts, dedications, acknowledgements, author's and editor's introductions, etc. From amongst all these objects only the appendixes may be considered to be additional text components, i.e. text components. I do not consider the remaining objects to be language formations being text components, but objects accompanying texts.

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[28]Such notions as "contents of a drawing" or "contents of a table" are used absolutely intuitively in the above context.

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Jarosław Fall
ANAPHOR[1] AND ITS BLURRED BOUNDARIES

When looking for an answer to the question of *what anaphor is*, many researchers fall into a kind of "cognitive pessimism" (at least with respect to the present stage of science development), and as a result leave this issue unsolved. An illustration of the abovementioned attitude may be the following sentence: "I shall not attempt to give a serious definition of anaphoric element, a task, which presupposes an understanding of this aspect of language which is, in my opinion, not now available" (Postal 1969a: 205).

Indeed the term "anaphor" is not easy to define. Therefore numerous authors limit themselves to the presentation of a more or less exhaustive set of possible anaphor realisations, and neglect provision of a definition thereof. This is for example done by Webber (1979), whose classification indicates a very broad understanding of the discussed phenomenon. She includes into the notion of anaphor not only pronouns, but also among others defined descriptions, verb phrase ellipses and the so-called *one-anaphors* (i.e. references to a part or the whole description contained in the nominal phrase, in English usually realised by the word *one*). Many researchers do not care to provide a typology of anaphors (eg. Hintikka and Kulas 1985,

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[1] In poetics, Biblical studies or in ancient rhetoric the notion of anaphor is (was) used to describe a phenomenon of multiple repetition of the same word or linguistic expression at the beginning of subsequent stanzas, verses, sentences or parts of the sentences. Such meaning of the term "anaphor" will not be the subject of the deliberations in this paper. We will be dealing not with lexical or constructional text repetitions, but with repeated references in a text. Sometimes the latter have the form of the former, e.g. *A BOTTLE and glasses stood on the table. The BOTTLE was almost empty.*

Kamp 1981). Starting from the entirety of the deliberations it follows, how do they understand the notion which we discuss in this paper?

1. Anaphor — a blurred notion

In connection with the abovementioned difficulties, definitions of the anaphor adopted by various authors (provided the latter at all decide to provide any terminological proposals) are considerably varied. The degree of precision of these definitions is also varied. If in a paper on scientific ambitions one allowed the use of a metaphor, we would say that the scope of the discussed notion tends to have "blurry limits."

1.1. Anaphor, metaphor, deixis

It is not easy to determine where anaphor ends and for example a reference a paraphrase, a metaphor or description known as deixis begins. The scope of these fuzzy notions partially overlap for sure, but a detailed description of the boarder cases would exceed the topic discussed herein. Therefore, we will limit ourselves to the definition of anaphor provided in point 5, and the mutual connections between the abovementioned terms will be reviewed now only with the use of a short example taken from Dobrzyńska (1983).

(1) *THIS BEAR knocked off the shelf again.*

This sentence contains an anaphoric pronoun *this*. The reference in this sentence may be made to a real bear if, for example sentence (1) was uttered by a tamer to a circus director. If at the same time she indicated the bear perpetrator with a gesture, then (according to Bühler) we are dealing with *deixis ad oculos.* If the discussed phrase pertains to an absent bear, which nonetheless is known to the discourse participants, then we are speaking of *deix ad phantasma.*[2]

If we, however, supplement sentence (1) in the following manner,

(2) *Peter was cleaning the room. THIS BEAR knocked off the shelf again.*

the situation has changed. The reference here is now to a certain clumsy man named Peter.

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[2]At least the second kind of deixis is by some researchers (e.g. Nash-Webber 1997) included into anaphor. The same standpoint is assumed by Bosch (1983). In his case, the decisive is the sentence stress, thanks to which we focus on the new object. Only in case of *deixis ad oculos* the expression *this bear* would be stressed in sentence (1).

As a side note, originally Bühler (1934) used the term *deixis ad phantasma,* however this term seems to be tainted with the influence of the German language.

Since *this bear* appeared in the position of the theme in utterance (2), it needs to refer to an individual known to the discourse participants. If, however, additional circumstances occur (the ones considered by analysis of example (1)), then the highlighted expression needs to contain a repeated reference to Peter. *This bear* is therefore a phrase cumulating with a reference (*anaphor*) and a new content (*metaphor*).[3]

1.2. Various terminological proposals

We have mentioned in point 1.1 many terms which are directly connected to anaphor. Some of them (even "cataphor") are considered by certain researchers to be subordinate with respect to anaphor. Let us present at this point some terminological proposals from the last several years. We will also provide short comments to these proposals.

Treating cataphor as a kind of anaphor is controversial even for etymological reasons, after all $\alpha \nu \alpha$ means "upwards" and $\kappa \alpha \tau \alpha$ means "downwards". A reference forward is therefore by such an understanding considered to be a special kind of a backward reference. With a similar internal inconsistency we are dealing, by application, with the sometimes used term "*forward anaphora*" (as a synonym of cataphor).

Halliday and Hasan (1976) proposed the term "*endophora*", which was supposed to cover both anaphor and cataphor. Fillmore (1975) instead of "deixis" used the name "*exophora*". Neither of these terms however have caught on, and anaphor is commonly used, when one is thinking of endophora.

Another unaccepted proposal was made by Hankamer and Sag (1976). Deixis in their terminology is a *pragmatic* or *pragmatically controlled anaphor,* in contracts to the ordinary, i.e. *syntactically-controlled anaphor.* The division of two groups specified in this manner was however met with many-sided and, what needs to be added, motivated criticism (e.g. Tasmowski-De Ryck and Verluyten 1981, 1982), since the linguistic and pragmatic factors overlap in the case of almost all anaphors.

2. On the scope of anaphor

It is impossible not to notice the considerable achievements of transformative grammar on the field of interpretation of anaphoric expressions. This theory has however adopted a very restrictive approach to the problem,

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[3]To make the mutual relations between the abovementioned terms more complicated, *this bear* in (2) is included to the (epithetic) defined descriptions (cf. Hintikka and Kulas 1985).

namely that which was interested only in the syntactical limitations of anaphor within the framework of a single sentence. As we have just mentioned, the phenomenon of anaphor is influenced not only by syntactical, but also by pragmatic and semantic factors. The scope of the latter is impossible to limit to the framework of a single sentence. Therefore we will rather opt for a considerably more general approach to anaphor.

2.1. Anaphor — a macro-syntactic phenomenon

By understanding a natural language it is impossible to stop at the level of a sentence. As numerous experts in the field (Nash-Webber 1977, Berzon et al. 1981, 1984, Webber 1979, Hirst 1981, Hintikka and Kulas 1983) claim, anaphor is the central point of the topic of natural language understanding (NLU). A satisfactory interpretation of anaphors is first possible only after crossing the boundary of a sentence.

This is visible, for instance, in the example of a report of some event. The participants of such an event are usually introduced at the beginning of the report. Subsequent sentences refer to the same participants most often not with the use of the initial naming they were ascribed, but with the use of pronouns, proper names or specific descriptions, equivalent to this initial naming. What is more, in Polish a pronoun may vanish or be revealed indirectly, as a relevant suffix of a verb. All of these secondary namings are anaphors (in a wider sense of the word — cf. 5.2.). Anaphor is therefore certainly a phenomenon exceeding the boundaries of a sentence.[4]

The object of a reference may also be described not in a sentence, but in a longer utterance, e.g. when at the end of an utterance we say that:

(3) *ALL THIS caused tremendous fuss.*

For macro-syntactical units of linguistic analysis one has been recently using most often the term "discourse" (cf. point 4). The so called *discourse-oriented approach* has been dominant for several years in computative linguistics, as well as in many theories dealing with natural language analysis (e.g. *Discourse Description Theory* — Kamp 1981 and *Dialogue Games* — Carlson 1983).

2.2. On the scope of cataphor

In the following adaptation of the original example (21) taken from "Tygodnik Powszechny" (1.02.1987), a pronoun reference *precedes* in the

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[4]Using Łachwa's (1986) terminology, anaphor is a phenomenon from the sphere of ASKEW formal-semantic relations in the text.

text the information on the item referred to. This is therefore an example of a cataphoric use of the pronoun *his*:

(4) *Since HIS parents are from Poland, the New York Mayor Edward Koch is on a private visit in our country.*

Bogusławski (1983:17) at the same time states that the property of cataphor is "that it does not transgress the threshold of a sentence." It seems that this exquisite linguist understands cataphor somewhat differently than we in this paper do. It is difficult to assume that he did not notice for example a specific manner of many reporters, who love to prolong the solution of the riddle to whom or what a text they have written is dedicated. Such articles usually start with a pronoun subject or another which does not make it clear to whom the reference is. Only after some time is the precise information of the objects being provided by the topic of the article revealed.

Sometimes, the discussed manner is very effective and is able to hold the attention of a reader for a longer while. An interesting example is a column called *Kolejka Spóźnionych* (*The Waiting Line of the Belated*, "Polityka" 7.02.1987), quite skillfully exploiting a means which could be called a cataphor generalisation. This is a fragment of the column:

it is the people's own fault, the clients could be flowing in rhythmically. Yet there were days when there was nobody, and now their pressure increased unbelievably, as if they made an agreement. [. . .] The workers. . . start at 5 a.m. and finish firstly after sunset. [. . .] The manager of the FACILITY knows that the statutory deadline for performance of the SERVICE is 72 hours. She also knows that she is not able to keep it.

The Director says: It is impossible to shorten the time of waiting in the line without opening a new facility in our town. It also would be useful to entirely change the technology, which in view of people's mentality is not that simple.

The second paragraph provides explanations:

In the hallway, outside of the manager's room nervous people are swarming. The majority of them are friends and families of the waiting persons. The waiting persons themselves are calm. What are a couple days of delay when compared to eternity? After all, it's not that bad. Last winter, the time of waiting for being buried at the "Zarzew" CEMETERY, belonging to the Municipal Communal Services Office in Łódź was sometimes as long as eleven days. This year you need to stay in the waiting line for a week only. Any way you look at it — something has moved here. . .

Let us note that in the column above, the chain of syntagmatic substitutions proposed by Harweg for a cohesive text remains unbroken (cf. point

4.3.1). Yet, it is attached from the other side. The resolutions of references of certain expressions used in the column are deferred to the very end thereof. Backward references pertain on the other hand to items which are barely partially defined. Also the notions of "datum" and "novum" acquire in such a text a less absolute meaning. Some NEW information is in the place typical for datum (cf. e.g. the last paragraph); on the other hand, in datum there also appears information which is "not entirely specified" (cf. the beginning of the column).

3. Of the nature of anaphor

We will now demonstrate how the location of anaphor, with respect to similar linguistic phenomena, is perceived by the representatives of two separate linguistic theories — the generativists and the text theoreticians. The approach of the former could be described as bottom-up and the approach of the latter as top-down.

3.1. The views of the generative-transformative school

We will not present here the theory of Chomsky,[5] who is the main figure in the discussed approach. We will however use the views (or rather crumbs of views) of linguists paying more attention to the problems of semantics.

According to Chafe (1970: 15), language is "a system which mediates, in a highly complex way, between the universe of meaning and the universe of sound." Such a system is traditionally analysed by linguists on the levels of *phonology*, *syntax* and *semantics*. However, these levels are not entirely independent from each other, since all of them are affected by *lexical* and *grammatical* factors.

3.1.1. Anaphor and generating a linguistic utterance

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[5]We will only briefly mention the newest ideas of Chomsky (1981, 1982), constituting the so-called *government and binding theory*. In this theory every nominal phrase belongs to one of three groups, originally called: "anaphor", "pronominal" and "referring expression." An anaphor requires co-meaning with another nominal phrase, which is a component of either the same sentence as the anaphor, or is understood (through ellipsis) as functioning in this sentence.

As a result, the use of the term "anaphor" in the GBT has been substantially limited only to reflexive and reciprocal pronouns.

At this point we bear in mind only the so-called sender model, i.e. the direction of the language system from the *meaning* (semantic representation) to *sound*. When speaking of a course of an utterance, Leech (1974) distinguishes therein the following four processes:

– lexicalization — selection of words to express certain content,

– structural compression — decrease of the degree of complexity and omission of components,

– linearization — transformation of unordered semantic representation into a sequence,

– thematization — ordering of the utterance in accordance with the syntax requirements and the weight of particular components of this utterance.

As it is easy to guess, Leech treats anaphor as one of the means used at the second of the above stages. This stage is aimed at simplification of the structure of the utterance's semantic representations, so that the linearization thereof is later simpler. Anaphoric references consist in entirely omitting (ellipsis) or shortening (by means of using pronouns) of the repeating elements of the semantic contents.

Leech (1974: 194) distinguishes between the relation of co-referentiality and anaphor. The former, according to Leech, is of semantic character the latter refers to "a syntactic unit (or rather a semantically defined syntactic unit)," since anaphoric reference need not be an argument in semantic terms, but may be an argument of some larger unit such as a predication or a part of a predication."[6]

3.1.2. Anaphoric islands

The phenomenon of *anaphoric islands* was discovered and named by Postal (1969a). Postal observed that certain linguistic units are inaccessible for anaphoric references:

(5') *Fred is a child whose PARENTS are dead, but YOURS are still alive.*

(5") * *Fred is an ORPHAN, but YOURS are still alive.*

In the generative semantic mode, the two above sentences should be synonymic, since it is assumed in this theory with respect to lexical units (such as *orphan*) that they come from syntactic structures (such as *child whose parents are dead*). Sentence (5") is incorrect. According to Leech (1974: 339) lexicalisation is a semantic process. Therefore the meaning of the word

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[6]It does not need to be added that the standpoint presented in this paper is more consistently semantic.

orphan has, as its component i.e. the notion of a "parent" and not the word *parent.* The latter cannot therefore be accessible for a pronoun. The latter cannot therefore be accessible for the pronoun *yours* in sentence (5"), since anaphor is a syntactic, and not a semantic relation.

Leech's standpoint is, however, contradicted by the fact that anaphor exceeds the limits of a sentence, as well as by frequent acceptability of sentences containing the so-called *strained anaphor* (a term provided by Watt, 1995):

(6) *John became a guitarist because he thought that IT was a beautiful instrument.* (Lakoff and Ross 1972)

According to Leech's standpoint the following sentences are unacceptable, and are dealing with an (failed) attempt at the use of the similarity between the words *guitarist* and *guitar.*

(7) **The guitarist bought a new ONE.*

(8) **John was a guitarist until he lost IT on the subway.*

Sometimes, to the contrary, the semantic similarity is sufficient, an event without any phonetic similarity, for an anaphor to be possible:

(9) *The government decision to annex Baja California as the fifty-fourth was the second blow to freedom in AS MANY weeks.* (Watt 1975: 111)

Hirst's (1981:15) examples, related to the phenomenon of the so-called *strained anaphor*, bear with them a doubt with respect to J. S. Mill's thesis, supported by certain logicians, that proper names are totally deprived of meaning.

(10) *Nadia Talent is full of it.*

(11) *Henry Block even looks like ONE.*

The semantic and syntactic factors mix here in a manner which is difficult to explain. It is for example astonishing that sentence (6) becomes less acceptable when one replaces *guitar* with *flute* (according to Hirst, 1981: 15)!

3.2. The standpoint of the text theory

The theory of text by Harweg (cf. 4.3) may be evidence of the meaning ascribed to anaphor by text theoreticians. The perspective from which the theory of text perceives the anaphor is the reversal of the theory discussed a moment ago (cf. 3.1.). As the generativists focus their attention on the rules of generating particular sentences of a text, the text theoreticians look at it as a ready-made product. For textologists it is natural to exceed the limits of one sentence, which were impossible to cross for the generativists.

Between particular sentences of a text there exist such relations, which Marciszewski (1977: 224) calls *referring* or *continuing*. It is possible to distinguish at least two types of such relations. One of them is realised with the use of the following words: *therefore, for example, namely, on the other hand*,[7] etc. The words here are respectively the indicators of the relation of introduction, illustrating, supplementation and opposition.[8] These words "have the role analogous to the role of conjunctions, the only difference being that they transform simple sentences into wholes of a higher level." These quasi-conjunctions are called by Marciszewski *text connectors*,[9] and the relation of reference created by them [. . .] — *connective referencing*.

Marciszewski treats anaphors as the second type of the relations described here, as the second way to continue the text. These are his (1977: 220) words:

The course of an utterance follows as a rule in such manner that by means of referring to the representations already aroused in the mind of the recipient with the use of appropriate names of predicates, here new representations are introduced; their newness does not need to consist in the fact that they are totally unfamiliar to the recipient; it is sufficient that for some time they have been absent and then they reappeared in the centre of the mind.

4. Certain terminological arrangements

Hereinafter, we will assume a standpoint very similar to the one Marciszewski presented a moment ago. We will define the key notion of "anaphor" first in point 5, since before this we need to mention the notions which we consider to be more basic as compared to anaphor. We will now determine our understating of the following terms: "expression," "text" and "discourse."

4.1. Expression, text, discourse.

The term (linguistic) "expression" will be employed by us rather freely, and will mean, depending on the context, a part of a sentence, a sentence or sometimes even an utterance composed of several sentences. The notion of *text* will be described extensively in point 4.2. Further, we will devote point 4.3 to the notion of *cohesion*. Both of the abovementioned terms will be

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[7]Originally (Marciszewski 1977: 225) there is the word *natychmiast* (immediately) instead of *natomiast* (on the other hand), yet it seems that this is an editing error.

[8]Cf. works on text cohesion, e.g. listed in footnote 22.

[9]Cf. Berzon et al. 1981, 1984.

used already now (in advance) to define the notion of discourse. "Discourse" (following: Bellert 1971) shall mean a *cohesive text.* Hereinafter we will be dealing with anaphors appearing in discourses.

4.2. Text

It is commonly known that text theoreticians have given great care to correctly define the object of their interest. However, their efforts have not been crowned with some concrete achievement, which would lead to a uniform and commonly accepted definition of what a text is. It will not be a gross exaggeration, if we say that there are as many concepts of the notion, as there are textologists.[10]

It is sometimes claimed that text is a language utterance which constitutes a whole satisfying a certain communication need; that it is an utterance which conveys a certain complete piece of information (relative with respect to the situation in which a given communication process is taking place) (Stabrawa 1986: 6.). By this understanding one may consider to be texts not only sequences of sentences but also, for example, the following sign: *Caution! High voltage!*

4.2.1. Harweg's theory

In this paper we use the theory of text formulated by Harweg (1975),[11] whose object of interest are "sequences of linguistic units, constituted by a certain uninterrupted syntagmatic substance."[12] A text – according to Harweg — is the last (the highest) level of such linguistic sequence. As a typical example of syntagmatic substance one may consider pronominal connections, which appear between subsequent sentences (or sentence equivalents[13]) of a given text.

More generally speaking, one of the most important factors resulting in text constitution is the anaphoric relations present therein. Such a standpoint by Harweg results in the fact that our interest in his theory should seem

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[10]A wide overview of various notions of text has been provided by Stabrawa (1986), beginning with a laconic (and imprecise) definition by Harris, that a text is as much as a finite sequence of sentences, up to a one-page (being in fact a small theory) definition by Agricola.

[11]Bosch (1983: 222) described it as "extremely stimulating approach." The summary thereof presented in this paper is rather laconic. In Polish, the most exhaustive description of Harweg's theory was provided by Stabrawa (1986).

[12]According to Stabrawa's translation (1986: 7).

[13]E.g. *Anaphor. Logical methods of its interpretation.*

more natural. Other aspects of the theory of this author will be discussed briefly in point 4.2.3.

4.2.2. Text as a polylinear structure

Studnicki (1985) noted the function which in written texts is taken by titles. Their role are not only limited namely to the delimitation of smaller textual units.[14] Titles may therefore at the same time affect the manner of interpretation of those pieces of information which are contained in the part of the text covered by a given title. Therefore, in Studnicki's opinion, one should treat titles not as factors which are outside of the text, but as *components* thereof.

In connection with the above observation, Studnicki divides the text (understood as its complete written version) into several lines depending on each other. The basic text constitutes the so-called main line. Over this line there are the lines of the titles, which may constitute (as in this paper) a complex hierarchical structure. The lowest line among the text lines is the line of the footnotes,[15] which is subordinated to the main line of the text.

4.2.3. Extensive text

Harweg introduced in his works the notion of an *extensive text*,[16] which is a consequence of his general notion of text — an uninterrupted chain of "syntagmatic substances." As an individual (extensive) text one may view for example subsequent conversations on the same topic, even if the conversations were separated by intervals.

Existence of a text is connected with the constitution of a "text community." Apart from the uniformity of the topic it is composed of the uniformity of the sender and the uniformity of the recipient (Mayenowa 1979),[17] since it is first then possible to make a reference to previous dialogues (texts), only then will we have a continuous chain of substitutions.

In footnote 2 we have mentioned the relationship between *anaphor* and *deixis as phantasma.* The just introduced extended notion of the text allows

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[14]This is e.g. Harweg's understanding.

[15]The line of the footnotes is definitely discontinuous. Footnotes are a set of apophyses of the main text attached here and there, each of which has only a local coherence with the place where it was introduced. Various footnotes are however dependent from one another. This phenomenon is usually called "TEXT BIFURCATION."

[16]Originally: *Grossraumtext.*

[17]These „uniformities" should be understood in a very flexible manner, one might even say in a pragmatic manner.

us to treat most of *ad phantasma* indications as anaphors within a certain extensive text. One might also claim the reverse (making a psychological reference) that each anaphor is a kind of *deixsis ad phantasma.* As we will soon see (cf. the definition of anaphor in point 5), we will support the latter standpoint.

However, how should we treat the following situation? Let us imagine that we are sitting at a table together with our friend (foe). We treat him to a dish with mushrooms. He eats it heartily. For a while nothing is said. Then we say:

(12) Do you know that THEY are very poisonous?

If in the above utterance we stress the word *them* and we point to the mushrooms, we will be dealing with a clear *deixis ad oculos.* However, a different prosody is also possible: the word *them* remains unstressed. Then the word needs to be treated as a reference to something which the sender of the communication realizes and with respect to which he assumes that it can be effortlessly identified by the recipient of the text. According to Bühler we would be dealing here with *deixis (ad phantasma)*, and according to other researchers — with an anaphor.

Consequently, Harweg's approach is linguistic. Also the so-called background knowledge is in his theory a part of a relevant (extensive) text. Probably, also in the above case his analysis would go in the direction of taking into account (within the relevant extensive text) previous conversations and readings, from which we have learned that mushrooms may be poisonous. Such conversations and readings would be used as additional clues for identification of the word *they*.[18]

However interesting, Harweg's theory does not sufficiently take into account two factors:

1) extra-linguistic experience,

2) knowledge "screening" process.

The fact, for example, that it hurts when one is electrocuted is learned by us rather from experience and not from a book or the advice of "privy" persons. We also never remember entire texts, which we had the chance to read or hear. Our memory also retains certain outlines and only with respect to the most important elements of the text is it possible to make a correct reference.

4.3. Remarks on cohesion

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[18]The above speculations are based on the conversations with Prof. Harweg during his several stays in Kraków.

Due to a lack of space, we will not consider herein the various meanings of the term "cohesion."[19] We will limit ourselves to a very intuitive understanding of the term. It is easy to notice that there are utterances, to which we would without a doubt ascribe the lack of cohesion (coherence).[20] Bogusławski (1983: 28) presents the following sentence:

The couplet:

Zemlja imeet formu šara.

Prijatno videt' nos komara.

This may be considered to be a text; this would obviously be a non-cohesive text; but perhaps someone strived for such a lack of cohesion.

On the other hand, the example ascribed to Ingarden:

(13) *A boy was sitting on a bench. HE had all angles acute and all sides equal.*

allows for the claim that it is possible to speak at least of two kinds of cohesion — syntactic (structural) and semantic.[21] The former is observed in (13) however the latter fails, and therefore as a whole it constitutes an incoherent language utterance.

4.4. Discourse understanding

As we have already ascertained, anaphor is the central point of the issue of natural language understanding. What is the course of the latter process? The outline below may be treated as an answer to this question, which quite faithfully corresponds to the reality.

4.4.1. Consciousness

Subsequent utterances of the sender leave marks in the mind (conciousness[22]) of the recipient of the discourse. They also introduce supplementations and/or changes with respect to the previously remembered information. The elements of the discourse presented in the consciousness become later available for further — often abbreviated – references; it is then possible to use anaphors (cf. point 5).

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[19]Exhaustive information on this topic was presented by Stabrawa (1986). He discusses i.a. the works of Wajszczuk (1983), Marciszewski (1975), Mayenowa (1979) and Harweg (1979). Cf. also i.a. Halliday and Hasan 1976 and Hobbs 1985.

[20]In accordance with the terminology used by Marciszewski (1975).

[21]See e.g. Marciszewsko 1981, 1983. Two separate terms are sometimes used for cohesion: coherence and cohesion.

[22]Among others Chafe (1974), Nash-Webber (1977) and Hirst (1981) used this term. See also Marciszewski 1977: 220.

Apart from the language context, the state of consciousness (within the scope of interest to us) is also influenced by the items from the time-spatial context common for the sender and the recipient, i.e. the so-called *co(n)situation.* The latter is particularly important through the interpretation of deixis. Even in case of direct indication, an effective reference is possible only with respect to items that are known, perceivable, and present in the consciousness of the participants of the communication process.

Thus the process of referring is therefore "filtered" by the consciousness. Therefore, in many new semantic theories, instead of speaking of the traditional referring to the world of real object, one speaks of a reference to the *consciousness* (or to what constitutes the equivalent of consciousness in a given theory. This way one also obtains access to the "possible worlds," which is necessary when we are making a reference to items which have only been imagined.

4.2.2. Discourse model

Webber (1979) for what we previously called *consciousness* used the term "discourse model."[23] The term is neutral, and adequate both by application to utterances of a human being and of a machine. By using it we will avoid personification of a machine which is deprived of consciousness.

Strictly speaking, we should speak not of one, but of many discourse models, as many as there are participants of this discourse. With such an understanding, effective communication between interlocutors would be contingent upon similarity of the relevant models with respect to all the factors material for a given discourse.

Let us note that in the last section we did not mention identity but merely similarity of "communicating" discourse models, since in each case it is possible to indicate those of the engaged factors which are material for mutual understanding and those which in a given situation could be omitted.

This observation is consistent, or rather results from the relativistic theory of comprehension formulated by Studnicki (1983) are consistent. This author claims that the phrase *system S comprehends expression E* remains elliptical, unless we each time indicate, in an express or implied manner — what comprehension we have in mind. It may well happen that a system comprehends s given the expression in view of one operation, while at the same time not comprehending it with respect to another operation.

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[23]Cf. very interesting theories of *context models* and *background knowledge* developed by Bosch (1983: 64-104).

Comprehension in its inchoative aspect is, according to Studnicki, infinite, since logically there is an indefinite number of consequences following on from each utterance. This process must therefore be interrupted at some point, i.e. when it is possible to perform the semantic operation (postoperation) required at a given time. The condition achieved by this manner may be called comprehension in its perfective aspect.

4.4.3 Set *I*

It turns out that there is a very close analogy between the discourse model and a set called *I*.[24] which plays a decisive role in the interpretation of anaphors in the theory of Hintikka and Kulas (1985[25]). This set is created during semantic plays with natural language expressions. Its contents may be affected by linguistic and situational factors.[26]

5. Definition of anaphor

After this quite long preparation, we may finally formulate the long-anticipated definition of anaphor. The definition of the terms adopted in this paper comes from Hirst (1981), who, further, professes to being influenced by Halliday and Hasan (1976).

Anaphor is a means of discourse aimed at *abbreviated* reference to a certain object (or objects) in anticipation that the discourse recipient will be able to reconstruct the full reference, and thereby determine the identity of such an object. The object we are referring to is called the *referend* or *antecedent* of anaphor. The full reference and the abbreviated reference have the quality of co-referentiality (co-designation). The process of determination of the referend of the anaphor is called the *interpretation* or *resolution* of the anaphor.[27]

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[24]The identity of this name with the English personal pronoun of the first person singular is perhaps not entirely accidental.

[25]In Polish more information on the topic is provided by Fall (1988).

[26]We will name only three more theories, in which we encounter equivalents of set *I*: *focusing* – Grosz 1977; *centering* — Sidner 1983, Grosz et al. 1983; *aboutness* — Bosch 1983.

[27]The notion of anaphor demonstrates clear connections to the — well-grounded in the logical tradition — topic of the so-called occasional expression. The latter is defined as such linguistic utterances, whose meaning or denotation differ, depending on the particular situation of the use thereof. *Today* means of course something else than on 2 April 1987, and will mean something different still on another day. A similar situation is with pronouns, which are often cited as an example of occasional expressions.

The above use of the formulation "abbreviated reference" requires some commentary. Depending on the manner of understanding thereof, we will be dealing with a narrow or broad definition of the notion of anaphor (cf. Bień 1984).

5.1. Narrow definition of anaphor

In the case of *the narrow understanding of anaphor* the abbreviation is understood literally as occurrence of a shorter reference in speech or in writing.[28] Then the object of the studies of anaphor are, as a rule, the pronouns (usually making a backward reference) and most often pronouns in the third person, singular (cf. e.g. Hintikka and Kulas 1985, Kamp 1981).

A side effect of such restrictive treatment of anaphor is the notorious omission of the definition thereof. Anaphor would therefore seem to be a part of a seemingly well determined class of pronoun. Yet, pronouns are a very varied group of words (cf. e.g. Jodłowski 1973), and precise distinction between anaphoric and non-anaphoric pronouns is not a simple task.

5.2. Broad definition of anaphor

In the case of *the broad understanding of anaphor* abbreviation of the reference mentioned in the definition of anaphor does not need to consist in application of more concise lexical means. What is meant here (according to Hirst 1981) is the use of a reference containing fewer bits of information *disambiguating* the object of reference.

However, according to Shannon's theory, we receive the more information, the less probable the information is. Therefore, introduction to the discourse of a *new* object is connected with the introduction of a large portion of information. If, however we are making a reference to an object which in

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What is more, specific descriptions do not at all have a universally unambiguous meaning, as Russell seemed to suggest. They are unambiguous, but only locally, within the framework set by the discourse and the situation, in which this discourse is conducted.

It therefore seems that anaphors could also be defined as such occasional expression which, when used in discourse, become unambiguous in the course thereof. This happens thanks to the location of the reference introduced by the part of the discourse preceding the use of the anaphor.

In pragmatic literature the issue of anaphor is perceived as a part of the issue of the so-called language indexes.

[28]An exception could be the use of a pronoun in place of a very short name, e.g. *Ubu — his, X — him, cat — it.*

some manner is determined and realized by the discourse recipient, then the relevant amount of information is smaller.

It needs to be kept in mind that Hirst's formulation does not in any way mention the source of the information. It is therefore not important, whether the knowledge of the previously determined object has been achieved through the discourse or the circumstances it is accompanied by.

We may therefore say that *broadly understood anaphor* is a means of discourse consisting of a reference to a unit contained in the consciousness (model) of the discourse recipient, and introduced thereto by the discourse or by the context thereof (also called the co(n)situation).[29] As it is apparent, anaphor in the broad sense needs to be treated as a semantic phenomenon, whereas for the anaphor in the narrow sense it may be analysed only on the syntax level.[30]

6. Anaphor and the contents of information

Yet, not all authors discussing anaphor consider a repeated reference to be a factor decisive for the appearance of the anaphor. And so for example Topolińska (1981) considers the appearance of an expression of a smaller informational content to be the necessary condition of an anaphor. Therefore, she allows only three types of anaphoric noun phrases:

a) full repetition, e.g.

(14) *We bought a blouse and a book as presents. The BLOUSE was beautiful, richly laced, and the BOOK had the opinion of a bestseller.*

b) partial semantic repetition, e.g.

(15) *Finally the old station has been torn down. THIS BUILDING spoiled the centre of the town very much.*

(16) *I packed the book and went with THE PACKAGE to the post office.*

c) partial grammatical repetition (pronominalisation), e.g.

(17) *I just spoke to Jerry. I met him at the theatre. He was with Hanna and it was SHE who noticed me in the smoking area.*

According to Topolińska (1981), the expression emphasized in the following example is not an anaphor:[31]

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[29]In order to include the *cataphor* into our deliberations, we need to take into consideration the abbreviated symptoms of full references.

[30]To be more precise, the boundary is set by the source of the referends. If one considers them to be the text only, then we are speaking of syntactical solution of anaphors. If we place the referends outside of the text (e.g. in the consciousness of the recipient or in some discourse model), then the interpretation of anaphors is of a semantic character.

[31]Although in a newer paper (1984: 329) she already calls it a *quasi*-anaphor.

(18) *The life and soul of the party was the son-in-law of the Smiths. THE YOUNG ARCHITECT has just returned from Canada.*

This author would probably, contrary to the statement of Dobrzyńska (1983), treat in the same way the expression *this bear* from example (2).

Topolińska's approach is not satisfactory, however. Firstly, discourse comprehension consists to a considerable extent in association of particular language utterances with objects (within the broad meaning of the word) and in the ability to determine when a new object is introduced into the discourse, and we are dealing with repetition of a reference. Secondly, objective measurement of the content of the information conveyed by particular linguistic expressions is simply undoable.

Topolińska claims that in (16) *the package* is an anaphor pertaining to the referend, which is the entire first subordinate sentence. Therefore, the anaphoric relations appear according to the author on the text-text axis. This syntactic approach to the issue results in the fact that the most important relations of co-referentiality between the objects of the discourse become blurred, and are pushed to the background. Hereinafter, we will, a number of times, present arguments against syntactical and in favour of semantic understanding of anaphor.

Example (16) provided by Topolińska (1981: 50) raises considerable doubts as to the relations between the informational contents of the anaphoric expression and the expression suggesting its antecedent, which she postulates. Does the packing of a book result in an effect on the form of a package which is ready to be sent? This is contradicted by the following sentence:

(19) *I packed the book and with my backpack on I marched to school.*

Let us consider one more example.

(20) *There were some people seating on the bench. SHE was smoking a cigar, HE had a ring in his nose.*

Both pronouns refer to the word *people* which contains information on plurality, however obviously imprecise. Firstly, from the second sentence we infer that two people are being described. Therefore, the pronouns in (20), or maybe an appropriate set thereof, introduce new information. If we consequently followed Topolińska's approach, those pronouns should not be considered to be anaphoric. Yet exclusion from the notion of anaphor, the pronouns of the third person singular and them being *personal* pronouns, does not seem to be acceptable even with adaptation of the greatest limitations imposed by the discussed linguistic phenomenon. Therefore, we will stick to the definition of anaphor provided in point 7.

7. Some examples of anaphor

7.1. Pronominal anaphors (in the narrow sense)

The three examples below[32] contain anaphors both in the narrow and in the broad sense:

(21) *The New York Mayor Edward Koch is on a private visit in our country (HIS parents are from Poland).*

(22) *Minister Jerzy Urban returned at a press conference to HIS favourite project of limiting French philosophy in Polish universities.*

(23) *Adam Łopatka: It is worth noting the fact that frequent visits of the Pope in Poland are unprecedented. THEY did not take place when Poland was ruled by catholic kings or during the interwar period.*

7.2. Anaphors in the broad sense

Examples (24) — (29) contain only anaphors in the broad sense:

(24) *The private sector is better than the state sector, one may not like IT, but THIS is a fact* (P. Wierzbicki, "Tygodnik Powszechny" from 1 February 1987).

Both *it* and *that* do not refer to single objects, but to the content of the entire utterance before the colon. These are therefore "pro-word"[33] (pro-sentential) uses of pronouns.

(25) *The spokesman for the Soviet Ministry of Foreign Affairs, G. Gierasimow: USSR has ceased to jam BBC's auditions in Russian, yet Radio Liberty does not deserve THIS.* (*Na lewicy,* "Polityka," 31 January 1987)

The use of the pronoun *this* in example (25) is also of "pro-sentential" character. This pronoun does not, however, refer to the entire preceding sentence, but only to parts of the proposition it contains. "Radio Liberty" does not deserve that it itself (and not the BBC) was no longer jammed by the USSR.

(26) Private vehicles traffic has been suspended in Romania. THIS ORDER has been dictated by bad weather and the necessity to save fuel. (*Na lewicy,* "Polityka," 31 January 1987)

The example in the second sentence contains a specific description in the form of *this order.* It was, however, not preceded by an earlier appearance of the word *order.* It follows therefrom that the sender of the above short

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[32] *Obraz tygodnia,* "Tygodnik Powszechny" from 1 February 1987.

[33] This term was used by Nitsch (1926) on the basis of the analogy: noun — pronoun, word — proword.

message believed in the recipient's ability to *recreate* this specific description. With such a reconstruction this recipient could not limit himself to his language competence; he also had to resort to the resources of his *background knowledge.* If he knows that suspension of car traffic in the entire country requires ratification of a certain legal act, then he will have no troubles to associate this legal act with the order mentioned in the second sentence of example (26).

(27) *Lecz tymczasem jeż przydreptał,*   (But the hedgehog came by
      A koziołek spadł na jeża.   and the Billy-Goat fell on the hedgehog
      Beknął głośno siedem razy,   He bleated loudly seven times
      Skoczył jakby opętany,   Jumped up as if possessed
      A siąść nie mógł, bo w TYM MIEJSCU   But could not sit down, cause RIGHT THERE
      Miał bolesne bardzo rany.   He had very painful wounds)[34]

(K. Makuszyński, *120 przygód Koziołka Matołka*)

In this case we need to guess what *right there* means. Drawing the correct conclusion is facilitated by a drawing of the poor Billy-Goat appearing in the book.[35]

(28) *At the end of the stay in the Vatican, the President of the Council of State paid a visit to Cardinal A.M. Deskur. Minister Andreotti received HIS POLISH COLLEAGUE with a dinner.* (Father A. Boniecki, "Tygodnik Powszechny" from 25 January 1987)

This case is particularly complex, and perhaps it even exceeds the issue of anaphor. The referend of *his Polish colleague* is neither of the persons mentioned before. It is Orzechowski — the Polish minister of foreign affairs, whose name (but without a mention of the full function he held) appeared in the article 20 lines earlier. Correct DECIPHERING (this definition is motivated here) of the expression *his Polish colleague* is entirely based on the postulated knowledge of the recipient, and only to a small extent on a language analysis. Reaching the referend is possible, if we know that Andreotti is (or was at that time) the Italian minister of foreign affairs and that *his Polish colleague* is probably a Polish representative with the same

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[34]In places where the English translation for some reason does not correspond to the Polish original, the original Polish test is provided in (brackets) — translator's note.

[35]However, even without a drawing most people determine the spot correctly. This results in the fact that a relevant part of our background knowledge, the so-called euphemism basis — a term taken from Awdiejew, is very easily accessible for everyone (it is very high in our memory resources.)

function. However, one cannot call his colleagues either Comrade Jaruzelski or Cardinal Deskur, which are mentioned just before the analysed expression.

The entire situation will change, if we introduce a minor modification:

(29) [. . .] *Minister Andreotti received HIS POLISH COLLEAGUE with a dinner. JAN KOWALSKI said later that he had never tasted a better spaghetti in his life.*

His Polish colleague becomes now a (cataphoric?) definite description referring to a certain Jan Kowalski.[36]

7.3. Conclusions from the examples

From the analysis of the above examples it can be clearly seen that anaphor understood broadly is a very complex phenomenon. In the views of some authors it comprises defined descriptions, cataphors and deixis. Using such compilations, the "cognitive pessimism" manifested by Postal in the quotation at the beginning of this paper becomes more understandable.

It therefore seems that if someone expects that the research of anaphor will bring concrete results, and not just a description of a complex situation, then one needs to adopt certain simplifying assumptions. Such simplifications may be of varied character depending on the fact of whether the research is conducted by a linguist, a logician or a representative of A.I. theory. In logic, there is for example a series of "standardized" problems which are usually taken into account, for example the donkey sentences of Geach or the sentences of Bach-Peters with cross references. Although formal interpretation of anaphors will be able to deal with those and similar problems, it will have at least partial recognition in the logicians community. Also the methods proposed by the author of this paper (cf. Fall 1988 — chapter 5), may be used only by presuming certain assumptions limiting the object of the analysis.

8. Antecedents of the anaphoric expression

In this paper we present the standpoint that the antecedents of anaphor, i.e. the objects to which the anaphoric expressions refer, are contained in the mind of the recipient (in other words in the discourse model). This theory

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[36]The definiteness of this description is not entirely foregone. The emphasized expression may be interpreted as isolated but undefined. In Polish the definiteness/indefiniteness distinction is not an undisputed issue; we do not dispose of any formal means of expressing both of these cases. In English one may view the definite article "the" as playing this role (at least according to Hintikka and Kulas, 1985).

was created as a reaction to the ideas of transformational grammarians and it is becoming more and more popular, since it turned out that taking into account only the syntax aspects of the language system and limiting the problem of anaphor to the text leads to unsatisfactory solutions. The semantic idea of anaphor is supported among others by the following logicians: Hintikka and Kulas (1985), Kamp (1981), Marciszewski (1977).

8.1. Semantic concept of the antecedent

The semantic approach of this paper with respect to anaphors has already been clearly signalled.

The notion of the *antecedent* of anaphor as *a text component* is in many cases highly doubtful. Let us look closely in particular at the pro-sentential anaphors, where the antecedent is merely signalled by the text (cf. 2.3. as well as i.a. examples (24)-(26), (46)-(48), (52), (53)).

We will also consider the already discussed (in point 2) description of an even ending in words:

(3) *ALL THIS caused tremendous fuss.*

If this description includes several sentences, or even an entire book chapter, then is it possible to say that these fragments of texts are the antecedent of the anaphor? It seems that it would be much more natural to state that the reference is made to the *proposition* conveyed by the above-mentioned fragments or to certain parts of the *discourse model* generated by the sender and/or the recipient of a given communication. The latter formulation may be considered especially apt, since only such anaphors may be effective, which make a reference to the object *realized* by the recipient of the communication. In other words, correct interpretation of an anaphor depends on the presence of a certain representation of the object of reference in the discourse model.

The name *(anaphoric) antecedent* more or less means that an anaphoric expression is a reference to something, which has already been defined (i.e. to a certain *antecedent*). Yet, such an order of things is only possible to keep by analysing only the simplest cases, which might be called *lexical anaphors* (Cornish 1986). Usually, the *anaphoric expression* comes first which in a given case is its *antecedent.* It is the *form of anaphor* that specifies to what components of the semantic layer of the discourse a reference is being made, i.e. what essentially the *anaphoric antecedent* is.

A part of the text preceding the anaphoric expression does not contain a clearly and finely defined antecedent to which a reference will be made. It rather opens a series of various possibilities, which in a vast part we do not

need to even realize directly. First, if in a further part of the discourse an anaphoric expression occurs, from the semantic structure of the preceding part of the discourse we distinguish a relevant antecedent built into the anaphor.

This antecedent exists only potentially before the anaphoric expression occurs. A concrete form of the anaphor results in carrying out relevant inferences and activation from the plurality of possible antecedents, one which is adequate for a given form of the anaphor. Then it may be called a true anaphoric antecedent (within the meaning that is usually ascribed to the notion).

The above observation has undoubtedly played a material part by generating terms used by Webber (1979) and Cornish (1986). These authors have used the following terms: "*invoking description*" (ID) for the semantic representation of the object introduced by the discourse and "*antecedent trigger*" for the part of the discourse invoking the potential antecedents of an anaphoric expression.

* * *

We will now demonstrate what kinds of potential anaphoric antecedents may be spoken, i.e. to what elements of the consciousness it is possible to make an abbreviated reference. We will use here a lot of observations made by Webber (1979: 16-20).

8.2. Individual objects

Here are some examples, wherein the anaphoric antecedents are single objects:

(30) *He ate a banana peel. Then [he] threw up.* (Zjadł skórkę od banana. Potem Ø wymiotował)

(31) *Sophie bought pants for Joseph. THEY pinch him.*

(32) *Irrespective of the fact whether John buys a new car or an old bike, he will keep IT in the garage.*

(33) *John helped two old ladies and five old gentlemen cross the street. It's a good lad.*

(34) ?*Mary became a violinist, because she considers IT to be a wonderful instrument.*

In Polish, the proposition expressed by an anaphoric pronoun may be disclosed indirectly, as a relevant ending of a verb. The so-called *pronominal*

zero.[37] From example (31) it follows that it is possible to make a reference to single objects with the use of plural pronouns. In Polish this pertains to the so-called plurale tantum nouns. In (32) the reference does not pertain to an actual car or bike, but to both of these items, *provided that john buys one of them.* Example (33) contains a specific, yet often used form of the pronoun *it.* Some additional information on this topic is to be presented in point 10. Before sentence (34) we have put a question mark, which means doubtful acceptability. We have discussed an English equivalent of this example in point 3.1.2.

8.3. Sets

(35) *Mary has three children. They are unbearable.*

(36) *Not many logicians smoke. [THEY] know that cigarettes are bad for you.* (Niewielu logików pali. Ø wiedzą, że papierosy szkodzą.)

(37) *Some logicians smoke although [THEY] know that cigarettes are bad for you.* (Niektórzy logicy palą, chociaż Ø wiedzą, że papierosy szkodzą.)

(38) *Mary gave each child a cookie. [THEY$_1$] did not eat THEM$_2$, because [THEY$_2$] had gone bad.* (Marysia dała każdemu dziecku po ciasteczku. Ø$_1$ nie zjadły ICH$_2$, bo Ø$_2$ były spleśniałe.)

(39) *Mary gave each child a cookie. [THEY$_1$] did not eat THEM$_2$, because [THEY$_1$] were busy with something else.* (Marysia dała każdemu dziecku po ciasteczku. Ø$_1$ nie zjadły ICH$_2$, bo Ø$_1$ były zajęte innymi sprawami.)

(40) *John and Mary are in hurry. It will be the best, if [THEY] go on foot.* (Janek i Marysia spieszą się. Najlepiej więc, jak Ø pójdą na piechotę.)

(41) *Whether it is a missionary or a nun, a cannibal having eaten THEM should brush his teeth.* (Czy to misjonarz, czy zakonnica, ludożerca po ich spożyciu powinien umyć zęby.)

We will not discuss each example separately. In all of them the referends of the highlighted pronouns (and pronominal zeros) are sets. The manner of determination of the set may, as it is demonstrated, be varied. Please note the similarity between examples (36) and (37) as well as between (38) and (39). Yet, whereas the anaphor in (36) refers to the set of all logicians, in (37) it only refers to smoking logicians. The interpretations of pronominal zeros in (38) and (39) are also different, what is dictated by factors of semantic

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[37]The phenomenon of pronominal zero is practically alien to English. In Polish it occurs quite often, especially if the same subject is continued. Yet, in Japanese, proper pronouns virtually do not exist (cf. Kameyama 1985), therefore the dominant type of references therein is a "zero-anaphor". Hungarian presents yet another situation, where one pronoun öserves all three grammatical genders in third person singular.

and not syntactic nature. In example (41), which is very similar to example (32) it is impossible to use a singular pronoun, since both potential referends are of different *grammatical* genders.

(42') *My neighbour has a Great Dane. THEY* [Great Danes] *are really huge.*

(42") *My neighbour has two Great Danes. THEY are really huge.*

A single object (but not several objects!) may also arise in an antecedent equal to a set covering the whole species. In (42") it is not clear, whether one means the set of two Danes or the entire dog species.

8.4. Matter

Singular pronouns may refer to a matter as such or to a certain (specified amount thereof).

(43) *John does not use water. He says* [*IT*] *is bad for him.* (Janek nie używa wody. Mówi, że Ø mu szkodzi.)

(44) *John has ordered a beer. He is waiting for IT impatiently.*

8.5. Specimens (prototypes)

Quantifying expressions: *each* [*x*], all [*x*], no [*x*], etc. say something of some specimen (prototypical) *x*. For such *x* pronoun references are possible.

(45) *Each sailor likes to have a drink. Supposedly [HE] also like other things.* (Każdy marynarz lubi wypić. Podobno Ø lubi też i inne rzeczy.)

8.6. Actions, events, states of affairs, judgments. . .

The examples below present possible references with the use of *it* for different kinds of antecedents mentioned in the title of this point:

(46) *John soaked Mary's braid in ink. IT made her cry. She always cries when someone does IT to her.*

(47) *Lately the Smiths are better off. They owe IT only to their own forethought.*

(48) *In order to prove that a cat has three legs, let's assume the reverse of IT.*

8.7. Descriptions of things

Ellipses in the nominal phrase may refer to already introduced (in an express or implied manner) descriptions of things.

(49) *John bought himself chequered trousers, and Joseph – strapped Ø.*

Ø = trousers

(50) *John likes coloured [vodka] best. Joseph drinks [IT] only clear.*
(Janek najlepiej lubi Ø żołądkową gorzką, Józek pija – tylko czystą Ø)

Ø = vodka

8.8. Predicates

Verb ellipses, as well expressions like *do that* have predicates as their antecedents:

(51) *John likes snakes and Stephany Ø crocodiles.*

Ø = likes

(52) *John beats his wife, but the president of Kraków would never (DO THAT).*

(53) *John would like to go to the Caribbean, but he knows THAT will never happen.*

9. Factors affecting interpretation of anaphors

The below sentence was used by Kisiel in the column *Zacznijmy od ogona* ("Tygodnik Powszechny" from 25 January 1987)

(54) *I therefore recommend the Wokulski "ethos", this would be a time THEREFOR.*

The word *therefor* has two possible antecedents here: Wokulski or the ethos represented by the latter. The contents of sentence (54) does not provide sufficient basis for selecting the first or the second option (from the part of the column preceding (54) it appears that it was more about the ethos).

Generally, for the use of a pronoun to be effective, it needs to be unambiguous, i.e. leaving no doubts with respect to the referend thereof. This does not mean that at the time of applying a pronoun, there may be only one object in the mind of the recipient. However, within the framework of a *relevant grammatical or semantic class* this object needs to be the only one. Therefore, this uniqueness is not assured, there occurs communicational failures sometimes having comical consequences.

(55) *Beside a pine there stood a child. IT was six meters tall.*

Interpretation of anaphors is a very complex task, since it is affected by various syntactical, semantic and pragmatic factors, which are not independent, but also affect one another. An exhaustive set of such factors was presented by Webber (1979: 5-10). We will widely apply it at this point. Let us consider the following story.

1. *Frank left HIS niece at home and went to the zoo with Adam and Eve.*

2. *Since the zoo was far away, [THEY] asked a neighbour with a car to lend IT to THEM. (*Ponieważ zoo było daleko, Ø poprosili sąsiadkę z samochodem aby IM GO pożyczyła.)

3. *When [THEY] got there, Frank learned that a poisonous cobra run away from the zoo.* (Gdy Ø dotarli na miejsce, Franek dowiedział się, że z zoo uciekła jadowita kobra.)

4. *Then [HE] saw a SNAKE near Adam.* (Wtem obok Adama Ø zauważył WĘŻA.)

5. *THE GIRL and ADAM also saw IT.*

6. *Frank was full of awe for Adam, because HE managed to catch the snake.*

7. *Frank regretted that [HE] did not have a stick. [HE] would be able to use IT, to help Adam.* (Franek żałował że Ø nie miał kija. Ø mógłby GO użyć, aby pomóc Adamowi.)

8. *Luckily, each of THE FRIENDS took with them a bottle of wine.*

9. *Adam offered to drink them all to forget about the COBRA.*

9.1. Inflection consistency

From the factors affecting the interpretation of pronoun anaphors the most important is their consistency with respect to gender and grammatical number with the potential antecedents. This consistency is sometimes more of grammatical rather than "natural" character. For example, in the fairy tale of Little Red Riding Hood or Cinderella, not knowing the sex of the heroes (in Polish – translator's note) we use masculine. When at a certain point of the tale we use the description like *the girl*, we may start using feminine pronouns. Yet, by the names of real persons, the natural gender prevails. And so for example:

(56) *Kiełbasa went to the rest room* (Kiełbasa wyszedł za potrzebą)

proves that we speak of a man, and the sentence:

(57) *C. Chomsky conducted an interesting research (C. Chomsky przeprowadziła ciekawe badania)*

suggests that C. Chomsky is a female, despite her name sounding "male" to Poles.

Additional limitations are introduced to the discussed consistency by inflection. In dependant cases various pronouns may have the same inflection forms. Even if a few potential antecedents are different from each other with respect to gender and number, determination to which of them a given pronoun pertains, may prove impossible. Here is a relevant example:

(58) *A child was playing with dolls. A bully run up and threw [it/them] (?) out of the window.* (Dziecko bawiło się lalkami. Podbiegł chuligan i wyrzucił JE (?) za okno.)

The last example demonstrates the fact that (apart from the nominative) the possibility of co-referentiality is decided rather not by the consistency of the gender and the number of the anaphoric pronoun and its antecedent, but by the limitations resulting from inflection.

9.2. Syntax limitation

The issue of limitations which are imposed on anaphor by syntax was dealt with in great detail by the representatives of the generative-transformative school. Various formulations of such limitations for English were provided i.a. by: Ross (1967), Langacker (1969), Postal (1969b), Wasow (1972), Culicover (1976) and Reinhart (1967, 1983). Hintikka and Kulas (1985) offer here a solution referring to the rules ordering the application of the rules of semantic games and to the so-called *exclusion phenomenon.* There are few publications concerning the discussed issue in Polish.[38]

In sentence (d) from the story presented above there are certainly syntactical limitations at work, resulting in the fact that *Adam* cannot be the referend of the zero pronoun appearing in this sentence. The exclusion phenomenon specifies i.a. that a pronoun cannot refer to an expression appearing in the same simple sentence as this pronoun.

9.3. Theme — rheme

Another explanation of the reference of the pronominal zero from sentence (d) is provided by the Prague lingusts.[39] In accordance with their

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[38]This topic is described i.a. by B. Dunin-Keplicz in his still unfinished dissertation. Cf. also Fall 1988.

[39]Webber (1979: 6) refers here to the work of Kuno (1976), whose theory of the so-called functional syntax demonstrates certain relations with the concepts of the Prague Linguistic School.

justification *Franek* — as an element introduced by the *theme* of the opening sentence of the story — is the *theme* of the entire *discourse*. He is therefore the easiest to be pronominalised (especially with the use of the pronominal zero), since the reader is the most aware of him. The other candidate for pronominalisation would be the *rheme* of the preceding utterance, and another candidate — the *theme* of the preceding sentence (again *Franek*).

9.4. Invariability of roles

Another explanation with respect to the interpretation of the pronominal zero in sentence (d) is provided by the research carried out by Maratsos (1973). This psychologist claimed that (at least) children interpreting pronouns most often use one simple strategy. According to their strategy the roles of discourse participants should change to the smallest extent possible. *Franek* being the subject of the main clause in sentence (c) should have the role of the subject also in sentence (d).

9.5. Semantic limitations of choice

In sentence (b) the pronoun *it* (*go*) pertains to the car. Other antecedents possible in view of the gender and the number (*home — dom, Franek* and *Adam*) are excluded, since from among them only the car *can be borrowed*. In the analysed story, one may find more examples of the impact of semantic factors affecting the interpretations of anaphors, but we will limit ourselves to just one in view of the limited space available.

Semantic limitations of choice of anaphor antecedents play the decisive function in those computer systems understanding the natural language, which use the so-called preference semantics[40] of Wilkes (1975a) — cf. e.g. Carter 1986. Apart from the above, we should also mention here the known systems of Winograd (1972), Woods et al. (1972) and Grosz (1977).

9.6. Recency and change of scene

In sentence (e) *the girl* refers to Eve, and not to Frank's niece mentioned before. This is decided by Eve's greater *recency* – she is the last female introduced to the story. (Let it be known that her probable young age is NEW information — resulting from the use of the word *girl* and not *woman*, for example).

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[40]Preference semantics, also sometimes called common-sense semantics.

Chafe (1975), wondering what causes an object to be removed from somebody's *consciousness*, and as a result thereof the impossibility to refer with a pronoun to such an object, noticed the change of scene. In our case, only Eve participates in the scene in the zoo and not Frank's niece. Therefore, only the former may be taken into consideration as a potential referend of the word *girl* from sentence (e).

Similar observations were made by Grosz (1977), who analysed *task-oriented dialogs*. She found that the structure of such dialogues is a reflection of the same performed sentence. It is impossible, for example, to make pronominal references across the limits of the sub-sentences. The end of each partial sentence is a sort of a change of scene. On the other hand, Grosz ascertained instances of pronominal references on long distances, but always with the possibility to return to the sub-sentence from the "sub-sub-sentence."

The above observations are confirmed in this short fragment of a report from a pilgrimage ("Tygodnik Powszechny" from 1 March 1987):

(59) *Soon, however, the voices of the nature deadened the monotonous incantation of the prayer. THIS made me feel a little bad. Whoa! After all, THIS is not a trip, but a peregrination...*

9.7. Implicit causality

Experiments of psychologists (Caramazza et al. 1977, Garvey et at. 1974, 1975) revealed that interpretation of pronouns goes faster, if it is consistent with the *implicit causality* expressed by particular verbs. This observation may be referred to by the pronoun *he* (mu) in sentence (f). Various factors, such as the use of negation or the passive voice or the mutual relation of the possible referends, disturb the picture of this implicit causality.[41]

9.8. Possible worlds

In sentence (g) pronoun *go* (*it*) refers to a stick, which Frank did not really have. The referend is therefore in a *possible world* or in a certain set of possible worlds. Various contexts may be associated with various hypothetical (future or modal) worlds. The possible worlds, as a factor affecting the interpretation of anaphors, were among others discussed by Karttunen (1976), Kuno (1970) and Lakoff (1970).

9.9. Sentence stress

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[41]More information on the topic was provided by Hirst (1981: 95-96).

With this point we will conclude the list of factors, which may affect the interpretation of anaphors. This list, although it covers nine components, certainly does not include all which is material by understanding of anaphoric expressions. We did not try to order in any way the various relevant factors nor to discuss their impact on one another, since this would exceed the assumptions and certainly, the capabilities of the author.

The role of stress (and empathy) by interpretations of anaphors was discussed i.a. by Akmajian and Jackendoff (1970) and Kuno (1975, 1976, 1987). Let us analyse the following examples.

(60) *John was first hit by Joseph and then — Kezek.* (Najpierw uderzył Janka Józek, a potem Kazek.)

(61) *John was first hit by Joseph, and then (John or Joseph) was hit by Kazek.* (Najpierw uderzył Janka Józek, a potem uderzył GO Kazek.)

(62) *John was first hit by Joseph and then Joseph was hit by Kazek.* (Najpierw uderzył Janka Józek, a potem JEGO uderzył Kazek.)

In example (60) there are no doubts that it was John who was hit twice. In (61) similarly we assume John is hit but we are not absolutely sure. If we, however, properly STRESS the pronoun (as in (62)), the interpretation, despite great familiarity, will change: the second hit reaches Joseph, i.e. John is avenged by Kazek.

10. Polysemy of pronouns and the typology of anaphors.

In points 8 and 9 we have respectively discussed the kinds of objects to which anaphoric expressions may refer and the factors which affect the interpretation of anaphors. Due to the limited space, we cannot discuss here the issue of typology of Polish anaphors (see Fall 1988, chapter 2). The difficulties to have such a typology will be presented in one example only.

A particularly complex (blurred) example of a Polish anaphoric expression is *to* (*it/that*) — characteristic both by personal and pro-sentential pronouns. Indirectly, also the pronoun *ten* (*that/this*) affects this complication — in view of its inflection pattern, it is in a large part overlapping with *to*. The polysemy of the latter word is demonstrated by the fact that it may have the following, varying applications:

1. prosentential (as in (24) and (25)

2. as a part of determined description — (26)

3. cataphoric

(63) *That the Earth is flat is doubtless.* (TO, że Ziemia jest płaska, nie ulega wątpliwości).

1. deictic (ostensive)

(64) *THIS is my new hat. Do you like it, honey?* (TO jest mój nowy kapelusz. Czy podoba ci się, kochanie?)

1. non-referential:

2. *John is an utter bastard.* (Janek TO[42] skończony drań.)

* * *

A similar polysemy can be observed in other languages as well, for example in English. Pronoun *it* has at least two functions in the sentence below:[43]

(66) *It is to be noted that when any part of this paper appears dull, there is a design in IT.*

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[42]According to Awdiejew *to* has the function of an operator of setting the theme-rheme boundary (it sets the beginning of the rheme).

[43]It supposedly comes from Richard Steele ("The Taller," no. 98, Thursday 7 July 1709). We repeat it after Hirst (1981: ix).

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POLISH YES/NO QUESTIONS AS AN EXAMPLE OF INDIRECT SPEECH ACTS

The aim of the present work is to demonstrate that the 'traditional' approach to yes/no questions as described in the speech acts theory is not fully comprehensive, as it fails to include a large group of utterances structured like definitive questions called 'indirect speech acts'. The article also presents an analysis of such indirect speech acts.

Since Searle's *Speech Acts* (1969) the speech act theory postulates that, in order to be successful, every act must fulfil a number of requirements. In case of interrogatives these include the following:

1a) The speaker does not know the answer.
1b) The speaker assumes the addressee to know the answer. } *preparatory conditions*

1c) The speaker wishes to know the answer.   *sincerity condition*
1d) The speaker wants the addressee to answer.   *essential condition*

Later works introduced several changes to the original set of conditions. All questions were classified as 'requests' and those failing to comply with one of the first three requirements were treated as 'successful' yet defective (Bach and Harnish 1979: 48). Consequently, none of Searle's conditions was disputed, even though they are actually applicable only to a certain type of interrogatives, namely inquiries. Lyons (1977: 755) noted that some of the original conditions may be weakened, although he did assume requirement (1a) to be a necessary condition for a successful interrogative. However,

Rakić's (1984) analysis of Serbo-Croatian yes/no questions proved that each of the original prerequisites could be questioned. His conclusions are equally relevant for yes/no questions in the Polish language.

There can be no doubt that the label 'yes/no questions' encompasses very diverse utterances. Such speech acts usually assume the form of interrogative sentences, clearly distinguishable from declarative ones due to their modality, e.g. the difference in how the speaker relates to the propositional content. Rakić (1984) introduced a simplified classification of yes/no questions, but his categories focused on the literal meaning —- which is sometimes called putting sentences into the zero context. This is a highly imperfect solution, as it leads to the omission of an important group of questions that can be counted among indirect speech acts.

The main types of questions may be defined in terms of their propositional content and the expressed intention. Such a classification was used by Fraser (1973) as well as Bach and Harnish (1979). This approach makes it possible to ascertain whether Searle's (1969) conditions for a successful interrogative truly apply to all utterances of the type.

The first group of sentences identified by Rakić (1984: 696) can be described as 'presumptive questions'. They are usually used when the speaker has a certain assumption concerning the subject of the conversation, e.g.:

Byłeś we Włoszech? [*You've been to Italy?*]

A person asking this question has a reason to believe that the addressee has indeed been to Italy, but wishes to hear a confirmation. Sometimes the supposition is expressed in a more direct manner, with the use of expressions such as: *więc*, *tak więc*, *przeto* [*so, surely*]:

Tak więc byłeś we Włoszech? [*So, you've been to Italy?*]

A similar effect may be achieved with question tags:

Byłeś we Włoszech, prawda? [*You've been to Italy, haven't you?*]
Byłeś we Włoszech, nie? [*You've been to Italy, right?*]

Again, the speaker expects to hear a confirmation of the expressed proposition. It also seems that questions expressing a supposition are rarely formed by the conventional means of the interrogative particle *czy* (placed in front of a declarative sentence in the Polish language, it changes it into a yes/no question). Bach and Harnish (1979) offer the following definition of such interrogatives:

In uttering such a question the speaker expresses:

1) the conviction that there is a reason to believe that a given proposition is true;

2) the intention to hear the addressee confirm or contradict the proposition.

It should also be noted that presumptive questions do not fulfil the first of Searle's conditions (i.e. the speaker does not know the answer).

The next group in Rakić's classification are informative questions. Here the speaker does not form suppositions as to the veracity of a given proposition, but is merely asking for information, e.g.:

Czy są wolne miejsca w autobusie?
[*Are there any seats left vacant in the bus?*]
Dobrą miałeś podróż? [*Did you have a nice trip?*]

Such questions may be answered with a simple *tak* [yes] or *nie* [no], or in a different manner (*Nie wiem*; *Zastanowię się* [I don't know; Let me think] etc.). According to Rakić (1984), the group also includes such questions as *Czy możesz otworzyć okno?* [Can you open the window?], although in most contexts this sentence acts as a request or a command rather than an inquiry. In this case a focus on the literal meaning obscures the actual message conveyed by the utterance. If we choose to disregard sentences of this kind, the characteristic for presumptive questions may be described as follows:

The speaker expresses:

1) curiosity or the lack of knowledge as to the veracity of a given proposition;

2) the intention to hear the addressee confirm or contradict the proposition.

Such questions are the only group that fulfils all original conditions for successful interrogatives as described by Searle.

The third group comprises questions expressing uncertainty or hesitation. The speaker voices some reservations but does not necessarily seek a direct answer, merely asking for additional information. Such questions often contain negation.

Czy on nie zabrał tych pieniędzy? [*Didn't he take the money?*]

Czyż list nie został zagubiony? [*Hasn't the letter been lost?*]

A question so phrased often signals the speaker's wish to obtain a more detailed explanation. It can be demonstrated with the following example:

— *Czy nie Marek ukradł te pieniądze?* [*Wasn't it Marek who stole the money?*]
— *Tak, on. Był jedyną osobą w domu.* [*Yes, it was him. He was alone in the house.*]

A simple *yes/no* answer would most probably be insufficient. The proposition expressed by the speaker is marked with uncertainty, therefore more detailed information isneeded to dispel his or her doubts. It can be assumed that in the case of such questions the speaker expresses:

1) uncertainty as to the veracity of a given proposition;
2) the intention to hear the addressee provide further information confirming or contradicting the proposition.

It might also be added that interrogatives of this type do not comply with Searle's second condition (i.e. the speaker assumes the addressee to know the answer).

The last group encompasses rhetorical questions in which the speaker expresses a proposition and 'forces' the addressee to disconfirm it; at times the speaker is also the one who answers the question. Let us use an example:

Czy po to cię ojciec posyła do szkoły, żebyś się tutaj bił?
[*Did your father send you to schools so that you could hit people?*]

The speaker, most probably a teacher, does not need to wait for the addressee's answer; he is merely pointing to certain facts, allowing the addressee, in this case —- a student —- to make the appropriate conclusion.

Rhetorical questions often have the impact of an accusation or reproach, as in the following example:

Spójrz na siebie. Czy żona może cię szanować po tym wszystkim? [*Look at yourself. After all this, do you think your wife can really respect you?*]

The question is in fact a reprimand, as the addressee is induced to think of what his wife likes and respects. Most probably the addressee

is being cajoled into answering *Nie, nie może.* [*No, she can't*] or silently acknowledging his guilt.

Uttering a rhetorical question may sometimes be a means of expressing additional surprise or protest. A person saying:

Czy ja ciebie zatrzymuję? [*Am I stopping you?*]

expresses astonishment and assumes that the opposite is true. The speaker does not expect the addressee to answer and seems unwilling to relinquish his or her original view on the matter. Such questions may also be used to ask about unequivocal truths.

Czy nie jestem mężem swojej żony? [*Am I not my wife's husband?*]

This sentence is a statement of the obvious and could not be uttered in order to start a discussion. The aim of the speaker is most probably to draw the addressee's attention to a fact that he or she failed to notice or deliberately disregarded.

The main difference between rhetorical and presumptive questions is that with the former the speaker wants the addressee to admit that only one answer is possible. In some cases the speaker answers his own question, even though no reply is truly needed. Thus, rhetorical questions do not fulfil the third condition for successful interrogatives (i.e. the speaker wishes to know the answer). In asking such a question the speaker expresses:

1) the wish that the addressee should say whether a given proposition is true or not;
2) the intention to have the addressee offer a direct or taciturn confirmation of the given proposition.

All of the abovementioned types of yes/no questions can be defined as diverse speech acts in terms of their propositional attitude and illocutionary intention, as suggested by Bach and Harnish (1979). The definition of each type refers (a) to the speaker's attitude towards a given proposition and (b) to the speaker's intention to hear the addressee's opinion on the same proposition. It is therefore apparent that the concept of a question as defined by Searle's original set of conditions is too narrow, as it only pertains to inquiries. Let us propose a more general definition:

In uttering a question the speaker expresses:
l) her attitude towards a given proposition;

2) the intention to hear the addressee's opinion on the same proposition.

Such a definition encompasses all types of questions discussed above, but in order to be adequate it must pertain only to the literal meaning of the questions. This approach allows us to discern some interesting qualities of this group of utterances, yet it makes it impossible to include many examples of yes/no questions that could be counted among indirect speech acts.

In the initial phase of research on speech acts it was established that the number and type of 'actions' that could be completed through making an utterance was strictly limited. It was also determined that all sentences contain structural clues as to their illocutionary force —- i.e. their status of promise, threat, declaration, order, etc. McCawley (1981) states that the illocutionary force of an utterance is a kind of an illocutionary act that the speaker performs by choosing to say a given thing. Bach and Harnish (1979) as well as Leech (1983) suggest that most utterances cannot be easily classified as one type of speech act or another, and therefore illocutionary force cannot be a part of the semantic structure of an utterance. Leech (1983: 175) is of the opinion that since illocutionary force is impossible to determine directly, it should be studied in terms of gradation. He also introduces the term 'illocutionary force indicating device', which refers to any characteristic that determines the illocutionary force of a given utterance. Apart from the much-discussed performative verbs, such measures include grammatical mood, word order, intonation and stress. Interrogatives are usually used to ask for information, declaratives to state facts and imperatives to issue orders. Each of the three types of sentences may also have other, less direct functions: rhetorical questions might be used to declare something, imperative sentences to make offers (*Wypij jeszcze jednego* [*Have another drink!*]) and declarative sentences — to communicate commands (*Oficerowie wystąpią w mundurach galowych* [*The officers shall be wearing parade uniforms*]). Such cases constitute examples of the so-called 'indirect speech acts'.

The term 'indirect speech act' was first introduced by Herringer (1972). Very soon after speech acts began to be studied, it was noticed (Searle 1969; Gordon and Lakoff 1975) that the illocutionary act of commanding someone to do something could be performed by means other than imperative sentences —- namely by interrogatives. This observation paved the way for the realization that distinguishing indirect speech acts complicates or even destroys the allegedly obvious connection between the grammatical structure of a sentence and its illocutionary force. It seems that some utterances may carry two types of illocutionary force, called primary (actual) and secondary

(incidental) force (Lyons 1977). The sentence:

Czy możesz zamknąć okno? [Can you close the window?]

may be understood as a question whose incidental illocutionary force is determined by the grammatical form of the sentence. Primarily, however, this utterance constitutes a request expressed by means of an interrogative (Searle 1975: 59), and its actual illocutionary force is derived from the meaning of the sentence and its incidental illocutionary force. Thus, a sentence may contain an illocutionary force indicating device characteristic for one type of speech act but still be uttered to perform an act of a different kind. As Levinson (1983: 265) puts it, what people do by means of words does not seem to be in any way restrained by the surface form of the sentences they utter.

This raises the question of whether speech acts ought to be divided into direct and indirect ones. Many scholars studying indirect acts make no mention of the direct ones, which may suggest that such the classification does not fulfil the conditions of mutual exclusiveness or relevance. What is more, there is no agreement as to which utterances fall into the category of indirect speech acts. It is perhaps advisable to view the matter in a slightly different light, introducing the division into 'direct' and 'non-direct' speech acts. The latter group would then encompass indirect speech acts as well as ironic and metaphorical utterances. Such an attitude opens the possibility of determining the interrelation between Searle's indirect speech acts and Grice's conversational implicatures (Grice 1975, 1978). In explaining meanings of indirect speech acts, Searle (1975) applies the same pattern Grice used to describe conversational implicatures. According to Searle, the addressee assumes that the speaker is willing to cooperate in the conversation and that his or her utterance is relevant in the given context. When the literal meaning does not seem relevant, the addressee concludes that the speaker must mean something different. Grice fails to specify how these hidden meanings ought to be sought. Searle, however, uses his speech act theory to complement Grice's theses and determine their practical application. Indirect speech acts may thus be assumed to be a subdivision of conversational implicatures. Leech (1980: 109) offers a different perspective. In his view indirectness is gradable, and consequently there is no such thing as an opposition between indirect and direct speech acts.

Indirect speech acts may be characterised as utterances containing more than the literal meaning. However, the term does not apply to allusions, metaphors, ironic utterances, etc. Thus, the group of indirect speech acts

mostly encompasses utterances that — being structured as declarative, interrogative or imperative sentences — convey more meaning than the grammatical form would suggest. In such utterances there is no connection between the syntactic structure and the illocutionary force. It should be added that utterances of this type could also be regarded as direct speech acts, if only their literal meaning is taken into account. In some cases, however, it might not be easy to find a context that would be appropriate (this is especially true for highly conventionalised courtesy forms). For example, the sentence:

> *Czy możesz otworzyć okno?* [*Can you open the window?*]

is most commonly used as a request (to open the window). However, in a context of one person moving into a flat with many construction faults, the same question might serve as a simple inquiry, not as a means of provoking any action on the addressee's part. It might be included in a series of interrogatives, e.g. *Are the taps tight? Is the ceiling level?* etc.

Many determinative questions, which often carry the meaning of wh-questions, may also be used as indirect speech acts (Kiefer 1980: 118).

> *Czy widziałeś moje pióro?* [*Have you seen my pen?*]

may mean *Gdzie jest moje pióro?* [*Where is my pen?*]. Similarly, the sentence:

> *Czy rozmawiałeś ze swoim ojcem?* [*Did you talk to your father?*]

in some circumstances may mean *Co powiedział twój ojciec?* [*What did your father say?*]. General questions with the verb *to know* may also be interpreted as covert particular questions.

> *Czy znasz tę osobę?* [*Do you know this person?*]
 or
> *Czy znasz to?* [*Do you know this?*]

might be used to signify *Kim jest ta osoba?* [*Who is this person?*], *Co to jest?* [*What is this?*].

Generally, it may be assumed that asking whether someone knows something is more polite than a direct request for information. Searle (1975: 74) also considers social protocol as the main reason for using indirect speech acts. Rhetorical questions are also counted among indirect speech acts (Kiefer

1980: 98), for in most cases the addressee is required not to answer, but to perform a certain action.

Another group of utterances included in indirect speech acts comprises the so-called *whimperatives*, i.e. yes/no questions with the illocutionary force of a wish, a request, or even a directive. Such sentences are problematic, as it is difficult to explain the reason for using interrogatives for expressing an intent and interpreting them as instructions rather than inquiries. In most contexts, the following examples:

> *Czy mógłbyś podać sól?* [*Could you pass the salt?*]
> *Nie otworzyłbyś okna?* [*Would you open the window?*]
> *Czy możesz zejść z mojej nogi?* [*Can you get off my foot?*]
> *Może podać do stołu?* [*Perhaps it's time to serve dinner?*]

 will be understood respectively as:

> *Podaj sól.* [*Pass the salt.*]
> *Otwórz okno.* [*Open the window.*]
> *Zejdź z mojej nogi.* [*Get off my foot.*]
> *Podaj do stołu.* [*Serve dinner.*]

Naturally, there are situations and contexts where at least some of the above sentences could be understood literally as inquiries.

Searle uses the term 'indirect act of speech' to define a situation where one illocutionary act is performed through the delivery of another act. He also attempts to explain how the addressee understands an indirect speech act if the sentence she hears literally means something else. Searle's hypothesis is that in the case of indirect speech acts the speaker communicates more than she actually says, by relying on the linguistic and non-linguistic background information she shares with the addressee as well as on the premise of rationality (Searle 1975: 60). He further specifies that the system necessary to unravel the mystery of this phenomenon ought to include the speech act theory, the general principles of cooperative conversation (e.g. as put forward by Grice), as well as a description of the common background information shared by both participants that enables the addressee to understand the utterance in line with the speaker's intention. Moreover, Searle contests the alleged necessity of establishing conversational postulates (Gordon and Lakoff 1975) or hidden imperative force (Sadock 1970, 1974). In his view, if someone asks the following question:

Nie sądzisz, że tutaj jest przeciąg? [*Don't you think it's draughty in here?*]

in order to suggest to the addressee to close the window, the method employed by the addressee to discern the message ought to be specified. Searle introduces a terminological distinction between primary and secondary illocutionary acts. In the case of the above sentence, the request to close the window constitutes the primary illocutionary act, whereas the secondary act is the call for an opinion. In other words, the meaning of secondary acts is literal, whereas primary acts convey a different message. If we assume that the addressee understands the literal secondary act, we should also show how she is able to deduce the hidden meaning of the primary act. Understanding an indirect request requires more intellectual effort than comprehending a direct utterance, and the speaker cannot be sure that her intention will be clear to the addressee. Searle attempts to reconstruct the process of inferring the hidden intention by showing how an indirect speech act may be derived from a direct one. He lists the following stages:

a) (facts relevant to the conversation) *X* asks whether *Y* thinks that a given room is draughty.
b) *X* feels the draught.
c) The draught is an unpleasant sensation for *X* (assumption).
d) *X* wants the cause of the draught eliminated (inference).
e) Closing the window will reduce the draught (assumption).
f) *X* wants the window closed (inference).
g) *X* wants *Y* to close the window (inference).

The strategy of implication should therefore acknowledge the difference between the primary and the secondary illocutionary act and determine the nature of the primary act. It should however be noted that the conclusion made at the final stage of the above implication is merely hypothetical, since the addressee may not be able to read the speaker's intention or pretend not to have understood it.

It seems that the group of directives —- commands, wishes, injunctions, pleas, prayers and proscriptions —- deserves the greatest attention in this respect. The form of such utterances is often highly conventionalised, which turns them into indirect speech acts. Searle (1975: 67-70) offers a series of intuition-based theses concerning directives. These include the following:

l. The meaning of such sentences does not contain directive force indicators.

2. Such sentences are fundamentally polysemantic.

3. Most of such utterances may be accompanied by the word *please*, which directly indicates that the primary aim of the utterance is to convey a directive, though the literal meaning of the sentence may suggest otherwise.

4. Such sentences are not idioms.

5. Such sentences are, in a sense, idiomatic. The role of indirect speech acts may only be taken by utterances structured in a particular manner —- not all sentences sharing a similar literal meaning are equally appropriate (this is more true in relation to English than to the Polish language).

6. When such sentences are used as requests (or demands), they do not lose their literal meaning. This is indicated by the answers, which may assume the same form regardless of whether the utterance is understood literally or non-literally. Searle claims that all cases of indirect speech acts may be analysed in the same way.

This raises the question whether the structure of all or some indirect speech acts is an unambiguous indicator of their polysemantic nature and —- in the case of highly conventionalised courtesy forms —- rules out literal interpretation. In other words: is it possible to postulate the existence of indirect illocutionary force indicators, by analogy to illocutionary force indicators (Auwera 1980: 37). It seems the answer is 'yes', at least in the case of definitive questions that in most situations function as requests or demands. Here are some examples:

Czy mogę prosić *o odpowiedź?* [Can I ask *for the answer?*]
Czy możesz *zamknąć okno?* [Can you *close the window?*]

However, not all questions structured like the above sentences have to function as indirect speech acts. The following utterance may only be interpreted as an inquiry:

Czy możesz być tutaj o ósmej? [*Can you be there by eight?*]

If we take into account all utterances that may function as indirect speech acts, the existence of indirect illocutionary force indicators seems less likely. This statement may be illustrated with the following example:

— *Piotr przychodzi do nas jutro w odwiedziny* [*Peter comes to visit us tomorrow*].

a) — *Nie widziałem go od wieków.* [*I haven't seen him in ages.*]
b) — *Zaproś mnie.* [*Invite me.*]

It is possible to envisage a situation when the addressee utters sentence (a) while actually trying to convey the message expressed directly by (b). There are no indirect illocutionary force indicators and the interpretation of the situation may proceed according to Searle's model, since his method is applicable to all indirect speech acts. Naturally, the addressee is not obliged to reveal that she understood the speaker's message, and she can treat the sentence (a) at face value if she has no intention to invite anyone. By using (a) and not (b) the speaker protects herself from being directly refused an invitation (which might be the result of using the latter sentence). This example reveals one of the reasons why indirect speech acts are so commonly used, despite the fact that they seem to obscure communication. Before we tackle this issue, let us consider a different problem.

The previous examples lacked variety and did little to demonstrate that the same results may be achieved with very different means. In the typical context of a dinner, a person wishing to be given some salt has many possibilities of asking for it —- even if we limit the choice to yes/no questions, such as the following:

Czy mógłbyś podać sól? [*Could you pass the salt?*]
Czy możesz podać sól? [*Can you pass the salt?*]
Podasz sól? [*Will you pass the salt?*]
Czy jest tu gdzieś sól? [*Is there any salt?*]
Czy widzisz może sól? [*Can you see any salt?*]
Czy mogę prosić o sól? [*May I ask for some salt?*]
Czy nie mógłbyś podać soli? [*Couldn't you pass the salt?*]
Nie podasz soli? [*Won't you pass the salt?*]
Czy nie widzisz gdzieś soli? [*Can't you see any salt?*]

All of the above utterances are indirect speech acts aimed at producing the same effect (passing the salt), yet the messages they convey are not identical. They seem to vary in the degree of politeness and the speaker's respect towards the addressee. If we were to ascertain the relation between the linguistic form of a sentence and the level of politeness expressed by it, conditional sentences would probably be deemed as the most courteous. Adding negation also seems to increase the politeness of the message, although this is not always the case. For example the sentence:

Czy nie możesz podać soli? [*Can't you pass the salt?*]

is a reproach rather than a polite request (which does not alter its status of an indirect speech act). Negation as a means of increasing the degree of politeness of an utterance is used in the Russian language (Comrie 1984: 43), but not in English (Fraser and Nolen 1981: 102). Surveys have shown that such sentences are perceived as much less polite than their non-negated counterparts.

This does not mean that an indirect speech act is always more polite than a direct one. Let us consider the following situation. A friend shows up at our door at a late hour. Courtesy dictates that we invite him in, and the simplest way to do so is to say:

Wejdź, proszę. [*Come in, please.*]

However, if the host is not pleased with the prospect of a late-night guest but does not wish to be impolite, he might, for example, say:

Nie wejdziesz? [*Won't you come in?*]
Może wszedłbyś na chwilę? [*Would you like to come in for a short while?*]
Wejdziesz? [*Will you come in?*]

In this case the most direct speech act seems the most polite, since the sincerity of indirect speech acts may be contested. The speaker fulfils a social obligation not to continue the conversation on the doorstep, and the addressee is left with a choice as to how he should behave. In any case, using an indirect speech act diminished the illocutionary force of the invitation.

The above considerations are in line with Grice's (1975, 1979) notion of conversational cooperation according to four maxims: quality, quantity, relevance, and manner. He concluded that the essence of communication is to convey an intention so that the addressee may understand it. This implies that the speakers' actions are inherently related to their intentions, which is why their aims may be discerned by the addressees. It is, however, uncertain whether the number of maxims is limited to the four mentioned. Leech (1983) postulates the addition of a politeness principle, which would include six maxims: tact, generosity, approbation, modesty, agreement, and sympathy. The new addition is a necessary condition for keeping Grice's principle, which is not always fulfilled (e.g. by indirect speech acts). Leech suggests that communicating parties have two fundamental aims: to cooperate and to be polite. The combination of these objectives may be competing (e.g.

with orders), convergent (e.g. with offering), neutral (e.g. with statements) or conflicting (e.g. with accusations), yet both aims are always clearly distinguishable (Leech 1983: 104). According to Leech, the participants of a conversation try to be as polite as possible on many different levels. They attempt to maximize their own efforts and the benefits gained by the other party, while simultaneously striving to minimize the other participant's exertion and their own profits. If the speaker wants the addressee to open the window, she will most likely choose an indirect utterance, in order to provide the other party with a choice, illusory though it may be. So defined, the politeness principle seems to be observed with particular diligence by the members of the English middle class (Jucker 1988: 377). The claim that more indirect utterances are always more polite, seems to be an oversimplification, since there are cases where too much courtesy is unwelcome and may even result in the message sounding rude, e.g. if an officer addresses a private saying:

> *Czy zechciałby pan łaskawie wykonać mój rozkaz?*
> [*Would you please be so kind as to execute the order?*]

It must be noted that in some situations an indirect act of speech is simply inappropriate, e.g. if a stranger in the street utters the following sentence:

> *Czy może mi pan pożyczyć milion?* [*Could you lend me a million?*]

Some scholars attempt to reduce the number of maxims rather than to increase it. Sperber and Wilson (1986) recognize only one maxim, namely that of relevance. It postulates that all behaviour related to communication contains the tacit assumption of relevance. A person who wishes to convey a message, both verbally and non-verbally, assumes that what she is about to communicate is relevant for the addressees and therefore worth the effort of understanding.

The most elaborate approach to these issues was introduced by Brown and Levinson (1987). They noted that each social group has problems with controlling their inner aggression. Seen in this context, politeness, respect and tact go far beyond the level of *savoir-vivre* or good manners. A key issue here is the concept of 'face', composed of two types of desires, the so-called 'face-wants', the participants attribute to one another. The first is the wish not to be forced into anything ('negative face'), the second —- the wish to be accepted ('positive face'). The concept of 'face' is regarded

as universal, though its realization may differ from culture to culture. It demonstrates how assumptions regarding the face help identify similarities between unrelated languages (e.g. English, the Tamil language, and Tzeltal — the language of the Mayas). Due to the rules of politeness, both participants of a conversation find it advantageous to preserve and enhance both their own face and the face of the other party.

The process of communication involves many acts that may be a potential threat to the face (the so-called 'face-threatening acts'). With regard to the 'negative face' (the right for autonomy), these include orders, suggestions, and requests, whereas the 'positive face' (the wish to be accepted) is threatened by denials, interruptions, accusations or the lack of approval. The speaker's 'positive face' is jeopardized by acts like making a confession or excuse. Her 'negative face' is threatened when she asks for help, accepts an offer, receives a compliment, etc. Generally speaking, face-threatening acts ought to be performed cautiously, to minimize the risk of 'losing face', unless there is need for absolute clarity. Indirect speech (and other phenomena, such as e.g. forms of address) is used when the speaker performs a face-threatening act. Highly conventionalised expressions (this category includes many yes/no questions used as requests) are a common choice, as there is little doubt as to their meaning, yet their form allows a different, non-threatening interpretation. Brown and Levinson (1987) consider indirect speech acts to be universal and claim that they are constructed in a similar way regardless of the language. In other words, the universal nature of indirect speech acts results from the fact that they are used to comply with universal politeness strategies.

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Paweł Więckowski
CHOMSKY AND PIAGET ON THE INNATENESS OF LANGUAGE

In 1975 Jean Piaget and Noam Chomsky met in Royaumont, near Paris, to take part in a philosophical debate on the "innateness" of language. At the outset, they both presented papers to clarify their positions, serving as a starting point for a debate of scholars from across various fields such as biology, anthropology, information technology, and philosophy. The exchange lasted for several days and was deemed a major formative experience for what came to be known as cognitive science. The debate capitalized on extensive research that Chomsky had been conducting since the 1950s and featured world-class contributors. Despite that, or perhaps maybe for that very reason, the discussion lacked precision and proved inconclusive. This paper reconstructs the main positions presented in the debate, followed by exposition and critical analysis of its core arguments.

PIAGET'S POSITION

Piaget came first to outline his theory of cognitive development (Piattelli-Palmerini 1980: 23-34, 164-167, see also 132-137). According to his core assumption, all components of human knowledge (such as mathematics, natural sciences, logic, or linguistic skills) are developed in a predefined order while being interrelated through a mechanism balancing cognitive structures. Knowledge is not drawn directly from the reality, ideas are not derived from senses (as an empiricist would have it), skills don't emerge as a result of conditioning (as behaviorists would have it). Nor are they innate

and *a priori* (as followers of Kant would have it). Knowledge is developed within the organism by one general mechanism in response to stimuli coming from the environment.

CHOMSKY'S POSITION

Drawing heavily on metaphoric language, Chomsky (Piattelli-Palmerini 1980: 35-52, 107-130) insisted that language is a mental organ much like heart is a physical organ, programmed to grow in line with genetic instructions until it reaches a steady state. The environment triggers the execution of this instruction, but it exerts no further influence on the development of the organ – there is nothing we can do to grow wings instead of arms. Which is why there are *a priori* limits to the linguistic capacity of humans. Genetic instruction is indispensable for language to occur, if a linguistic gene was missing, humans would be unable to acquire language (Chomsky claims that humans would not be able to master language of creatures inhabiting other planets, see also Putnam 1975). Humans are the only creatures that have genetic linguistic instruction, and it's independent from other genetically-enabled skills such as face recognition. But this instruction determines only the core of language, that is, a formal basis for grammar rules. Meanwhile, vocabulary, phonetics, or specific details of particular ethnic languages are environment-dependent.

THE CRUX

The tone for the debate was set by Chomsky and his supporters. Entirely passing over the anti-empiricist component of Piaget's theory, Chomsky chose to contrast his innatism with Piaget's claim regarding the environment's impact on cognitive structures and single mechanism theory. In that way, Piaget, a declared opponent of behaviorism, was forced to fend off criticism addressed initially to behaviorists (see Chomsky 1967). Each time someone spoke against the possibility of learning or for innateness of linguistic mechanisms, it was considered to be an endorsement of innatism. While the majority were ready to accept that genetic determination in language is important, there was little recognition that the innatist hypothesis consisted in fact of several independent hypotheses. Chomsky claimed that:

(1) grammar is founded on transformational-generative rules that enable making and understanding linguistic expressions;

(2) development of grammar is genetically determined, environment only triggers the execution of genetic instruction;

(3) without genes language acquisition would be impossible – grammar rules cannot be learned;

(4) language develops independently from other cognitive skills;

(5) only humans possess the ability to speak.

PIAGET'S ARGUMENT

Piaget was defending his position with little commitment. His efforts to come up with specific arguments against innatism were hardly convincing: Piaget pointed out that (a) there is no precise description of genetic determinacy of language — but the same can be said of the liver, which undoubtedly develops to genetic script; (b) the evolution of linguistic genes was not explained — but this does not necessarily mean that linguistic genes must have been already present inside the virus, much like it does not contain liver genes; (c) natural knowledge is not innate — but this does not mean that grammar is in this regard similar. Piaget was convinced that his own account of cognitive development is complete, which would render innatist claims superfluous. But, with all respect for his theory, developed throughout much of the last century, it is not fully compliant with the standards pursued in contemporary science. Piaget uses his observations to look for knowledge creation processes, but he never provided quantitative regularities falsifiable in the experiment. What he did achieve was a description of the development of specific skills and knowledge through a shared set of concepts (accommodation, assimilation, cognitive schemata). However, such a description may at best have personal appeal and it cannot be accepted as proof that such skills are indeed produced by this shared mechanism.

Piaget is more persuasive when exercising more general criticism of Chomsky who's only concern is to identify grammar rules triggered by genes. His theory never discusses relationships between language and cognition, nor does it look for regularities responsible for the emergence of grammar rules in subsequent stages of human development. Piaget, underlining links between verbal meaning and non-verbal experience, as well as links between grammar structures (e.g. passive voice) and specific stages of mental representation of the world (differentiation between the object and the activity; operation reversibility), finds the Chomskian description of language an extremely crude one. His theories fail to explain the emergence of language, much like axiomatic definition of natural numbers fails to answer how children learn to use them.

Another issue that innatists chose not to explain is how language was formed over the course of human history. If the genetic instruction is as specific as Chomsky would like it to be, it could not have evolved over a mere dozen thousand years. Why, then, is it so that the language of primitive humans was not as sophisticated as ours? If the speaking environment is a prerequisite for triggering grammar instruction, how was it triggered in first humans? These difficulties can be brushed aside by assuming that language is a learning-driven phenomenon, but still, wherever it emerged it had to have a grammar of some sort, because grammar is already predefined in genes.

LINGUISTIC ARGUMENTS OF CHOMSKY

Chomsky's primary objective was to deliver proof that principles guiding transformational-generative grammar are innate, he displayed less concern to what implications this would have for philosophy. Despite that, his two core linguistic arguments presented in Royaumont failed to ignite a debate (although Putnam subsequently sent a paper where he undertook to dissect one of those arguments, Piattelli-Palmerini 1980: 294-295). Finding the arguments well structured, Chomsky used them repeatedly to make the point that some grammar rules used by the people must be innate (Piattelli-Palmerini 1980: 39-43, 109-117).

Chomsky analysed rules of just one language, claiming that humans are not predetermined to learn this rather than any other language. Therefore, if a specific language has innate rules, it must be so with any other language. Note that innatism does not endorse universals. This is because it is possible to assume that grammar may be programmed to have innate alternatives. Depending on the nature of the linguistic environment, the latter triggers only one of them, with alternative components having no shared properties.

The first argument focuses on questions. A child knows that interrogative of

(1)   *The man is here*

is

(2)   *Is the man here?*

The child doesn't create rule R1 (to form a question, move the first *is* to the front), but rule R2 (to form a question, move *is* to the front). Therefore, when confronted with the compound sentence

(3)   *The man who is here is tall*,

the child will transform it into interrogative

(4)   *Is the man who is here tall?*,

according to R2, not R1, which would render

(5)   *Is the man who here is tall?.*

Although R1 is simpler than R2, the child chooses R2. Our instinctive choice of R2 instead of R1 is innate.

However, this argument can be challenged. Usually, a child confronts compound sentences much later than simple sentences such as:

(6)   *The man walks fast.*
(7)   *Does the man walk fast?*
(8)   *The man walked fast.*
(9)   *Did the man walk fast?*

Having mastered the procedure for (2), (7), and (9), the child can easily grasp that the interrogative requires transformation of the main verb. Rules along the lines of "the first occurrence of the given word from the left" may be fairly awkward for the human mind. One would need to judge whether the sentence has words that must be moved to the front, and look for words that go with *does*, *did*, *do*. Many English words can be either verbs or nouns (like *walk*), which would further complicate things. In that light, the rule prescribing to look for the main verb seems to be the simplest solution. Also, it cannot be ruled out that, while learning to form subordinate clauses with *who*, a child is guided by the adult to leave said clause intact. Further, although Chomsky was not explicit in that, one may assume that he believed that both R1 and R2 are built according to purely syntactic criteria. A rule instructing them to look for the main verb without applying semantic criteria would indeed be relatively complex when compared with the rule prescribing them to look for the first *is* from the left. It is much simpler to find the main verb via semantic criteria. Thus, linguistic behaviour indicated by Chomsky can be explained without resorting to innate rules, it would suffice to assume that we tend to create the simplest rules possible.

Although generally unconvincing, Chomsky manages to capture an important thought. The available data invite various but equally valid generalities. It may be said that we strive for simplicity and choose the most convenient generalities. But it may be equally admissible that people favour certain hypotheses over others. This can be caused by acquired bias or inborn preferences, they may also extend to cover the whole of cognition or apply only to its specific areas. It may be the case that a certain innate mechanism makes us formulate generalities of this rather than other nature, but this claim can be legitimized only through a careful choice of relevant examples, not conceptual speculation.

The second argument is more complex. The sentence

(10)   *Each of the men likes the others.*

means roughly the same as

(11)   *The men like each other.*

Meanwhile, the sentence

(12)   *Each of the men expect John to like the others.*

has no equivalent in the incorrect

(13)   **The men expect John to like each other.*

Sentence (13) is neither a sematic paraphrase of (12), nor is it grammatically correct.

Two questions emerge. First, why is there no rule incorporating (13) to proper English by token of it being a paraphrase of (12)? Second, how do children know which sentences are incorrect? Chomsky firmly stated that, when learning to speak, children never form sentences like (13) on their own, nor do they get instructions forbidding them from doing so. According to Chomsky, there is an innate formal rule, called *the Specified Subject Condition* (SSC), that precludes to connect components of the subordinate clause (*each other*) with the component of the main clause(*the men*) if the former has a different subject (*John*) than the latter. Chomsky runs into trouble when trying to come up with precise definition of that rule, particularly when explaining why it does not apply to the rule connecting *Each of the men* and *the others* in (12), but it does no particular harm to his general line of reasoning. It is this precisely innate and arbitrary character of SSC that is responsible for there being no place for (13) in English (although there could be) and that children instinctively know it.

This line of thought, being the chief argument supporting the innatist claim, can be rebuked by demonstrating that (A) introducing of (13) to language would unnecessarily complicate grammar, thus violating the simplicity rule; and (B) *each other* in (13) means something else than it does in English.

(A) Let us consider the following sentences:

(14)   *The men expect us to like each other.*

(15)   *The men expect each of us to like the others.*

(16)   *Each of the men expects us to like the others.*

(17)   *Each of the men expects each of us to like the others.*

Sentence (14) is correct English (because *us* is in plural, as opposed to (13) where *John* is singular). *Each other* refers to *us*, which is why only (15) is a paraphrase of (14). Meanwhile, if we were to treat (13) as correct, in which *each other* would refer to *the men*, also sentences (16) and (17) would be paraphrases of (14). Incorporating (13) into English (which would be

used rather infrequently because we rarely say that each person of a certain group wants other people to like all persons from the group except for the speaker!), would make *each other* an ambiguous phrase.

(B) But why don't children make a mistake by forming (13) (and why Chomsky is so sure about that?)? *Each other* indicates reciprocity. (Only when the subject consists of two entities, the sentence with *each other* is equivalent to the sentence with *each of*, as in "*Each of them likes the other.*" When we speak of more than two entities, we tend to use *one another* instead of *each other*, at least in traditional English). Let's assume that in (10)-(13) the subject consists of three persons. In (11), A and B like each other, B and C like each other, and C and A like each other. In (10), A likes B and C, B likes A and C, and C likes A and B, which paints the same picture as (11) as there is a relationship between each pair. The meaning of (12) is more complex: A expects John to like B and C, B expects John to like A and C, and C expects John to like A and B. These relationships cannot be described by using *each other*, and no one would ever think of using (13) to describe it.

Having observed that users of English do not form certain types of sentences, Chomsky says this is because there is a complex syntactic rule, further concluding that the rule must be innate since it was not acquired by learning. My counterargument shows that the same behaviour can be guided by simpler rules, partly pragmatic (tendency to simplify language), partly semantic (understanding what *each other* means). In that way we arrive at the suspicion that Chomsky is wrong in his conviction that language is governed by such rules as SSC. This reservation holds perhaps for the better part of Chomsky's conception of grammar. Its purpose was to create a set of syntactic rules capable of generating all and only correct sentences, as well as explain relationships that occur between them. Chomsky equaled such rules with linguistic competence which in his view actively participates in the creation and understanding of linguistic expressions. However, since there is a suspicion that people do not use those rules at all,[1] it seems futile to discuss whether they are acquired or innate.

FURTHER DEVELOPMENTS

There were at least three disruptive issues in the Royaumont debate. First, since the linguistic arguments presented by Chomsky were never

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[1]For a review of psychological experiments undermining the claim that Chomsky's rules are applied by the users of language, see Aitchison 1998.

properly challenged, the prevailing impression was that the dispute ran along the acquired/innate divide. Second, participants never undertook to provide a definition of human language. Third, the innate/acquired distinction was taken for granted, as if both extremes were complementary and exclusive. Arguments revolved around five theses delivered by Chomsky, although these were never clearly outlined.

LANGUAGE AND OTHER SKILLS

Some convincingly argue that language is a skill independent from all others. Contrary to Piaget, they claim that although the paralyzed cannot perform certain sensorimotor operations, they are capable of speaking. (Piattelli-Palmerini 1980: 140, 164). But this may just as well speak for flexibility of learning mechanism. Innatists frequently stress that linguistic skills are relatively independent from the general level of intelligence, but this only proves that the learning mechanism is independent from intelligence. It compromises Piaget's idea, but fails to secure the legitimacy of an innatist agenda. Also, note that Piaget and other participants of the debate were perhaps too quick to blur the distinction between language acquisition and creation of knowledge structures. In the case of language it is important to reproduce uniform skills– it enables communication within the community and its structure evolves slowly. Yet knowledge structures can change rapidly. It would be odd if the same mechanism was responsible for both language acquisition and production of knowledge (on the other hand, however, rapid progress of knowledge is enabled by a small group of highly specialized scientists, while the popular world view changes slowly). The innatist comparison of linguistic skills to the spider spinning its web or beaver building its dam is confusing because this is precisely where humans and animals differ — rocket science is not something we would carry in genes.

LANGUAGE OF HUMANS VS. LANGUAGES OF ANIMALS

Differences between human language and animal modes of communication were widely discussed during the conference (Piattelli-Palmerini 1980: 179-183, 203-230). Comprehensive studies show that apes are both highly intelligent and capable of symbolic representation, and their preverbal communication is not inferior to humans. That said, they have not developed verbal or symbolic language that would match that of humans.

Those observations prompted Chomsky to make the following statement:

[Glass, Premack, and Gazzinga] have discovered that in the case of severe global aphasics (people who apparently have almost total destruction of the physical basis of language capacity) they were able, by using Premack's techniques, to induce a system very much like the one that chimpanzee acquired [. . .] I think that is the kind of result one would expect, because what it means is that chimpanzee is very smart and has all kinds of sensorimotor constructions (causality, representational functions, semiotic functions, and so forth), but one thing is missing: that little part of the left hemisphere that is responsible for the very specific structures of human language. This is exactly what ought to come out if the specific structures of human language are genetically determined, and therefore I would like it to be further evidence that this is the case (Piattelli-Palmerini 1980: 181-182) .

Arguments presented here seem, however, too general. First, we do know that in some cases of aphasia damages can be compensated by the brain (also, patient's age plays a role). Therefore, even if linguistic skills are innate, they are not necessarily restricted to specific areas of the brain. Second, brain damage may disable learning skills, abstracting, or any other skill required in the usage of language. Language acquisition must depend on a complex and innate mechanism that creates grammar rules. Once damaged, it precludes the emergence of language, but this does not mean that rules to be mastered are genetically determined. Similarly, memory damage makes it impossible to acquire language. Only a systematic study of relationships between speech impairment and impairment of other skills would constitute the basis for speculation whether linguistic skills are in any way unique. Also, it cannot be ruled out that what for one creature is spontaneous and innate, can be learned by training by another. Chimpanzees cannot learn a language, but maybe dolphins would succeed.

Differences between human and animal languages were also highlighted by the anthropologist Dan Sperber (Piattelli-Palmerini 1980: 244-254). If chimpanzees symbolize and communicate but fall short of grammar, then maybe capacity for symbolizing and creation of grammar come from different sources and have different functions, only accidentally merged in language. Symbolic activity has no grammar because "a grammar is an apparatus that enumerates (in a mathematical sense of the term) the sentences of language" (Piattelli-Palmerini 1980: 248). This reveals a tacit assumption regarding the nature of grammar. As pointed out before, it is most probable that people have no such grammar. Grammar that underlies linguistic behaviour consists probably of a complex set of rules that establishes relationships between sentences, as well as relationships between sentences and situations

in which they are used. Understood in that way, grammar is certainly not purely human, nor is it language-specific. Animal behaviour is also guided by rules, and there was time when structuralists were trying to discover grammars governing various areas of human activity — indeed, maybe there is a grammar of folk poetry or musical grammar in major-minor. Before one determines whether, and to which extent, linguistic grammar is unique, one first needs define precisely what one means.

THE IMPACT OF THE ENVIRONMENT AND GENES ON THE DEVELOPMENT OF LANGUAGE

Another group of arguments revolved around the independence of language from the environment. The proponents of innatism claimed that: humans can only learn their first language at a certain age - if they fail to do so, language will never kick in; we learn to speak in various environments, but linguistic competences acquired by the members of the given community are strikingly similar; structural semblance of languages of the world proves that people share the same genes.[2]

Those claims can be challenged in various ways. The age of the first language acquisition, shared, the same, goes the argument, in case of all humans, may easily mean that the learning mechanism has a genetic expiration date. Also, the pace of language acquisition is individual. One should not put too much into the claim that all members of the community must have similar linguistic competences, as this may fluctuate depending on the environment (to survive we need no more than several hundred words and a couple of basic sentence structures, it is also an excessive egalitarianism to claim that a lumber jack and an intellectual both possess similar linguistic skills). Further, we should not underestimate education, a dozen of years of exposure to language is enough to grasp the shared rules. The existence of universal grammar is far less obvious than major differences between languages.

The neurological argument is equally unconvincing. An experiment conducted by Hubel and Wiesel (Piattelli-Palmerini 1980: 108) demonstrated that a cat has neurons that react only to horizontal lines occurring in its visual field. If a kitten in its first months never looks at something horizontal, the responsible neurons degenerate. This would mean that a cat is not learning to distinguish horizontal lines, but is born with this ability, which can further

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[2]These arguments were formulated earlier in Chomsky 1962 and Chomsky 1967. They were later widely criticised, for example in Putnam 1975.

be lost. Jean-Pierre Changeux went as far as to say that learning is a process not so much driven by acquiring new skills but rather eliminating disposable neural connections (Piattelli-Palmerini 1980: 194). Finding the experiment illuminating, we must stress that perception and linguistic competence differ in terms of complexity. Not sooner can any neurological data be used as proof than we get the idea how linguistic skills are represented in the brain. If we were to make a simple analogy between feline perception and language, we would be compelled to say that at birth every human speaks all the languages of the world (albeit rather imperfectly), which are then all outlived by the one we truly need.

There is also little to support the claim that the human child raised by inhabitants of a distant planet would in the end of the day develop an English-like grammar or develop no grammar at all.

ON THE CONCEPT OF LEARNING

For ethical reasons there is no place for experiments demonstrating that in an arbitrarily manipulated environment grammar structures would remain relatively intact. Available indirect demonstrations can be interpreted either way. Which is why, as the debate unfolded, there was increasing support for the general argument that language must be innate because there is no such thing as acquired skills. Chomsky, who usually maintained that grammar is the only innate thing(see his argument in Piattelli-Palmerini 1980: 137-138), at one point stated (Piattelli-Palmerini 1980: 109-111) that since there is no scientific description of the learning mechanism, it is futile to discuss the possibility that learning is responsible even for partial language acquisition (one example of such a mechanism is Hume's idea of associative learning). Moreover, at the last panel he stood arm in arm with Fodor who denied any possibility that learning can prompt an acquisition of new skills (Piattelli-Palmerini 1980: 255-275).

The most popular innatist argument has it that linguistic data encountered by the child are insufficient to learn grammar: people compose previously unheard sentences and apply rules they have never trained.

The argument, however, builds on the misconceived opposition between "innate" and "acquired." Similes used by Chomsky (language as a heart or a liver, arms that cannot turn into wings) testify to his strong commitment to a radical version of genetic determinism: if something is innate, it must inescapably emerge in a predefined and environment-independent form in all specimens of the given species, without effort or initiative on their part. Language never emerges spontaneously and must be first triggered, but

for the latter to happen one needs only a very limited set of not always correct sentences, which, however, on their own cannot deliver general rules of correctness.

Innate qualities are here pitted against acquired qualities, which need to be trained, do not emerge on their own, and require initiative and effort on the part of the learner. Although Chomsky would not admit that, one may suppose that his criticism is directed at the behavioristic theory of learning, according to which an individual can be freely shaped by reinforcement techniques to teach him any particular skill.

This radical opposition between innate and acquired skills seems to be blown out of proportion. There are, obviously, highly determined genetic features (which surely deserve to be called "innate") which emerge spontaneously (e.g. cardiac functions), but there are also features that could never be triggered by genetic determination (wings instead of arms). The first is essential, the other impossible. In-between there is a whole variety of possible, but non-essential features which the environment and genes shape collectively. While genes deliver the range of possibilities, the environment puts the finishing touches on the given feature, e.g. genes determine the colour of the skin based on the absorbed sunlight. Persons with hereditary dispositions to certain ailments may steer clear from them by instituting a proper lifestyle, while individuals without such dispositions can still develop those illnesses if they show no concern for their health. Even the eruption of permanent teeth, although determined, requires some effort, that is pulling out of milk teeth. Linguistic skills seem to fit in that category, they neither emerge spontaneously, nor are they identical in all humans or trained in a behaviorist sense of the word. However, the crux of the debate is whether they are acquired or innate and released by the environment.

Chomsky appears to be refusing to call something "learning" unless the training involves the direct conditioning of skills to be acquired. When a pianist cannot get his sonata right, he scales back his efforts to practice études. Having mastered them well enough he will possibly perform better on his original project. Similarly, a student who is struggling with the exercise is given by the teacher a number of simpler examples which help him find his way through the main task. Neither of those Chomsky would call "learning." He would rather argue that what we see here is the triggering of innate skills, and it would partially fall in line with popular intuitions. If someone masters a skill by repetition, we are inclined to call it "learning" (for example, the child is learning how to write the letter *a* by writing it down time and again). But when someone, by completing activity *A*, simultaneously enhances her

skills in *B*, we start to hesitate, the more so the bigger the difference between the two. (Consider the child that masters the letter *a* by drawing a snail. It feels much more like learning than the situation when someone, after putting together Lego blocks for half a year suddenly turns into a qualified train dispatcher. Wouldn't we be rather inclined to call it a miraculous emergence of dispatching skills?). For the empiricist theory of learning the difference between these two is irrelevant. What both the theory of trigger and theory of learning ultimately do is to provide conditions which must be met by the organism to master the skill in question. We may insist that driving skills are innate (in a weaker sense of the concept), but further claim that they must be triggered by certain circumstances, such as attending a driving course.

Innatists, however, see here one major difference. Acquired knowledge accesses the mind from the outside, whereas triggered knowledge is there from the very beginning, it just needs to be updated. Fodor presented his critique of "learning" in opposition to Seymour Papert (Piattelli-Palmerini 1980: 89-106). Papert used a perceptron as the example of a learning computer. The device counts blobs in its visual field. To get the number right when blobs overlap, perceptron must come up with a complex rule (first introduced by Euler). It is not part of its original setup, but it nevertheless manages to invent it. For Papert, it would be an example of learning. Fodor thinks the opposite (Piattelli-Palmerini 1980: 142-162, 260-261). Learning concepts is nothing else but using simple concepts to define complex concepts, with the former already present within a computer or a brain. Learning would then be in fact a process of arriving at beliefs. Beliefs emerge upon formulation of alternative hypotheses and their subsequent falsification by experience, with only one ultimately passing the test. In that way the progress of knowledge does not create any new content. Rather, from the whole body of plausible content one chooses some of it and marks it as assertion. Fodor supports his claim with a psychological example. A man is given several geometrical figures, knowing that some of them are specifically identified as "miv." Building on this information, he comes up with the definition of "miv," which is "red squares" (Piattelli-Palmerini 1980: 146). According to Fodor, the man did not in fact create any concept, but defined "miv" through "red" and "square" which were available to him beforehand. A computer has a machine code, which can be extended to include further concepts only when they are definable in said code, by the same token humans have mental language that incorporates concepts such as "cat," by defining it in such language.

This theory, however, is specious. Primary concepts may be present in the mind from the very beginning, but they are not functioning on a conscious level, and building complex concepts and hypotheses requires effort. Therefore, mental concepts — the whole body of plausible content — exist only in potentiality, and in order for knowledge to develop they need to be updated, and choices made with regard to those concepts must be informed by the environment. Conditions under which the concept can be updated are identical with conditions set out by the "theory of learning." The claim that the whole knowledge resides in the mind *in potentia* resembles the view that all books are already contained in the alphabet, so Shakespeare did not really write *Hamlet* but merely selected it as one of already existing combinations of letters. The theory would be of use if we were able to gain insight into the content of mental code and subsequently predict that certain concepts and theories are impossible. This cannot happen for fundamental reasons: an inquirer uses the same code that he seeks to examine, he therefore cannot come up with a concept that would not be already part of the code. Ultimately, we cannot prove that the mental code exists, nor can we draw from this fact any practical conclusions.

CONCLUSIONS

The discussion presented in this paper leads to several conclusions. First, Chomsky's master thesis — that structural foundations of transformational-generative grammar are innate — failed to deliver on its promises. Even its weaker version, that all languages must have a shared grammar structure, could not be supported by convincing reasoning. Second, it is also dubious that Piaget was right in claiming that each cognitive skill is developed via a single learning mechanism. Brain specialization rather supports the argument that learning how to navigate our way from home to work and learning grammar rules engages, at least partially, different mechanisms. Third, language emerges in the wake of both genetically determined factors and the environment, which is why it is neither innate, nor acquired, at least in the radical sense of those terms. The question remains what is the impact of those factors. Fourth, even if there are innate factors in language, it does not mean that our knowledge is of *a priori*, or environment-independent, nature.

Although the debate did not reach satisfying consensus or even any provisional conclusions, its legacy seems to be that scholars are now unequivocally favouring genetic determination of cultural behaviour in departure over the *tabula rasa* concept of the mind. However, the participants failed

to grasp one major difference between humans and animals. Animals possess instinctive mechanisms which they apply to satisfy their natural needs and make use of their innate abilities. Meanwhile, following philosophers of culture and society, whose voice recently garnered wider attention thanks to ecologists, one could say that humans often lose touch with their natural needs and fail to make use of their innate abilities. In effect, they no longer know how to use innate structures of their organisms. Maybe research into the genetic determination of language will show that the way we use our linguistic competences is not entirely right.

BIblipgraphy

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Leszek S. Kolek
THE SEMIOTICS OF SIMPLE FORMS: THE JOKE AND ITS EXPANSIVENESS IN COMIC NARRATIVES

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Introduction

The problems of the so-called small narratives (Głowiński 1973: 319), also known as simple forms, mini-narratives, *einfache Formen*, *formes simples*, are by no means new, since they date back to the 1930s, when André Jolles formulated his theory and published it as *Einfache Formen* (1929). At that time the book did not raise much interest. Only since the 1950s has it acquired some recognition and there have appeared successive reprints of *Einfache Formen*, translations into several languages, and critical discussions. Jolles's theory raises some serious objections and, in spite of some attempts to develop it and make it more precise, it has remained an intriguing speculation lacking in any wider application (Scholes 1974: 42–50).

Let us recall that Jolles's simple forms are ideal entities in the same sense as parts of speech. They exist in the human mind and result from a certain 'mental disposition' in response to human ethical and interpretative needs, thus providing means to endow the world with sense and values. They are 'actualized' as verbal texts, folk or popular, with a definite ethical message, but they differ from 'literary' forms which are works of individuals rather than communities. Thus, at the beginning there exists a simple form as an unfulfilled, though specific possibility of a structure, which is realized only after a given culture has created concrete texts which are then used by

writers to construct literary forms; the latter may combine several simple forms, after appropriate modifications.[1]

Even in such a superficial presentation, it is easy to notice a significant principle of generating complex forms out of smaller components, an organic and universal principle, especially if we add that such larger wholes are characterized by the emergence of qualities which cannot be derived from the qualities of constitutive elements. Jolles is not alone in his theory because, before and after him, there were more or less successful attempts to split longer narratives into smaller components (Propp 1968, Shklovsky 1964). Sometimes they led to results not envisaged by their creators (e.g. the great popularity of Propp's theory and its development mainly by French structuralists — Greimas 1966, Todorov 1967, Bremond 1973). Perhaps the strongest objection one may raise against those attempts is their total neglect of aesthetic-emotional qualities (an omission which was strongly opposed by Propp, Shklovsky, as well as Jolles in their times) in order to examine purely syntactic relations and to concentrate on structural aspects, such as 'event' (Bremond), which were then used to create 'narrative grammars' (cf. criticism by Rosner 1980) or even higher units, e.g. 'situation' (Nowakowska 1981). Yet one of the most significant advantages of Jolles's theory is the fact that it does not accept this kind of omission, since every simple form is at once endowed with determined, immanent ethical and aesthetic features which remain in the text after it has been inserted into another text or expanded into a larger whole.

It is not the aim of this paper to improve Jolles's theory, defend its completeness, the criteria for the choice of the selected forms, or even its logical coherence. Yet there remains its most significant element, namely the very principle of generating complex forms out of simple components and the preservation of aesthetic qualities. This kind of principle lies at the basis of every semiotic system: the point is not only what a sign means (as in semantics) but also how it means (Blonsky 1985: VII).

This study is thus an attempt to trace the expansiveness of only one

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[1] Simple forms distinguished by Andre Jolles include the legend, the saga, the myth, the riddle, the proverb, the case, the memoir, the tale, and the joke. Contrary to the promise made by the theorist, they do not constitute a closed or systematic set because they do not form a logical whole. For instance, scholars have noticed the absence of forms such as the song, the prayer, or the 'character'. A later attempt by Henrik Becker has not found acceptance either; he tried to create a coherent system consisting of five modes of discourse (interrogative, indicative, imperative, optative, and silence) arranged into idealistic and realistic pairs with the necessary addition of a tenth form, the fable. Cf. Scholes 1974: 48-49.

of Jolles's nine simple forms, namely the joke,[2] into longer narratives characterized by the dominance of that aesthetic quality which is a distinctive feature of the chosen form, i.e. the comic.

1. The comic: state of research

Considerations about the comic, humour, and laughter[3] should probably always begin with a reminder about a paradox, not always fully apprehended, but fundamental: there is a principal contradiction between the 'uncontrollable, exuberant force', as laughter is sometimes described, and a systematic, rigorous intellectual construction which is to grasp and explain that force in a logical and rational way. For some writers the very attempt to formulate such a construction is a cause of laughter and complaints about pedantry. It is a fact that an explained joke stops being funny, but a scientific theory need not be characterized by the same qualities as the examined material.

Yet the suppression of this prejudice does not solve the above paradox, and many theories of the comic formulated through centuries merely cause additional complications because the conceptions they propose abound in contradictions. For some scholars the comic is an evidently individual phenomenon, whereas for others it can be examined only in social context; sometimes it is regarded as a positive phenomenon ('improving the morals') whereas according to others — it is negative (anarchy). There are still serious gaps in our knowledge of the comic: no mechanism of transition from a

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[2] Similarly to other simple forms, the joke also creates terminological problems. On the basis of dictionary definitions, the following terms have been rejected: "wit" or "witticism" — because of its inclusion in rhetorical figures; "trick", "frolic", "prank" — because of their informal character and connection with action rather than text; "anecdote" — because of its other meanings, i.e. the content of a work of art, without any relation to the comic. Unfortunately, the joke may also be connected with action (as in a 'practical joke'), so we can only narrow down its definition to a short story, always (intentionally) comic, and lay down an additional condition, namely the necessity of possessing features of a narrative (narrator, characters, action, setting, radicals of presentation). This condition excludes non-narrative forms of joke (e.g. of the question–answer type or a humorous riddle).

[3] More detailed information about the state of research on the comic can be found in Kolek 1985a and 1985b. From the formal point of view, the comic may be regarded as an aesthetic quality, humour — as a mental feature, whereas laughter — as a physiological reaction. In common usage, these terms are almost interchangeable, if only for stylistic reasons. It is worth noting that Freud (1960) distinguished the concepts of joke, the comic, and humour according to the number of persons, a kind of 'economy', and the psychological mechanism, but the classification has not found general acceptance.

perception of a stimulus to the physiological reaction (laughter) has yet been discovered, no consistent classification of the different kinds of laughter has been developed, etc. These issues already indicate various scientific domains which deal with this phenomenon — from physiology and psychology, through anthropology and sociology, to philosophy, aesthetics, theory of art, literary studies, and linguistics. In a sense, this explains the large number of theories of the comic, developed independently, though abounding in important and valid observations, whose richness almost equals the richness of described stimuli producing laughter. Hence, we deal with a phenomenon which is distinctly interdisciplinary, internally contradictory, causing unavoidable fragmentariness of its accounts, and as rich and exuberant as the development of its theories.

How can one try and solve the contradiction in analyzing the comic in such a complex situation? A proposition of a partial way out from this dilemma may be found precisely in Jolles's theory of simple forms after introducing some modifications. First of all, the theory makes it possible to give up excessive aspirations to cover all the problems caused by the comic and to radically narrow down the material to one kind of stimuli, the so-called narrative jokes, which should be characterized by relatively simple or 'pure' aesthetic effects. This choice also determines the main field of research, that is literary theory, though it does not exclude inspiration of other domains, e.g. the proposed foundations of humour they offer, such as 'the mechanical — the animate', 'nature – culture or civilization', 'freedom – norm', 'subjectivism — social or psychological determinism', expression of aggression, breaking a taboo, etc.; they may constitute determinants indicating a specific kind of stimuli, that is the texts in which one should look for factors bringing about the reaction it is supposed to evoke. It is also necessary to approach the phenomenon in a relative way, e.g., instead of an arbitrary decision that the comic is an exclusively individual or exclusively social phenomenon, one should rather assume that one is dealing with a whole scope of stimuli with varying degrees of universality and then look for its determinants. All this indicates the need of a method sufficiently dynamic, flexible, though systematic, yet also having a rich integrative potential which may meet the above requirements. It is such a method that requires some attention now.

2. The method: a semiotic model of the text

For the analysis of the joke we shall accept the semiotic model of the text comprehended as a generative process creating an open hierarchical

system.

According to Cesare Segre (1979: 3), "this type of interpretation falls well within the confines of literary semiotics. A text (in our case, a narrative text) is a whole made up of signs whose progressively larger groupings [...] serve in their turn as signs." Speaking more precisely, linearly arranged verbal signs generate a hierarchical pattern of signs of higher orders, also described as macro-signs, sign complexes, higher semantic structures, great semantic figures (Segre 1979, Markiewicz 1970: 80–89, 1976; Sławiński 1974). In literary terminology, the latter, of varying degrees of complexity, concern the type of narrator, elements of the setting, characters, situations, events, action, plot, etc., up to the complete hierarchy of the whole text which also has the nature of a sign. In this sense, referring to a polemic between Henryk Markiewicz and Janusz Sławiński, we agree that "Wołodyjowski [a literary character] consists of meanings", that is, in the generative process, the semantic field of the sign called "Wołodyjowski" is filled with specific attributes and meanings of expressions uttered by "Wołodyjowski", about "Wołodyjowski", as well as with features implied by events in which "Wołodyjowski" participates (i.e. 'concretization' according to Winner 1979: 48, 53). It should be added that, like every sign, it also functions as a component of a sign of a higher order (analogously to William James's opposition 'tychism – synechism'). In the latter aspect, apart from all the usual roles played by signs, they also have an additional function, i.e. the generative function (or 'referential function' in respect to the fictional world, cf. Okopień-Sławińska 1976: 310–317). Accordingly, in the above example, "Wołodyjowski" is also a component of higher signs (e.g. events, situations, elements of the fictional world he represents) and a vehicle of meanings affecting the highest level of the senses of the novel (e.g., due to its symbolic functions, a vehicle of the ideas of honour, patriotism, courage, righteousness, etc.). Thus we arrive at the classical process of semiosis: such use of words-signs which creates a higher sign of the character, used then to generate and imply still higher signs and meanings.

This kind of model of the text reveals its usefulness if we add an aspect which is particularly significant for the present considerations, namely a thesis that every sign on every level is endowed with aesthetic-emotional qualities, immanent and/or superimposed. In the latter case, aestheticians speak about 'emergent qualities'; it is believed that:

> most works of art are complex constructs with aesthetic qualities
> existing at various levels of containment constituting a kind of

hierarchy. The work of art perceived as a whole – a Gestalt — has over-all aesthetic qualities and the contained parts have also their aesthetic qualities. The aesthetic characteristics at each higher level of containment are 'emergent' not only from the non-aesthetic properties of the construct but 'emergent' also from aesthetic qualities of the contained parts. (Osborne 1977: 17)

The aesthetic qualities of particular signs created in the generative process are thus overlapping (strengthening, negating, or neutralizing each other), which results in specific modulations of effects developing in time, whereas the final aesthetic effect of the text is a result of partial effects, which are theoretically simpler and qualitatively 'purer'. Such a description of the generative process offers a good illustration of the greatly simplified nature of every attempt at deciding that some longer, complex narrative is a comedy.

The proposed model offers a completely different explanation of, for instance, the traditional distinction between three categories of humour, i.e., verbal humour, humour of character, and situational humour. According to the accepted premises, they all constitute the same phenomenon (or quality) occurring on different ontological levels of signs: for a situation to come into being, its components must first be created (setting, characters, event); similarly, if a character is to exist it must first be generated (named, equipped with a set of features, described or shown in action); and both signs such as thesemay come into being only by using language, the basic system of signs. For the fictional world "exists only in so far as it is conjured up by a specific succession of verbal signs" (Kavanagh 1972: 243). Each of the three categories is therefore in a sense a case of 'verbal humour', although in each case we deal with language having different dominant functions. However, one should not conclude that the three categories may be reduced to one, because it would merely result in impoverishing the theory. The above example illustrates the occurrence of aesthetic effects in signs at different levels, each of which is governed by its specific rules, and shows a possible mechanism of superimposing aesthetic effects while employing signs at lower levels as components of higher signs. This implies the need to examine precisely the process of new signs coming into being and the emergence of new aesthetic qualities.

The proposed manner of analyzing the generative process may be described as expansive (or inductive) semiotics in contradistinction to reductive

semiotics, practised by some scholars. As Cesare Segre states:

> Structuralist interpretation actuates in general a deconstruction or breaking down of the text, which it subsequently reconstructs according to categories, formulae, tables. The text ends up in some measure 'detemporalized'. But it is advisable to insist on the importance of the temporal aspect. Along the time axis lie not only narrative and poetic moments but also verbal and conceptual rhythm, recursivity, and disambiguation techniques: reading is an adventure which has been programmed in its phase and duration. (Segre 1979: VIII)

Many semioticians of literature (see studies in Fowler 1975), including Segre himself, begin with a certain transformational formula derived from the text usually in the form of a four-term homology which, in their opinion, generates all the elements of the work, from general ideas to style. Therefore it seems justified to object against such mechanistic treatment of the artistic text – equipped with a repertoire of transformational rules a computer could spin off ready stories based on a given homology.

The proposed approach reverses this procedure because it begins at the lowest level and ends with basic structural oppositions. First of all, it allows the examination of texts precisely in their dynamic temporal aspect which allows simultaneously the identification of even the simplest aesthetic effects and then tracing their modifications and emergence of complex effects. It should again be stressed that in dealing with such a complex phenomenon as the comic, even breaking texts down into simple components of examined sign hierarchies does not lead to the development of any strict 'algebra of aesthetic effects', since differences occur in the reception of even the simplest units; one may only assume that such differences will be smaller in simple forms than in aesthetically complex works. In every case, analysis is to be carried out on scopes of possible effects, based on presumed average responses, so that the conclusions may only have an approximate character whose precision — this time in keeping with mathematical rules — is the lower, the more complex the analysed wholes.

Although the acceptance of the concept of the open hierarchical system as a model of the literary text opens broad integrative perspectives, it also causes some complications. Taking into account the highest levels and hierarchies as wholes, literary works become then components of still higher structures,

such as literary current, epoch, culture, philosophy, sociology, etc. On the other hand, the lowest levels — in keeping with the accepted assumptions — should be 'infinitely' divisible into ever smaller components, such as sentences, words, morphemes, phonemes, graphic and acoustic elements, which also go beyond the field of literary theory and enter other fields of science. Such a model places the text within a reference system which is too complex to grasp and utilize for practical purposes. For this reason, introducing the principle of significance for a given discipline, particular specialized enquiries isolate — always with some arbitrariness and simplification — only certain sections of the hierarchy or scopes of levels for examination. And thus, for instance, linguistics covers the levels from phonemes to sentences; in literary studies, an analysis of poetry, in which the phonic organization of discourse is relevant, begins as a rule at levels lower than an analysis of prose. If we accept such a model of the text, perhaps one of the broadest and most comprehensive in literary theory, it results precisely from the complexity of the phenomenon of the comic whose analysis it is to serve.

3. The elementary unit

The proposed model of the literary text as an open hierarchical system naturally entails the necessity of determining the level at which text analysis should begin in order to examine the mechanism of the comic. This kind of choice of the level can be reduced to the selection of an elementary unit of the text capable of producing the examined phenomenon. The basic difficulty is posed by the transition from the linear nature of the medium to the hierarchy of the signs it generates, for there is no unambiguous equivalence of both 'dimensions' of the text, i.e. it cannot be stated that a unit of the linear sequence (word, sentence, paragraph, chapter, part, etc.) creates only one kind of level of signs. Most frequently we encounter a situation in which one sentence creates at once a number of signs at different levels (even though these signs may have merely empty semantic fields). It is probably this kind of difficulty that Greimas had in mind when he emphasized the contradiction inherent in the hierarchical understanding of the text, because "the units of communication with different dimensions can be simultaneously recognized as equivalent" (1966: 72–73). Yet, on the other hand, Janusz Sławiński rightly maintains that "there exists a certain continuum of semantic units which make possible the transition from very simple particles of meaning to complex meaningful units which we describe as presented 'events', 'plots', 'objects', 'persons', 'narrative situations', etc." (1974: 140).[4]

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[4] „Istnieje jakieś continuum jednostek semantycznych, umożliwiające przejście od

Speaking about the elementary unit, we cannot take into consideration a precisely measured length of the text. The lack of "perceptible homology between the signifier and the signified" while moving from the plane of language to that of discourse was frequently emphasized by Roland Barthes (1970a); instead he proposed his own unit, called 'lexia', established in a purely empirical way, determined by a concern for convenience and described as "a segment within which we observe the distribution of meaning" (Barthes 1985: 85), often of very different length. If we cannot employ his conception, it is mainly because in his analysis Barthes entirely ignores the aspect which is most important for us, i.e. the comic, for which he is justly criticized (McFadden 1982: 226–230). For that reason, the basic criterion for us cannot be 'the distribution of meaning' but the ability to produce the comic.

As has been noted above, students of the comic discover stimuli evoking laughter practically at all the levels of the text, from single phonemes and letters,[5] through aesthetically charged words, word complexes, and rhetorical figures, one-sentence maxims, paradoxes, epigrams, jokes, anecdotes, to humorous tales, comedies, comic short stories, and novels. Thus no attempt is made to establish the level of the elementary unit. Yet if we take a closer look at the examples they provide, it will turn out that there occur some dependencies which create certain conditions for the functioning of these stimuli and these determinants may serve as criteria of selection for us.

The first condition is the degree of dependence of the stimulus on context. Units at the lowest level, sounds, phonemes, or syllables, by themselves seem to be aesthetically neutral and only in some situations (e.g. stammering) can they evoke "gales of laughter" (Fry 1963: 33). Since the decisive role is played here by the circumstances which enforce proper connotations on the recipients, it is clear that in such cases one would have to examine infinitely varied contexts rather than the units themselves.

Smaller context-dependence is shown by units at the next higher level covering the range from word to compound sentences which, with some

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bardzo prostych drobin sensu do złożonych struktur znaczeniowych, które określamy jako przedstawione őzdarzeniaŕ, őwątkiŕ, őprzedmiotyŕ, őosobyŕ, ősytuacje narracyjneŕ itp." (1974: 140).

[5] In enumerating various aspects of humour that cannot be explained, Fry discusses the surprising effects evoked by the letter 'k' whose "sound is itself enough to send people into gales of laughter" (1963: 33). In this context, one may also cite the note by Kafka who found "the letter K offensive, almost nauseating" or the analysis of meanings communicated by single sounds by Leiris (cf. Steiner 1975: 197–198), as well as the well-known example of associating vowels with colours in Rimbaud's poem *Voyelles*.

simplification, may be called the level of rhetorical figures (comic epithets, puns, equivocacy, asteismus, charientism, double-entendre, paronomasia, paradoxes, irony, parody, etc.). There can be no doubt that we deal here with many forms characterized by the comic (handbooks of rhetoric enumerate many such tropes and describe their mechanisms) and, additionally, they are relatively autonomous (cf. anthologies of aphorisms, epigrams, or paradoxes). A more detailed discussion of these forms, their structure, relation to the comic and operation in reception is beyond the scope of the present paper (only on the subject of irony see book-length studies by Muecke 1969, Booth 1974), so we offer only three main reasons for which they cannot be accepted as elementary units.

(1) Rhetoric is not concerned with the comic potential of these forms since they serve the traditional dominant aims of an utterance, i.e. persuasion, emphasis, ornamentation, diversification, or defeating the opponent by ridiculing; thus they play an instrumental function, as devices subordinated to the overall tactics of manipulating the reaction of the recipient.

(2) Depending on the fashion, poetic style and aesthetic taste of the epoch, rhetorical figures undergo far reaching transformation, often totally losing or acquiring the comic effect; let us quote the example of 'mimesis' which until the 17$^{\text{th}}$ century meant "imitation for the purpose of ridiculing" and today has completely lost this sense, or paronomasia, which originally denoted 'beauty' and only today is it associated with humour. Therefore, the relation between rhetorical figures and the comic cannot be accepted as an immanent feature of these forms.

(3) Finally, rhetorical figures do not meet other significant conditions, important in narrative texts, namely, they are not long enough to acquire the temporal character, necessary for a dynamically developing text. If one may use an analogy to music, comic tropes seem to function like single chords rather than an expanding musical phrase.

All these conditions are fulfilled by the unit at the next higher level, i.e. at the level of Jolles's simple forms, namely the joke (in the sense specified above). A joke is a complete, closed text, therefore it is a unit formally independent of the context; it does not have to be an instrumental structure, and its relation with the comic is (intentionally) immanent; it is also the shortest narrative form endowed with all the characteristics of the narrative and developing a typical dynamic of effects in time.

Still, before passing to the analysis of the joke, let us repeat that the acceptance of this form as an elementary unit does not entail a negation of comic effects which may occur at lower levels. On the contrary, in keeping

with the general principle of expansive semiotics, it should turn out that in reality the joke may be regarded as an expanded form of some rhetorical figures, although in contrast to them the very process of expansion aims primarily at narrowing down its aesthetic-emotional effects and directing them at the comic.

4. The joke and its structure

There is quite an abundance of literature devoted to the joke, covering all the fields dealing with humour and developing theories of the comic. Hence, it is not difficult to find features common to various concepts or at least recurring in some approaches and then translate them into the terminology accepted in this paper.

The basic element of the joke is the so-called bisociation, also called by some writers an incongruity, discrepancy, contradiction, etc. It occurs in every theory: for linguists it will be any departure from a norm of the language (Morin 1966, Milner 1972, Pocheptsov 1974); for anthropologists and sociologists — breaking a custom or rule of behaviour (Douglas 1968, Johnson 1976, 1978); for psychologists — overcoming the internal censor or a taboo or a discharge of aggression (Freud 1960, Holland 1968). The consequence is a large number of various lists and repertoires of norms which can be broken in order to create a bisociation and the number of such rules is practically infinite.

Yet it should be noted that the principle of breaking a norm also constitutes the basic element in definitions of many rhetorical figures: a norm is broken by an insertion of an additional letter in a pun or paronomasia, combining contradictory words or sentences in an oxymoron and in the so-called expanded oxymoron, i.e. a paradox; we also find such terms as paradoxical characters, situations, events, and even whole stories and novels that are based on a paradox on some level of their semiotic hierarchy. A similar phenomenon is encountered in such cases as a proverb expanded into a parable, a metaphor into an allegory, or a number of variants of irony (situational, dramatic, tragic, the irony of fate, romantic, cosmic).

Thus we are dealing with a mechanism that is apparently very simple (transgression of a norm), although the effects and forms it can generate are practically unlimited, mainly for two reasons: due to the infinite repertoire of 'norms' and due to the phenomenon of semiotic expansiveness, illustrated above with the example of 'growing' rhetorical figures which give rise to much longer forms. The phenomenon of semiotic expansiveness constitutes an essential obstacle for linguistic theories of humour since they cannot deal

with the category of 'situational humour', because it goes beyond purely linguistic mechanisms, so they have to employ catch-alls like isomorphism or homomorphism.

It is at this point that the semiotic approach proves its usefulness. A noun or a proper name is something different than a literary character since the sets of rules that govern the subject or object differ from the rules for the functioning of a character in a given situation in the presented world or an event in a plot. Semiotics makes it possible to distinguish levels at which there occur verbal signs and signs of the higher order and different rules operating at these levels. Therefore, instead of multiplying the repertoires of norms, we should rather concentrate on the functioning of the mechanism of bisociation at various levels and on the manner of using them for the creation of comic effects.

If a bisociation is to be properly received and fulfil its task, several conditions must be met. First of all, it must be adjusted to the sign competence of an average recipient;[6] the latter denotes the necessary knowledge of all the potential denotations and connotations of signs generated at particular levels (although it is not known which of them will turn out to be significant on a particular stage of reception). The second factor is the degree of discrepancy between the components of a bisociation. In view of the necessity of discovering the point of the joke, there must exist a specific, often unusual point of view, plane, or context in which the solution reveals the relation between the components of the bisociation. In other words, two discrepant sets (or series) from which bisociation components are derived, must overlap (or intersect) in a third set (or series) which reconciles the discrepancy and shows its apparent nature. The third condition is a proper number of clues leading to the solution of the bisociation. In literary theory this condition finds its confirmation in the concept of text coherence (Mayenowa 1974:

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[6] Excluding the prior knowledge of the relations between signs and their significance for the point of a joke, 'sign competence' seems to be a more precise term than 'shared knowledge' proposed by Johnson (1976: 311). At the same time, it should be admitted that, similarly to irony or beauty, the comic must be confirmed subjectively. One cannot wholly exclude the possibility that both the author and the recipient may react quite individually, due to personal prejudice or likes, mental deviation, private trauma, tastes, transitory moods, which escape all generalization. The recognition of such a possibility also admits the existence of a limit of objective, scientific reflection, not only about the comic. Thus, without negating the possibility of such arbitrary, subjective cases, we take into account a recipient who is 'statistically' average, sociologically and psychologically. There are many arguments indicating that, in spite of differences, we respond with laughter to the same stimuli as representatives of geographically and historically distant cultures.

259–267), which describes the nature of a complete whole — also in the logical sense – of every message (after filling up its ellipticality on the basis of sign competence). An additional element which evokes the expectation of text coherence is the so-called modal frame or 'metatextual' devices (title, announcement, or another signal at the beginning and end of the message; Mayenowa 1974: 131–133, Okopień-Sławińska 1976: 320). In this way, the text acquires the nature of a closed whole, a complex sign, coherent semiotic hierarchy endowed with an overall sense.

The assumption about proper sign competence introduces an important criterion of classifying bisociations, different from the repertoire of norms. It is the criterion of the degree of universality determined by the whole scope of the bases of bisociations, from the most common laws of nature, through conventions, customs, and rules obligatory in a given civilization, culture, race, nation, country, region, to social and professional circles and the smallest groups of friends, couples, etc. (the so-called private or inside jokes; theoretically, there is a possibility of a bisociation understandable only for the author of the joke, based on some completely private, individual norm — its revelation would automatically broaden the universality of the bisociation). The universality criterion explains, among others, the contradictions between theories of humour comprehended as an exclusively social or exclusively individual phenomenon.

Yet the determination of the degree of universality may be carried out only after specifying the level at which it is concretized in the text of a joke. For every narrative joke may be transformed (analogously to a summary of a longer narrative)[7] into more concise forms of the 'question — answer' type,

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[7] The problem of summaries is one of the primary and most difficult tasks of the semiotics of the narrative. On the one hand, as Culler writes, "One elementary fact about our literary competence is that when called upon to summarize plot we can do it so in a single sentence or in a long and detailed paragraph. There is, in other words, a hierarchy of appropriate plot summaries, running from the most succinct to the most detailed, and there would be a substantial agreement among readers about what ought to be included at a particular level of generality [...] What is striking is how much agreement there would be about what should *not* be included in these summaries [...] We know that there are subsidiary elements and a proper theory of narrative should provide a model which explains how we know it." (1975: 128–129). A partial answer to this question is provided by the proposed distinction between the basic mechanism and optional elements. On the other hand, the losses entailed by summarizing have been excellently described by Sławiński (1974: 140): "Many renowned conceptions in theory of novel are characterized precisely by the fact that they concern a summarized work, i.e. reduced to a situation in which its unique 'being in the word' becomes something neutral, exchangeable for other modes of existence, also non-verbal ones [...] Analytical

one-sentence humorous riddles, paradoxes, or oxymorons, although it would entail ever more radical changes of effects till their complete neutralization. It is therefore necessary to distinguish the so-called basic mechanism and optional elements. The basic mechanism describes a set of elements and their relations necessary to express a bisociation at the lowest level of the semiotic hierarchy of the text. The distinction of the basic mechanism implies, in turn, the existence of optional elements (additional or superimposed). They have no great importance for the universality of a bisociation but may be employed to adjust the whole text to a particular recipient, to sharpen the effects and change their character. They may have a different, usually narrower, universality than the basic mechanism which, however, need not change. For example, a joke about Mr X does not cease to be a joke (i.e. it does not lose its comic character) if the recipient does not know Mr X and the bisociation is based on a human fault or weakness. Personal knowledge of Mr X may sharpen the satirical edge of the joke, but it is not necessary for the understanding of the bisociation. Yet, if the bisociation is based on some feature characteristic only of Mr X, this feature would then constitute a component of the basic mechanism and would determine the relative degree of its universality.

Apart from the universality criterion, the concepts of the basic mechanism and optional elements are necessary for another reason, which has already been mentioned when talking about the disappearance of the comic during a gradual abstraction the bisociation from the text. As Arthur Koestler (1975: 15) states, "each combinatorial, bisociative pattern is trivalent" and may lead to three kinds of responses which he wittily calls "HA-HA, AHA, AH" reactions and which correspond to comedy, scientific discovery, and tragedy, respectively. Koestler's theory raises some objections, but it clearly shows insufficiency of bisociation alone for explaining the phenomenon of the comic and the necessity of taking into account the decisive role of the form of expression: bisociation is merely a potential which is actualized only

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operations are then carried out on a novel comprehended as an object of possible transformations, reduced to a state in which it may be 'told' in one way or another, because it is no longer told in any concrete manner." ["bardzo wiele eksponowanych koncepcji w zakresie teorii powieści odznacza się tym właśnie, że dotyczą one utworu streszczonego, to znaczy zredukowanego do takiej sytuacji, w której jego jednorazowe őbycie w słowieŕ staje się czymś neutralnym, wymiennym na inne sposoby istnienia, również pozajęzykowe [...] Dokonuje się operacji badawczych na powieści ujętej jako przedmiot możliwych przekładów, sprowadzonej do stanu, w którym może być ona őopowiedzianaŕ tak lub inaczej, ponieważ nie jest już opowiedziana w żaden konkretny sposób."].

when it is given a concrete form narrowing down the final effect.

Speaking most generally, the aesthetic effect of a bisociation in a joke is determined by a number of manipulations carried out on the stream of information provided by the text. They consist mainly in applying the selection of data in several oppositions emerging in the process of transferring bisociation to higher levels. Apart from the conditions of bisociation mentioned above, these oppositions include: selective conciseness vs. verbosity (expansion – condensation), implicitness vs. explicitness, an element of surprise and its degree regulated by appropriate ordering of information, qualitative (aesthetic) selection of signs at various levels, sudden reversal in the scale of importance, finally, typical stages in joke reception. All these oppositions are strictly interrelated.

Thus, when Shakespeare claims that "brevity is the soul of wit" we may certainly believe him as long as we deal with wit but in the case of the narrative joke there appear doubts. For when a noun is replaced by a description of a character, and a verb — with a report about an event, the principle of brevity seems to be broken. Yet this conclusion is only apparently valid, for at the same time we move to a higher semiotic level and (a) the implicitness of the sign is increased or (b) a dynamic element is introduced, or still (c) a misleading signal is provided. In case (a) the passage to a higher level is connected with the introduction of new rules and, instead of directly communicating a fact, we create a sign whose connotations must be guessed by the recipient (e.g. instead of saying that somebody is stupid, we report an event which reveals that person's stupidity). In case (b) in the joke there occur sentences which apparently do not add any new information but their aim is to delay the presentation of the point of the joke. In case (c) an attempt may be made to win the empathy of the recipient before revealing the point or blocking her potential pity or sympathy for the 'victim' of the joke. Brevity becomes one of the most important features of the joke when hiding the solution of the bisociation, weakening negative effects or the very manner of expressing the point. Thus we deal with selective brevity, subordinated to the strategy of the whole text and related to other oppositions.

The most important data, crucial for the solution of the bisociation and discovering the point, are always only implied. The aim of the tactic is to draw the recipient into play, making her begin the process of interpretation on the basis of incomplete data, forcing her to start guessing, i.e. formulating the so-called abductions (Eco 1976, Eco and Sebeok 1983; cf. footnote 11). In the text of a joke, bisociation constitutes a question, an enigma, or a surprise,

and since – in opposition to rhetorical figures — the joke develops in time and ends with a point, the recipient performs the process of reconstructing the semiotic hierarchy during which there occur unexpected discoveries and revaluation of successive interpretative decisions. Only the point of the joke reveals the particular perspective necessary for the solution of the bisociation, from which the whole hierarchy acquires a new character and exposes the reversal of the scale of values: details become significant, obvious things mean something contrary to what they usually mean. The point reveals the so far "hidden code" of the joke and enables "the final act of integration" (Kavanagh 1972: 244), restoring to the text its coherence which at first was disturbed by a bisociation.

In the joke, the fundamental manipulation consists in a sudden change of the plane of reception: it aims at diverting the attention of the recipient from aesthetically negative effects created at the beginning and transferring it to the logical puzzle (bisociation). As a result, the plane which, according to the 'usual' code, would be insignificant, requires more attention from the recipient than planes important on the usual scale of values. In this way, the joke creates a paradoxical situation in which the logical solution of the riddle is more urgent, if only temporarily, than even the most tragic events or ethical considerations.

The presence of such procedures in the text may be easily noticed when we take into account ways of 'killing' jokes by persons who can't tell them. Addition of superfluous information, already present in the text implicitly, deprives the recipient of a chance to make the discovery on her own, and thus also of the surprise; furthermore, additional information indicating a mistaken interpretation itself becomes a source of humour (a kind of a 'meta-joke'). But the effect of the joke may be destroyed not only by additional information or data presented explicitly (i.e. breaking the principles of conciseness and implicitness). For one may preserve the original bisociation, the amount of information, and its implicitness, but it would merely suffice to change the order of the provided data in order to reveal prematurely the clues leading to the point, to lose the element of surprise and total disappearance of comic effects.[8]

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[8] As far as the order of providing information is concerned, Eco (1989) makes several interesting remarks about a fairly different domain which seems to offer apparently fewer possibilities of manipulation, namely television, where the producer of a live transmission can radically change the quality of photographed reality mainly by selection and ordering. It shows how many more possibilities are offered by literature (as well as the radio) in which images are not 'given' but must first come into

This takes us to the last aspect of the joke, namely to its dynamics. The following stages of reception may be distinguished: stage 1 depends on the occurrence and kind of the modal frame (usually an announcement of the genre of the text); depending on the frame and recipient's expectations, stage 2 brings an aesthetically neutral and/or half-comic statement of a fact; the next two stages are characterized by specific aesthetic qualities and include: stage 3 — negative or tragic surprise, and stage 4 — comic resolution (corresponding to the tragic and comic potential of a given bisociation); finally, stage 5, following the burst of laughter, may be described as a moment of reflection or pensiveness, preceding a return to stage 1, before the announcement.

If the first four stages seem to raise no serious objections and within the accepted conditions one may attempt a possible exact interpretation of aesthetic, logical, and moral meanings created at particular levels of signs, stage 5 — when the joke as a whole assumes the status of one sign and is placed in a broader frame of reference to accomplish an overall, synthetic evaluation — may seem controversial.

Undoubtedly, it is a mistake to claim that jokes "self-destruct immediately after consumption" (Riffaterre 1978: 16), and although they do not achieve the depth of poetry, most of them contain the proverbial 'grain of truth' or deeper sense, which is often far from comic. Still, conclusions concerning the last stage are most difficult to ascertain precisely, because the above assumptions are no longer sufficient and one should additionally presuppose the recipient's ability and willingness to look for a deeper sense in the jokes; a critic may only identify the potential for such reflection and its scope encoded in the text.

However, in this paper the efficacy of distinguishing this stage is more important. For example, when Aristotle maintains in *Poetics* that the comic results from the ridiculous in the form of 'a harmless defect', he concentrates on the moment of perceiving the comic stimulus in a short, direct perspective (every defect is harmful, mainly for the person who has it). On the other hand, an opposite opinion of Plato, expressed in *Philebus*, that the delight provided by a comedy is never 'pure' because it combines laughter with suffering and always results from a serious defect (most often envy and presumptuousness), seems to be based on reflection from a longer temporal

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being thanks to language. This specific deficiency of specific details in descriptions is regarded as a basis of the phenomenon of 'semiotic intensification' and as an advantage of literature over film camera (cf. Stanzel 1978: 258, as well as his remarks about Ingarden's places of indeterminacy (*Unbestimmtsheitstellen*) and Uspensky's concepts).

perspective, called stage 5 above. This example proves that the omission of that stage may result in apparently contrary statements which are actually both valid but concern different stages of reception.

The reflective stage in joke reception may raise additional doubts because it is dependent on extra-literary context (for instance, the recipient's reflection may be blocked by an announcement of the next joke). Yet, when we move on to longer narratives, the context will be created within the text and then elements such asa rapid sequence of episodes, quick action demanding more attention than the sense of single joke structures, or the opposite — an abrupt ending of a chapter, suspended action, or a pause inviting reflection, will prove important instruments for manipulating the responses of the recipient.

The working model of the joke structure presented above does not constitute 'necessary and sufficient' conditions of the occurrence of the comic, which is indicated by the very nature of the correlated oppositions determining the field of choice; it is rather a set of the most important techniques narrowing down the effect of bisociation to the comic in the process of passing from one level of signs to another, higher level, that is, in the process of expansive semiotics. Obviously, the latter is not limited to the discussed passage from the simplest forms of bisociation to the joke, but it reaches further and also covers longer and more complex narratives, stories and novels.

The starting point for further analysis is thus the assumption that in every longer comic narrative there must occur at least one structure analogous to the joke model.

5. The joke in simple structures

Actually, one could repeat here the claim that as far as 'situational humour' is isomorphic in respect to 'verbal humour', a comic short story is isomorphic in respect to the joke pattern (or even a rhetorical figure or a bisociation). Yet such a statement merely reveals how little is explained by the concept of isomorphism and how important and complex the rules that govern it may be.

In keeping with the principle of the double aspect of every sign, accepted above, one may state that we are now interested in the joke as a whole becoming a component of a larger structure. Hence, the basic question concerns the ways in which joke models function in broader and deeper hierarchies created in short stories.

Some of these ways are quite obvious and require no extensive commentary, especially when a single joke structure may be clearly isolated as part of a short story. For example, it may then be employed atthe very end as a characteristic comic point of the whole tale. Its effect would then depend on the nature of the beginning: a lengthy preparation, kept in a lightly comic tone would lead to a climax in the ending, whereas a neutral, sad, or tragic beginning — leading to the ending as a joke pattern — may constitute a comic relief of the suspense or a tragic-comic ending, resulting in typical 'mixed effects' (numerous examples are provided by some tales by Boccaccio, Maupassant, Saki, or O'Henry). Theoretically, a reverse situation is possible, when the short story begins with a joke; however, if there occurs only one such joke structure, the comic mood is likely to be broken and instead of keeping up the effects of the point we would instead find an extension of stage 5, the reflective stage, which would deprive the narrative of its comic character and thus exclude it from the discussed type of short stories.

Remaining with single joke structures in the short story, one may find an interesting example of a text in which such a structure is used as a basis for the whole story, namely a tale from the *Decameron* known as "The Falcon" (Day 5, Tale 9). The very insertion of the joke structure in a longer narrative must bring about quite radical modifications, if only because of the more concretized presented world. Characters are no longer empty signs, provided with one or two features narrowing down their semantic fields to achieve comic effects; now they are filled with attributes of personality, social context, historical background, etc. Naturally, selective brevity plays here a significant role too; according to Booth (1963: 9–16), "too much moral stature will spoil the comedy, too little will destroy our desire for his [the protagonist's] success." Also secondary characters receive various treatment. The most superficial of these is the presentation of the husband, whose death could weaken the comedy if its negative effects were not blocked by strictly syntactic means. A fuller presentation is given to the character of the son, whose fatal illness is in fact extended in time in order to overshadow the joke structure at the climax of the story. Even more functional are changes in the more fundamental aspects of the joke structure: different ordering of the data, ending in the form of an epigram rather than a point of the joke (thus blocking the potential of the reflective stage), finally, a greatly expanded modal frame which in advance announces a happy ending. All these departures from a typical joke structure result in a great weakening of comic effects, the discovery is less sudden and stress is transferred from the plot to the reactions of characters. In consequence, instead of a joke with

evident elements of 'black humour', we find a short story representing the category called 'sentimental comedy'.

Yet it seems that in longer comic narratives we rarely deal with single joke structures. More frequent are whole sequences of such forms. The simplest construction of this kind would be a series of joke structures linked by the main character or some kind of plot (e.g. a travel). Works of this type are quite numerous not only among short stories but also novels (e.g. the so-called 'chain' composition; such narratives like Apuleius's *Metamorphoses*, Petronius's *Satyricon*, old romances, picaresque tales, and in modern times – J.K. Jerome's *Three Men in a Boat*, numerous stories and novels by P.G. Wodehouse and others). Narratives of this kind are usually characterized by frequent changes of aesthetic effects of particular joke structures (in order to avoid monotony in longer works), as well as relying on previously created contexts and signs in order to achieve the desired effects in later structures.

A transitional form between these relatively simple forms and much more complex narratives may be found in another tale from the *Decameron*, namely "Alatiel" (Day 2, Tale 7). Similarly to "The Falcon", "Alatiel" has one joke structure in its overall construction (the bride's travel, loss of chastity on the way, happy ending thanks to deceit), but one element of this structure (rape) is expanded into a completely new joke structure and repeated eight times (so many adventures happen to the bride and each ends with frolics in bed). This time, instead of a weakening of the aesthetic effects after transferring a joke structure to a short story, we find a great intensification of comic effects, which results in the tale acquiring the character of a farce and grotesque. Naturally, the strengthening of these effects is a consequence of the accumulation of the points of successive repeated joke structures, whose frequency and repetitiveness weaken the strong contrast between sudden deaths of the lovers and the erotic result of every adventure (Segre 1979: 122–136). In this way, the tale becomes a farce even in the etymological meaning of the term, lacking the reflective stage due to the quick succession of jokes in the action and parody of the convention of romance.

One should also note a characteristic change of the semiotic hierarchy in both tales by Boccaccio: in "The Falcon", the hierarchy is shorter and deeper (fewer events, fuller characterization), whereas in "Alatiel" it is longer and shallower (more events, more stereotypical characters). In the case of the second tale, the construction of the basic joke structure would require only one 'adventure' of the heroine but their multiplication merely extends the hierarchy in order to intensify the effects rather than deepen the meanings. Nor is there any reason to limit the sequence just to eight repetitions, apart

from the author's inventiveness or his subtle sense of the border whose crossing would entail the danger of monotony. Thus, if in the first case one may speak about the vertical integration of the hierarchy (a narrow and deep concretization of signs), in the latter case there occurs a horizontal integration.

The above examples of the ways the joke structures function in short stories constitute relatively simple cases, yet they are important both for the clarity of argument and for the examination of the advantages of the proposed method when compared with other approaches applied to the same texts (compare the analysis of "The Falcon" in Booth 1963 and the semiotic analysis of "Alatiel" with a four-term homology in Segre 1979). Moreover, the presented ways the joke structures operate in these texts should facilitate an examination of such structures in much more complex narratives.

6. Two Narratives by Evelyn Waugh

In order to illustrate a more complex construction of a comic short story, an analysis has been carried out of a short story by a master of English comedy, Evelyn Waugh, entitled "The Man Who Liked Dickens". The basic joke structure in this story is an almost pure semiotic process consisting in filling up the semantic fields of two signs-characters and a simultaneous reversal of the relation between them. The protagonist of the story, whose features are revealed in a series of jokes, gradually discovers the real nature of another character, McMaster, in two sequences of jokes. The first sequence concerns particular stages of McMaster's transformation and a change of his role — from that of the saviour, through a generous host, to a jailer, which automatically changes the status of the protagonist, who is first a saved traveller, then a guest, and finally a prisoner. The second sequence shows the protagonist's futile attempts to escape, revealing McMaster's surprising deceitfulness, cleverness, and eventually his grotesque omnipotence. The semantic field of McMaster is initially quite empty, since the cultural code does not apply — the setting is the Brazilian jungle, but McMaster is a white man, not a Native American. The cultural code operates in the case of the protagonist, a man from our world, purposefully creating contrast and evoking empathy in the reader, thus forcing him to accept the protagonist's reactions and his interpretations.

Joke structures assume mostly the form of events, although their functions are varied. They are not only elements revealing features of characters (which is particularly important in this text) but also components of the whole action; their aesthetic-emotional effects, in their dynamic aspect and

varied frequency of joke structures, block the recipient's sympathy, introduce elements of surprise, or even fantasy, weaken potentially tragic or grim qualities or — on the contrary — expose them, and finally they produce 'mixed effects' by superimposing aesthetically contrasted qualities (e.g. comic utterances of a character in the state of delirium). A new function of joke structures appears at higher levels in which literary conventions are evoked and then negated. In opposition to the tale of adventure or the traveller's tale, evoked at the beginning, the short story does not end but begins with a happy ending (the protagonist saved from death), and only on the very last page does it reveal the purpose of this ordering: the protagonist is saved only to spend the rest of his life reading aloud Dickens' novels to a half-lunatic saviour-jailer. This is but one of many traps set for the reader, and such traps are numerous in the text.

It is obvious that in every comic narrative an important role is played by numerous joke structures. If in the case of "Alatiel", we speak about the frequency of such structures and the accumulation of their effects, in Waugh's story one should also speak about their density and superimposition of effects, for there occurs both vertical and horizontal integration (there is a repetition of analogous structures only in one section of the story — three attempts to escape). Moreover, similarities occurring in other parts concern mainly the kinds of points and types of bisociation. This observation may serve as a basis for a more general conclusion, namely the subordination of a series of determined joke structures to the fragment of the presented world they generate. In Waugh's story, one may notice evident genre differences between particular parts: the first one moves from naturalism to grotesque (in the jungle); the second one represents a typical social satire (the fashionable world of London) with elements of the burlesque (the wife's betrayal); finally, the third part returns to the conventions of the grotesque and black humour with elements of surrealism, with overlapping effects of comedy and horror. But this kind of correlation between generic convention and the setting is fully developed in the next narrative by Waugh.

The short story "The Man Who Liked Dickens" has not been an accidental choice or one determined by its specific and complex mechanism of generating humour. The main reason for its choice is the fact that for Waugh it became a starting point for creating one of his best novels, namely *A Handful of Dust* (1934), an outstanding work which enjoys well-deserved high praise from critics and historians of literature. This is worthwhile stressing because, contrary to numerous attempts of applying semiotic analysis to clearly secondary or popular literature (fairy tale, crime story), we subject

to such analysis an excellent work; at the same time the construction of this novel does not represent a simple chain composition but it is an organic and overall development of the potential already present in the short story. A full analysis of the novel carried out by this method has been presented elsewhere (Kolek 1985b), so here we shall summarize the most important processes observed while the short story was expanded into a novel.

The starting point in the novel is mainly an increase in the number of secondary characters. If in the original text of the story they remained empty signs, e.g., the wife's lovers, whose only function was to destroy the marriage of the protagonist, in the novel are transformed into representatives of a whole social group, into "the world of the Beavers" (Chapter I). This world is generated in a process characterized by a high density of joke structures (jokes scattered, superimposed, extended in the action) whose points, apart from aesthetic-emotional qualities, give this fragment of the narrative the nature of the code of satire, implying determined evaluations and ideas. Against this background, the 'world' of the protagonist, Hetton Abbey (Chapter II), is generated in a series of scenes which also are joke structures, but their density is lower, the qualities of their points are milder, and the transitions between particular joke structures are gradual and, additionally, often separated by almost lyrical descriptions, actually facilitating the reflective stage. As a result of these changes, one may say that the world of Hetton Abbey, whose generation in the short story covers merely one paragraph, is here created by means of the code of romantic comedy (according to the classification of kinds of comedy by Frye 1973: 184-185).

The world of the main character emerges from the narrative as an unstable system, threatened from the outside (by the world of the Beavers) and from the inside (its main component, the wife, belongs to a different world). The action which then develops illustrates the process of the breakdown of this system, again in a series of jokes-events. The only significant exception is the fatal accident of the protagonist's son, although the aesthetic-emotional effect of this event is weakened by the inhibitory devices and the imposition of 'apparent irony', and then neutralized by a gradual passage to burlesque and comedy of the absurd. A metaphorical presentation of the collapse of this world is given in the form of a description of the game of solitaire in almost purely semiotic terms — ascribing meanings to particular cards, establishing their hierarchy and precedence, rules, creating an arrangement with an in-built element of randomness. The description repeats in miniature the process of creating the world of Hetton Abbey and its collapse. The components of this world (wife, husband, residence) are scattered, 're-shuffled',

and finally placed in other, apparently more lasting or better systems.

The rest of the novel constitutes a relatively faithful repetition of the action of the short story, though with modifications resulting from already highly developed contexts. Thus the whole expedition to Brazil acquires a much deeper meaning and turns into a search for an alternative system, even more idealistic than Hetton Abbey; the action is shown parallelly in the jungle and in London and shows the consequences for the 'components' of the broken system and a simultaneous process of placing them in other combinations until their stability is questioned: the suggestion of cyclicity in the very end suggests an only relative stability of new systems and an always present possibility of a repetition of the whole cycle of events from the beginning.

A Handful of Dust is thus an organic expansion of the whole short story (so that one cannot speak here about the phenomenon of 'inserting' a shorter narrative into a longer one), but this expansion produces new dimensions of the hierarchy in the novel. First of all, expansion concerns new complexes of signs, 'the worlds', endowed with determined systems of values implied at once by the stylistic-generic codes employed in their creation and determined in turn by joke structures (frequency, density, qualities of points, abrupt or smooth passages). As a result, the novel creates a system of correlated oppositions: materialism, determinism, and satire vs. idealism, accident, and romantic comedy. In the whole work, the aesthetically milder code becomes a typical misleading index: what seems to be a lesser evil, may lead to consequences much worse than what is openly criticized. Thus, if the short story is mainly a work of entertainment (a comic horror story), the novel based on it raises several deep, essential problems of human existence and its universal significance (the questions of happiness, ideals, rules and sense of shaping one's life, the problem of tradition and its falsification, the issue of religion and its role in human life). The multidimensional expansion of the novel creates a hierarchy which is the most complete of all the texts mentioned above. It is a hierarchy whose interpretation demands going far beyond the system of the work itself mainly due to the greatly expanded cultural and symbolic codes,[9] which have merely been mentioned briefly

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[9] The cultural code is evoked by numerous references to the Bible, St. Augustine, Voltaire, Dante, T.S. Eliot, Conrad, and others. On the other hand, the symbolic code is most evident in the case of the residence of Hetton Abbey which is also the most difficult to interpret. It combines the conventions of romance, fairy tale, Gothic story, the Arthurian cycle, the poetry of Malory and Tennyson, as well as the style of architecture (Gothic – Neo-Gothic or Victorian Gothic), and when it becomes identified

above.

Yet, from the point of view of the subject of the present paper, much more important are the very complex and rich aesthetic-emotional effects created in the novel. Especially broad is the scope of the world-code complexes. Apart from complexes 'the Beavers — satire' and 'Hetton Abbey — romantic comedy', the novel contains others, e.g. melodrama or sentimental comedy – Thérèse de Vitry, grotesque (naturalism — the absurd) — the jungle, social comedy — Brenda and her friends, stoic comedy — Mrs Rattery, farce — London demimonde, grotesque — the vicar's homily, family comedy — John Andrew, the nanny and Ben. Apart from the superimposed function of implying moral and ideological evaluations, these codes also determine the manner of generating the presented reality and establish the generic convention of the work. Similarly to the joke structure in short stories, these codes — through the characters generated by them — are arranged into sequences, contrasted, entwined, superimposed. In addition, in a sense between them, there occur numerous and varied inserted non-comic passages, lyrical, sometimes pathetic or even tragic. One critic, though not a semiotician, described the protagonist as "a wooden puppet weeping real tears" (Bergonzi 1963: 25), thus inventing an almost semiotic image to illustrate the complicated effects evoked by this character. One may therefore sum up the above remarks with a statement that the original hierarchy of the short story has been organically broadened and enriched with new levels of signs, new aesthetic effects, new senses, thus producing an outstanding work of art.

7. Conclusions

(A) The limits of the method

The lowest level at which the application of the proposed method should begin has been discussed above, while determining the elementary unit on the plane of simple forms, so there still remains the upper level to be determined. Although we have finished the analysis at the level of the literary work, in keeping with the principle of semiotic expansiveness, it should be possible – at least theoretically — to pass to higher levels. If the assumption about the double aspect of every sign is true, and the literary work as a whole has the nature of a sign, then the above analysis is incomplete, since it ignores the other aspect of *A Handful of Dust*, i.e. being a component

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with love of tradition, it turns into a paradox — the residence becomes a prison which the prisoner does not want to leave.

of higher systems. According to Jerzy Pelc, "every literary work is a sign: of the experiences of the author, of times, the prevailing fashion, artistic trend, cultural current, a sign of the objects and events presented in the text." (1984: 342).[10] Apart from the last sense, already discussed above, there appear a number of systems in which a literary work may be regarded as a component.

Perhaps the next level higher than the literary work should be the canon of a writer's output and there are several arguments to confirm it. For instance, it is well known that an interpretation of a text becomes easier, and often even possible, thanks to the knowledge of other works by the same author. Some scholars actually regard the canon as an 'idiolectic variant' of a genre, characterized by "specific means of expression and style [...] kind of action, symbols, setting" (Fowler 1982: 128–129). That is why critics often speak about 'the world of the writing' of a certain author, i.e. about a sign whose components are single works treated analogously to utterances arranged in a certain order in time, each of which adds something to the 'world' of her canon. On the other hand, this conception is opposed by: the assumption of the uniqueness and originality of each literary work, ignoring differences between them and between phases of the writer's creation, finally, lack of the artist's intention which would give coherence to the canon, i.e. lack of the important condition for the formation of a hierarchical semantic whole.

Yet, if we refer again to the principles of semiotic expansiveness and the rules occurring while moving from a lower level to a higher one, it will turn out that this set of separate and (relatively) unique elements will acquire coherence by the decision of a critic or historian of literature rather than that of the author. In consequence, the canon is not only an existential process of creating particular works but becomes a process generating the world of the writer's works placed within the reference system established by a scholar. Elements of the reference system include: the internal structure (oppositions) of the generated world, repertoire of codes, dynamics of development, direction of evolution marked by particular works, criteria of perfection or artistic maturity, ideas making up the so-called worldview of the writer, etc. And although it would be difficult to seek some joke structure at the basis of this process, the reference system established by the critic makes it possible not only to create a hierarchy but also to give

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[10] "każde bowiem dzieło literackie to znak: przeżyć swego autora, znak czasu, panującej mody, kierunku artystycznego, prądu kulturowego, znak przedstawionych w tekście rzeczy i zdarzeń" (1984: 342).

it necessary coherence.

The situation is similar when we place a literary work in still larger sets, e.g. in a literary period (synchronically) or literary genre (diachronically). In each case, including the systems mentioned by Pelc, one should establish appropriate criteria and a reference point, while introducing new rules – genological, historical, comparative, cultural, sociological, psychological, philosophical, etc.

An attempt to reconstruct the process generating the world of the canon of one writer, Evelyn Waugh, has been made elsewhere (Kolek 1985c: ch. 4). The analysis of still higher systems by this method, especially the genre and the period, requires further studies.

(B) The aesthetic effect

The proposed approach is practically limited to only one aspect, i.e. the analysis of the process of the concretization of bisociation in such a way that its effect is limited to the comic. Its essence consists in simplifying the problems of the comic, rather than solving them. It takes advantage of some universal assumptions and principles, such as hierarchic structure, semiotic expansiveness, simultaneous condensation and expansion while passing from one level to another, rules in operation at particular levels, introduction of the device of mechanism instead of lists or repertoires (the universality criterion on the level of the basic mechanism), ways of using joke structures in longer narratives, the world-code complexes, superimposed functions of codes and jokes.

In fact, the perception of the phenomenon of simultaneous condensation and expansion is by no means something new. Greimas (1966: 72–73) mentions it when he writes about "exchangeability of semantic units of unequal magnitude" on the basis of a somewhat trivial claim that something may be presented in a simple or complicated way, which, for him, is sufficient evidence to question the hierarchic structure of a narrative. On the other hand, a long narrative may be summarized in a more or less detailed manner, which implies precisely a hierarchy of summaries (Culler 1975: 128–129) and is not particularly innovative either. Real problems emerge when we ask about the rules of simple or complicated presentation and the criterion forincluding or excluding some elements in summaries. The omission of these rules and criteria causes critics to speak of isomorphism, structural matrix, hypograms, formulae, and generative homologies. Yet the price paid for such reductionism is always very high; in the case of bisociation it leads to a complete loss of the comic, and thus also of other possible aesthetic effects,

because the proposed formulae are so greatly abstracted and disembodied that they become aesthetically neutral. That is why, retaining the systematic approach, a reversed procedure is proposed, namely beginning the analysis with the generative process and the elementary unit of the joke, which should not only enable the preservation of the aesthetic effects but also their examination in their dynamic aspect and reconstruction of the whole semiotic hierarchy of the literary work.

In order to better illustrate the proposed approach we may refer to the well-known comparison of language to a game of chess (Wittgenstein and de Saussure, cf. Pelc 1984: 305), where expressions are compared to chess pieces, their use — to the rules of moves, and communicative situation to the chessboard. In the case of the semiotic expansiveness of the joke to longer comic narratives, the analogy should be transferred to higher levels: instead of a game of chess we should deal with competitions, tournaments, championships, individual and for teams. There would then be a hierarchy of competitions and of players (titles, ranking lists) as well as rules and principles established for each level of this hierarchy. To make the analogy fuller, we can imagine an enthusiastic chess lover who reconstructs a record of such a tournament or championship, who can identify — due to sign competence — not only the basic principles but also openings and strategies, appreciate the originality of particular moves, gambits, defences, etc. Gradually, particular players, masters and grandmasters, acquire for him individual features, there appear favourites, and along with them — suspense, pleasant or unpleasant surprises, i.e. aesthetic qualities, arranged in a certain 'dramatic' sequence. And it is a determined and unchangeable sequence, as in the narrative. Moreover, this example fits well with the frequently quoted view of Shklovsky that the process of the reception of a literary work is more important than the end of the plot: it does not matter for our chess lover that the result of a tournament is known in advance, just as in the case of a historical novel. Let us only add that, as in the case of the narrative, the whole record of the tournament has been planned by the author in advance, along with its dramatic moments, suspense, and surprises.[11]

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[11] It is perhaps this aspect that has been neglected by Eco and Sebeok (1983) in their brilliant analysis of the actions of Sherlock Holmes which they name 'abductions'. They have omitted the role of the reader for whom the discoveries of the great detective constitute not only surprises, reaffirmed by Watson, but also elements of a carefully thought-out generative process creating the character of Holmes himself (i.e. a sign filled up precisely by the abductions performed by him, although sometimes he is

The above analogy reveals not only the great 'price' paid by some semiotic approaches to literature, but also the advantages of the applied method.

(C) Applications

Naturally, the presented approach cannot aspire to solve all the problems and contradictions of the comic (especially in respect to extra-literary fields). In addition, it constitutes an initial rather than final stage of research. However, it still makes possible a certain degree of integration of numerous theories of the comic and offers a plane on which such integration seems possible.

The fragmentary analyses and results reported above allow one to conclude that the presented method may lead to deeper and more systematic studies on the phenomenon of the comic in literature: among others, to such projects as an attempt to define genetic variants of comedy (satire, grotesque, farce, burlesque, the absurd, etc.), both pure and mixed, or the dominant kinds of the comic in particular literary periods.

However, already the analyses of Evelyn Waugh's narratives reveal the need of a more thorough re-examination of other simple forms distinguished by André Jolles, their participation in the generative process, characteristic aesthetic-emotional effects, manner of their mutual co-operation, as well as their completeness and systematic character. But the analysis should also demand an examination of the whole possible system of these forms, which

misled by his opponents) and the narrative strategy building up a specifically dramatic nature of the texts. Since the reception of the text is a continuous process of reading and interpreting data (given in a determined order, implied, partial, hidden, delayed, etc.), one should speak not only about Holmes's abductions but also about those performed by the reader (perhaps they should be called 'meta-abductions'), which are additionally determined by purposeful manipulations to create suspense, aesthetic effects or to mislead the recipient. We have shown this above with the example of the functions of bisociation in the joke.

Yet, if the example of the game of chess seems too obvious as an illustration of semiotic expansiveness, one may consider the much simpler case of traffic lights. As a system, they consist of signs-signals with a conventional meaning and an inbuilt element of redundancy (double coding with colour and position), rules of ordering and correlation on particular corners of the crossing. But it is possible to expand this system by synchronizing the lights on a series of crossings in order to facilitate continuous driving without any stops along a determined route through a city. The dominant rule here is the principle of privileging one route at the cost of others, subordinating the lights to the time of driving between crossings, determination of average speed, etc. It seems therefore doubtful that traffic lights constitute an example of "a system without articulation" (Eco 1976: 232).

would be a task of very complicated basic studies. Perhaps the principles of semiotic expansiveness and the model of the literary work as an open hierarchical system may help in recognizing other simple forms or narrative units which would also be vehicles of aesthetic qualities.

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Fr. Marian Rusecki
ON THE NOTION OF RELIGIOUS SIGN

Similarly to all scientific knowledge, and to an extent objective knowledge as well, theological knowledge requires human knowledge which is personal and rational. The Revelation of God is not a doctrine or a set of theoretical truths about a supernatural world inaccessible to our knowledge — all the less a structured system of truths — but a living reality of God granting Himself to each one who believes, and to some extent to ones who do not believe, getting in touch and starting a dialogue with a person of good will; this is why human knowledge is necessary. Its role in the communication between God and human is essential; it could be even said that only at that point does theology obtain the status of an academic discipline: it structures the data of the Revelation, systematises it and confronts it with the developments of science and purely rational knowledge. It strives for insight into the truths of faith and its mysteries to justify and, in a way, verify them, using the achievements of science and philosophy. Even though the mind plays the most important role in this work, a theologian at this stage of research also uses other forms of gaining knowledge: interpersonally, through faith and love as well as intuition.

Fundamental theology, grown out of traditional apologetics but obviously assuming a somewhat different epistemological and methodological model, critically analyses the ways and types of legitimising the Christian Revelation or — more generally speaking — the supernatural character of Christianity.[1] At the same time, it is an introductory discipline of theology as such, its

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[1] Fundamental theology is described in this way by many authors such as Nagy (1972: 122), Kopeć (1964), Hładowski (1980: 13-14), Rusecki (1981: 32-33).

discourse aiming to control and determine whether theological exploration of the content of the Revelation is justified, i.e. whether the Revelation of Good indeed has taken place in history and what arguments indicate that fact. The Revelation of God fulfilled in the history is a supernatural reality, which is why the process of experiencing and justification cannot have a purely natural character. Since the Revelation came into existence in time and space in the form of various epiphanic or theophanic signs, it was accessible to human perception in its object (visible) part, even though — as we shall see — it is not this element of a sign that constitutes its (in this case: revelatory) content. The category of sign may build a bridge between the historical and the supernatural reality.

Based on the aforementioned arguments, it may be assumed that the method applied in fundamental theology should be complex — in part rational and in part theological.[2]This claim is quite distinctively implied by the structure of a miracle as a sign of God and a religious symbol. These notions are used in theology; however, they are understood in different ways, poorly or formally defined and their content grasped in a rather intuitive way.

In the Scriptures, as well as in patristic theology, a miracle was understood in categories of sign and religion, without any reflection on the structure of sign and its functions. In this understanding, the miracle had numerous and various functions in relation to the supernatural reality: it was a sign of God's presence and His work of salvation, a sign of His goodness and mercy, a sign of the coming of the Kingdom of God and its fulfilment, a sign of grace and salvation, God's calling inviting the human to a dialogue, a fulfilment of God's promises, a credential to the continuity of the sacred history, a legitimation of the mission of Jesus and His disciples, a structural part of the Revelation of God (see Fuller 1967; Kalles 1961; Fridrichsen 1925; Brazole 1964; Rusecki 1979).

Since the 1940s, significant changes have been taking place within the study of miracles. The theological tradition of recent centuries, which completely departed from the biblical and patristic origins, has been abandoned. Under the influence of the developing biblical and patristic studies, a return towards the biblical concept of miracle as a sign has taken place. Researchers

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[2] The issue of the method applied in fundamental theology is still a subject of animated discussion. A bulk of older authors, as well as the followers of the Warsaw school of apologetics, take the stand that the method is purely rational. In my view, they do not take into sufficient consideration the subject of this discipline nor the structure of arguments (Rusecki 1984: 62-67).

have considered its functions, particularly in relation to the Revelation. The earlier understanding of the evidential value of a miracle as a sigil of the Revelation has been disproved since a miracle as a sign allows for different interpretations. It has been determined that a miracle is not something external to the Revelation; that is must be considered on the background of the whole Revelation, particularly with the commenting Word of God and that it is a sign of God's presence and His working for the natural and supernatural good of humans, a sign of a calling towards humans and a sign of grace and salvation (from the huge amount of literature on the topic, see e.g. Monden 1960: 41-45, 59-98; Kopeć 1972; Liégé 1953, Delling 1964; Gogolewski 1977; Langevin 1975; Léon-Dufour 1977).

These results are remarkable, all the more so that they have been reached in various ways: through analysis of biblical data, especially in the area of notions and terminology, by consideration of the place of a miracle in the message structure of the New Testament and its function in this message and by regarding a miracle as a sign whose nature has been at least partly penetrated. However, these considerations have not always been systematic and their conclusions regarding the function of a miracle have not been based on its nature — particularly because the theory of the functions of a sign had not yet been fully developed. Anyway, the theory of sign applied to explication of a miracle was not homogenous and often too simplified, noticing only two elements of a miracle: the empirical and the extra-empirical. Recently, a growing interest in the topic of sign in different areas of research has been noticeable.

Miracle as a Sign

Contemporary Interest in Signs

The interest in theory of sign actually started at the beginning of our century in the area of logic. A new branch of logic has come into being, known as semiology or semiotics.[3] It mainly stemmed from deliberations on language, attempts to explain the nature and function of linguistic signs and their relations (de Saussure). The development and future shape of logic was to some extent influenced by the neo-positivist studies on the structure of

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[3]Pelc (1982: 8-31) thoroughly analyses the notions "semiotics," "semiology" and "semantics" and their interrelations, concluding that the first two terms have the same meaning but for many reasons, which he quotes in the text, he prefers the name "semiotics" (p. 31); however, he does not enforce his solutions and leaves researchers the freedom of choice.

language and the analytical (linguistic) philosophy. Both these philosophical schools were, and still are, tightly connected to the general philosophical tendency of the end of the 19th and early 20th century to emphasise the categories of symbol and meaning. Particularly the latter became the centre of attention in philosophy at the time of Ch. Peirce and E. Husserl. Virtually all streams of contemporary philosophy have taken it on (phenomenology, existentialism, neo-positivism, linguistic philosophy, philosophical hermeneutics, structuralism), enriching its understanding. The interest in meaning was accompanied by the interest in language, signs and symbols, for the human mind is capable of symbolising (abstract comprehension of all phenomena in symbolic categories) and expressing itself through symbol-sign creations that convey sense. Neo-positivism and linguistic philosophy went in this direction, claiming that philosophy does not study the world but language, not things but symbols (Langer 1976 and the *Introduction* by Buczyńska-Garewicz 1976; Buczyńska-Garewicz 1975: 17-50). The human world is the world of signs and symbols (Wittgenstein). Even though not all have followed such an extreme philosophical concept, the attention turned towards the issues of symbolic signs and the connected category of meaning was not without influence on other fields of study.

In the field of anthropology, the need to symbolise was qualified as one of the elementary human needs and creation of signs and symbols — as a primordial and fundamental activity of a human being (C. Levi-Strauss).

The pragmatic research of American psychologists assessed the influence of signs on human behaviour. Under the influence of the research by Ch. Morris on the process of semiosis, it became a basis of proper interpretation of human actions and their interdependences expressed in signs, which are intermediaries of these actions. A great contribution to the development of sign and symbol studies was made by the depth psychology, which showed that human beings retain a strong connection with primordial symbols in their subconscious.

Similar conclusions have been drawn in the philosophy of religion by proving that in all historical periods, humans had a set of symbol-sign activities and words that expressed the real or desired connection with God (Eliade 1952; 1966; Friedman 1954; Wisse 1963: 141-210). On the level of natural religions, these were made by humans, while in the revealed religion, especially after the incarnation, God grants Himself to humans in signs which fully answer the natural need of the human being to communicate with a higher entity through signs.

Due to its meaningful role, the sign was gradually introduced, with

appropriate modifications, into other fields of study: besides the abovementioned, mathematics, aesthetics, sociology and even biology and medicine, where physiological reactions of an organism to various signs-stimuli are studied. The theory of sign has recently found particular interest within the information theory, which, apparently has been tightly connected to its development. Due to the realisation of the role of sign in human life and facing the transition of the theory of sign to many fields of study, attempts to describe the entire phenomenon of culture in categories of signs as carriers of sense and conditions of human communication have been taken.

The common application of the category of sign in contemporary culture and the growing appreciation for the value of meaning conveyed by signs was also reflected in theology developing in a cultural context. This is particularly visible in sacramentology, liturgics, the theory of miracle and even in the whole theory of apologetics. This phenomenon may also be noticed in Christology (Christ as a sign of God) andecclesiology (the Church — a sign of Christ) (Wisse 1963: 44-47; Rahner 1960; Schillebeeckx 1966; Masure 1938; Latourelle 1966; Grześkowiak 1976a, 1976b).

Of course, attempts to apply the theory of sign to the mentioned disciplines has not meant that the theories of these disciplines have been consistently developed with respect to sign. This results in, among others, the fact that semiotics itself, as the study of sign, has not yet reached a sufficient level of methodological maturity.[4] It does not mean, however, that it has not had significant achievements which could be used for a more versatile description of miracle in terms of sign and for inferring functions from its structure, so that they are not ascribed arbitrarily.

In the following elaboration on the concept of sign and its functions, the late work of Pierre Guiraud and Jerzy Pelc, as well as the opinions of other authors, will be used.

Theory of Sign and Its Functions

Before starting the discussion proper — in order to avoid misunderstandings — it should be emphasised that knowledge through sign belongs to a type of indirect knowledge, different from direct knowledge, which is a result of direct sensory experiences and does not transcend the given content of a sensory experience. This direct knowledge might also be, in a broader

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[4] P. Guiraud (1974: 6-7) mentions three concepts of semiotics, but there are undoubtedly more. It is commonly said to be at the stage of self-defining. The issue is thoroughly discussed by Pelc (1982: 226-340), who distinguishes five concepts of semiotics.

understanding, referred to as the direct intellection of intellectual data. In the case of indirect knowledge, besides the knowing subject and the known object, a mediating object is given, which may be either a tool of gaining knowledge — the case known as instrumental knowledge — or a sign. Hence, knowledge through sign is not a case of instrumental knowledge as it has another, characteristic empirical structure. A sign cannot play the role of an indirect tool of gaining knowledge in such a way as for example a scale, a telescope, a microscope or a counter in instrumental knowledge. Additionally — a fact strongly emphasised by Pelc — knowledge through sign is connected to semiotic inference (see Kraszewski 1975: 194-213; cf. Pelc 1980: 142-151).

Coming back to the principles of semiotics, it should be emphasised that it currently distinguishes between a sign and a thing. A sign is considered from a personalistic perspective, in which the creator of a sign may start a connection with another person through it, convey some content to them and evoke certain reactions. Therefore, each sign is a carrier of a certain message and is given a special sense. Its basic function, besides connecting the creator of a sign with its addressee, is therefore to convey certain information (Krąpiec 1985: 34-35; Pelc 1982: 213-214, 55-65; Buczyńska-Garewicz 1975: 18-19; Guiraud 1974: 29).

As a result, the division into natural, artificial and mixed signs probably falls into not corresponding with such a concept, for the first category is not a carrier of sense which is to be conveyed to anyone (nobody burns fire in their herd in order to convey information of their presence at home, unless under a special arrangement; similarly, a cloud is not a sign of rain because a cloud does not want to convey any information to us — it might become a sign of rain in a meteorological message if we give such a meaning to it (Giraud 1974: 29; Eco 1972: 56-57)). The formerly so called natural signs are currently referred to as "indices" (Stępień 1976: 135).[5] foreignlanguageenglish

In the light of all things said about sign up until now, the understanding of sign in three dimensions: objective, subjective and teleological seems dissatisfying. In the first meaning, a sign is understood as a thing which means another thing, independently of its sender and receiver; in the second one, it is an object intended for the receiver who is to read it, whereas in the third meaning, a sign is something created by a person with the intention of evoking a certain reaction from another one (Kotarbińska 1957: 59-65).

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[5] Some authors still retain the old division of signs, e.g. Kraszewski (1975: 20-21). Krąpiec and Pelc also notice the differences, but they include indices in the category of a broader understood sign. Pelc (1980: 130-132) discusses different opinions on the topic.

In fact, only the third meaning can refer to signs proper because a sign cannot *de facto* be understood independently of its sender, receiver and the content it is supposed to convey. Signals, seemingly the most objective signs, cannot play the role of signs if considered independently of the creator of the encoded content and its receiver because, in their very nature, they are either to control behaviours (e. g. traffic lights) or a call to stop them (e. g. factory hooters). Considered independently of the will of the creator of content given to them (conventionally or arbitrarily) and the receiver, they would be merely light or acoustic phenomena — simply things.

A correct definition of sign is — surprisingly — rather problematic. This is why, instead of citing its many definitions, we will focus on the description of elements included in the structure of sign and its functions, which are an inherent part of the nature of sign.

As a starting point, the definition of sign by J. Kotarbińska in the purpose meaning (this specification does not need to be distinguished as the structure of each sign includes a teleological element, as well as all other elements) or the definition given by P. Guiraudmay can be assumed: a sign is a sensual substance whose mental picture is associated in our mind with a picture of another substance and whose function is to evoke the latter substance in order to communicate (Kotarbińska 1957:29).[6]

Characteristically enough, the outstanding expert on the topic of sign, J. Pelc, does not aim in his works on the notion of sign at the precise description of sign by a lexical or real definition. However, he analyses the issues that are prior to and conditional for the appropriate definition of sign. Only after solving them — which, as his versatile analyses show, is not easy — does he attempt to provide the notion of sign in a broad meaning that would "encompass all kinds of cases of using something as a sign" (Pelc 1980: 123, 132).

A sign always indicates an intention to communicate some sense to somebody. A question arises: is such an intention conscious? Some researchers, including the psychoanalytic school of Lacan, claim that it need not be so because they consider the symptoms of unconsciousness as a mode of communication, a speech of a kind. A similar claim is made by supporters of parapsychology, which uses the notion of unconscious subliminal messages (Guiraud 1974: 30f; Buczyńska-Garewicz 1975: 110f). It seems, however, that the intention should rather be conscious and pursed on purpose; otherwise, the sign would not be a carrier of sense and a tool of dialogue to the full

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[6] A sign is similarly defined by Stępień (1976: 131) and others.

extent but, in the best case, accidentally.

The abovementioned function of communicating sense and the nature of sign itself imply a number of structural elements. In the most general sense, these are: message and its carrier, sender and receiver, reference and code (Guiraud 1974: 48f, particularly p. 9).[7]

The first pair of elements refer to the material element being a carrier (medium) of some message (content). Hence, all signs have a signifying element — signifier (*signifié*) and a signified element (*signifiant*), to which *signification*, or the way of expressing meaning by the given sign, should be added. In the structure of sign, the relation between the signifier and the signified is always conventional. It usually comes to life through an agreement among the sign users, who acknowledge its existence between the two elements and respect it while using the sign. This codification is a process whose source is — in most cases — practice. The said agreement is statistical and depends on the number of individuals who know it and abide by it when encountering signs bound by the given convention. The convention may be implicit or explicit, unanimous or not unanimous, binding or informative. For instance, the agreement is close to absolute in traffic codes or algebraic notations and quite strong in the case of social protocol. However, the relation of the signifying to the signified is sometimes quite fuzzy or even intuitive only. In such cases, the meaning of a sign is ambiguous and the sign itself belongs to what is known as open systems. One example are works of art, which can hardly be called codes and whose interpretation systems belong to various kinds of hermeneutics (Stępień 1976: 135; Eco 1972: 56f; Guiraud 1974: 31f).

Therefore, motivated and arbitrary signs are distinguished. A sign is motivated when there is a natural relation arising from nature between the signifier and the signified; if there is no perceivable connection between the two elements, an arbitrary (non-motivated) sign is in question (Guiraud 1974: 33f; Stępień 1976: 136).[8]

What is worth noting here is the careful attitude of J. Pelc to the frequent practice of contrasting natural and conventional signs. The author thoroughly analysed the meanings of adjectives describing these types of

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[7]Grześkowiak (1976b: 194) mentions five of the structural elements. What Pelc (1980:124) points out in his analysis of the views of Sextus Empiricus should also be emphasised: "semeion" in its particular meaning is something that indicates a non-manifest thing, which can be always non-manifest, non-manifest by its nature or temporarily non-manifest. This thought is of use in distinguishing the structure of miracle as a sign of God.

[8] The issue was thoroughly discussed by F. de Saussure (1961).

signs, showing their ambiguity as well as the rationale behind the contrasting of these two types — however, not a sufficiently convincing one. He concludes that the issue is extremely complex and that the contrasting of natural and conventional signs is subject to many doubts, though he does not deem this contrast impossible. Still, he emphasises that whoever contrasts these two types must be well aware of what is "natural" and what is "conventional," for this is tightly connected with the structure of the definition of sign and of the functioning contrasts and classifications of signs (Pelc 1980: 133-142, 1982: 90-105).[9]

In order to effectively enable communication, a sign should be unambiguous, i.e. one signified element should refer to one signifying element and vice versa (this is often the case in academic languages, particularly in formal studies, and in signalisation systems). Practically, however, in many systems, the same signifying element refers to many signified elements (e. g. in poetry codes, in which the sign is open) or vice versa. In this case, we can refer to a number of overlapping codes — in particular if polysemy is the rule (Eco 1972: 57f; Guiraud 1974: 9, 56-115).

The second pair of elements belonging to the structure of sign are the sender of a sign and its receiver. Without them, there would be no signs. Signs do not exist independently of persons. Signs perform a role of an intermediary in the communication between the creator of the sign and its receiver. As mentioned before, a substantial purpose of a sign is for its creator to pass a carrier of certain information to an individual or collective receiver. Hence, the personal connection between the sender and the receiver of information is important for the structure of sign. If it has been started, the sign fulfils its task; the communication not taking place indicates that the sign as a carrier of sense has not been correctly decoded, i.e. it has not fulfilled its key function. In such situations, the creator of sign (who does not need to create new signs every time but may use existing ones, giving them a new meaning) is usually absent, hidden in a way, and must be found through the given sign — by decoding its sense — in order to fully understand the will of the sender and the sender's intentions towards the receiver. The issue of decoding the sign by the receiver is not an easy one. The receiver must carefully examine the sign, i.e. the relations between the signifying and signified elements, triggered by either a motivated or an arbitrary sign. The examination itself, however, is not enough, for the receiver must refer the sign, i.e the material object with its assigned meaning, to the code; only in

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[9] Krąpiec (1985: 35), seeing the real difference between the two, recommends keeping to the earlier findings.

this context can the sign be decoded correctly (Guiraud 1974. Stępień 1976: 136f).

Here, we encounter the third pair of structural elements of a sign: reference and code or, in other words, the double reference. The activity of referring to a sign stems from its nature. A sign cannot focus the attention of the receiver on the signifying element as it is not a reality in itself, which can be considered in the structure of sign with no connection to its assigned meaning, but it should hint and refer to the signified element. Its task is to turn the attention of the receiver to the entire sign, to inform the receiver that they are within the scope of its working and to indicate the other reality with which it is connected. Were that not true, the sign would lose its function of a sense carrier, would have "no meaning" and would become just an object.

As signs are not always unambiguous when the content element is, in a way, forced on the receiver, and the connection of the elements might be lost and intuitive only at times, the sign must be referred to the code, in the light of which it can be correctly interpreted. Hence, having received a certain message with the sign, the receiver must decode it, i.e. recreate its sense based on signs, every one of which contains elements of the sense, or hints connected to the relation between one sign and the others (Buczyńska-Garewicz 1975: 26f; Eco 1972: 63f, 362-391).

As a general rule, there should be one appropriate code for each class of signs. In some cases, however, while decoding signs, one has to refer to a number of codes, which enable their correct and full interpretation. The hermeneutics of signs enables them, so to say, to "speak", and the interpreters to discover the sense. It is particularly important in the case of signs which have not been clearly codified, ones not subject to an unambiguous social convention or occasional signs. Also these signs are in a sense subject to convention and have a social character, but it is more casual and less clear.

Codes are usually created by force of certain conventions. They are essential to correctly decode the sense of a given sign. The sign itself is a part of the code. In semiotics, notions of epistemological codes, scientific codes, aesthetic codes, poetic codes, technical codes, logical codes etc. are used. These codes refer to a certain rational, irrational or life experience on which basis they have been designed. Hence, they can express relations which are either objective, real, noticeable and — at least presumably — verifiable, or invisible, difficult to grasp, evicting the set conventions (this is sometimes the character of poetic and aesthetic codes) (Guiraud 1974: 14, 51f; Eco 1972: 61f, 362-391). It should be stressed that codes are usually

transmitted in the oral form and exist in a certain language.

An important role in reading signs is played by semiotic inference, which J. Pelc describes as follows:

> In the cases of conscious and purposeful sending or creating signs, there is an inference made by the sender. As this inference factor [. . .] also exists in the course of sign interpretation, it might be deemed highly likely that this factor is an inherent part of all usage of signs by people in the sign process, i.e. of the sending or receiving of signs. Therefore, whenever X uses a sign as something else at a certain point, X makes the described type of inference, and vice versa. These inferences might be called semiotic inferences, referring to the fact that they have been first noticed and described in the thoughts on the notion of *semeion* in ancient Greek philosophy (Pelc 1980: 148f).

It is worth noting that the author himself does not generally work on interpretation codes.

Due to these structural elements, many functions performed by the sign may be distinguished. P. Guiraud does it quite independently of these elements, even though he connects the functions of signs with them to some extent in his further discussion. In doing so, he uses the work of R. Jakobson, who distinguishes six language functions in his analysis of language: the referential, emotive, conative, poetic, phatic and metalingual function. According to Guiraud, these functions remain valid in all kinds of communication, including communication through signs (Guiraud 1974: 10-13; cf. Markiewicz 1972).

The referential function is a condition of all communication. It demarcates the relation between the message and the object to which it refers. The emotive function determines the connection of the sender with the message and the conative function — the relations between the message and the receiver; the goal of all communication in general is to provoke some reaction of the receiver and to call for participation (by appealing to the intelligence or feelings of the addressee, or — most frequently — to their personality). The poetic function expresses the attitude connected by the message to itself. (This function seems to have no application in the case of a miracle-sign because it is not a tool of communication. It may, however, be applied to art, whose reference is the message itself.) The phatic function confirms or breaks the contact and captures the attention of the interlocutor. It is an orientation towards contact and its aim is to prolong the communication.

Finally, the metalingual function determines the sense of the signs which might not be understandable for the addressee. It refers a given sign to the code from which it takes its meaning. The single functions may be sometimes emphasised but they are all connected with the nature of sign. Therefore, it seems that these functions should be more closely connected with the structural elements of sign, so that they follow on from its structure. In further discussion, however, no references to the previous thoughts will be made as this would be too callow.

Attempt to Apply the Concept of Sign and Its Function to Miracles

Defining a miracle as a sign of God is characteristic for contemporary theological thought, though its structural elements have not always been sufficiently emphasised. The same applies to the functions of a miracle as a sign. Even though they have been determined properly, if in various ways, not all of them were unambiguously following from the notion of miracle as a sign. This is why different authors emphasise different functions of a miracle. The aim of this attempt is not as much to systematise the functions as it is to deduce them from the structure of a miracle as a sign.

First, it must be noted that a miracle as a sign is essentially different from a sign as such, even though it shows a structural similarity. The difference lies within the specificity of structure of a sign-miracle: the carrying element of a miracle does not stem from convention; it is not given meaning on grounds of a connection, whether motivated or arbitrary, but by the decision of God. The miracle is given to us. The carrying, empirical element must distinguish itself among other signs by its extraordinariness (it should diverge from the normal course of events, signalising that the given phenomenon has a role of a sign). This, however, is not the source of originality of a miracle as a sign, as every sign has a distinguishing feature by force of convention. The characteristic feature of a sign-miracle is that God chooses a given thing or phenomenon to give it the character of a sign by endowing it with a special meaning. This is, as a matter of fact, the view of many authors (Monden 1960: 44f, 58; Taymans 1955: 237f; Moroux 1935: 557f). Therefore, the carrying (material, signifying) element of a miracle need not be contrary to the laws of nature. It is enough for it to somehow surpass their working (acceleration of the effect, improvement etc.) since the essence of a miracle, similarly to a sign, does not lie within the signifier but in the signified, the content element — even though without the former, there would be no sign. Therefore, theoretically, the empirical element of a miracle need not surpass

the working of natural forces as long as it is known from other indications that it has been given a special sense by God — that God chooses it to be given a character of a divine sign by endowing it with a sense, in order to communicate this sense to human (Taymans 1955: 232f; Guardini 1959: 50; Mouroux 1935: 558f; Dondeyne 1951).

It should be once more strongly emphasised that the essence of miracle as sign cannot lie within its empirical element — as it is only a carrier of sense — but it lies within the element of meaning, i.e. in what God wants to communicate by the sign (emotive function). The main focus of the discussion of sign should be therefore moved from the material element –strongly emphasised by the traditional approach to miracle, which reduced its essence to this element — to the element of meaning, the invisible, as it was pointed out by Sextus Empiricus (see footnote 7). At this point it should be added that a miracle-sign is supernatural and comes from God. For this reason, it belongs to the religious reality and can only be considered from this perspective and not on the level of science or philosophy. The last two may be useful as the starting point of the discussion of a miracle in that they help determine whether the empirical element performs the function of a sign.

If we were to emphasise and analyse only the occurrence of a miracle — its physical side, our approach to the rich reality of miracle would be purely positivistic and incongruous with not only the biblical approach but also the nature of the Holy Scripture. The Bible is not a factual description and it does not present mere facts but proclaims the God's message of salvation on their grounds. Therefore, it shows the sense of divine interventions in history. Since a miracle is a part of the Revelation of God, in cannot be a fact only, a bare fact, a merely empirical occurrence, as these are not only unknown by the sacred history but also to the secular history. Moreover, were a miracle only an extraordinary fact provoking curiosity, its spectacular, i.e. the secular aspect would be emphasised. Thus, the miracle would be taken out of the religious context and moved to the non-religious level — on which spectacularity, understood as extraordinariness, is also possible but which is often an effect of using appropriate techniques, such as magic or illusion — or to the level of parapsychological phenomena. However, a miracle in its nature implies the message of salvation; it asks a question; it invites itself to go further, to look for what is above it (Léon-Dufour 1977).

To avoid the purely theoretical character of this discussion, a particular example of one type of miracle may be given: miraculous healings, which, nota bene, are the most frequently occurring miracles (so it was at the

time of Jesus and has been throughout the history of Christianity). In this case, the material element of a sign-miracle is the starting point: a severe illness (usually incurable, organic, not preceded by a crisis; additionally, it is certain that no medication has been used or, if it has been used, it could not lead to the effect in question; that the healing was disproportionate to any medication used; that it is full and lasting, i.e. all diseases have been healed and no recurrence of the illness will take place — Benedict XIV) as well as the healing, i.e. a full recovery, the final state which attracts the attention of observers (or, more precisely, witnesses); if achieving such an effect is possible by means of medication, it is not possible in such short a time as in the case of an extraordinary (miraculous) healing — acceleration of natural powers.

However, as follows from the discussion up to this point, this one element is not sufficient for there to be a sign. It must be connected with a meaning, for which it is a carrier. For example, in order to prove that he has the authority to forgive sins, Jesus heals a paralysed man. Similarly, during exorcisms, the point was not only to free the possessed from a demon, also called an impure spirit, but to signalise that with the occurrence of such phenomena, proclaimed by the prophets, the Messianic Age would start, in which the Messiah would come and accomplish the Messianic mission. Generally speaking, it is condensed within the coming of the Kingdom of God, whose centre was the Messiah, with whom Jesus of Nazareth identified — at least indirectly. Hence, Jesus signalised that with His coming, the eschatic Messianic era of salvation had begun.

An interesting and difficult issue is the connection of the signified with the signifier (referential function — the carrying element in the miracle-sign refers to the meaning given to it). Is the connection natural or arbitrary? We have seen that signs may contain one or the other which does not disqualify a sign as a sign and does not change its nature. It seems safer and better to assume that God gives the right meaning to a sign. This may be well illustrated by the example of the wonders of Jesus, who sometimes explains their meanings, giving them the sense relating to salvation. If we limited ourselves to a natural connection only, we could just conclude from a miracle that God is the Lord of nature and has the authority over it, i.e. that the transcendent God is the performer of the miracle (the role of semantic inference may be important here). From this conclusion, further conclusions may be drawn; these, however, would not follow directly from the nature of the miracle as a sign. Of course, the arbitrariness of the connection between the elements of a miracle considered as a sign cannot be understood as full

liberty on the part of God as He gives the sense to signs adequately and proportionately to the empirical element of the miracle. The role of semantic inference may be important here as well as on the further stages of obtaining knowledge from signs.

What is, then, the sense of miracles? The answer to this question is simple in the cases when Jesus or an inspired author or thaumaturge has expressly given their meanings. If this has not been clearly stated, then is seems to depend on the kind of miracle. Certain kinds of miracles were coded in the Revelation of God, which is why a particular miracle should be first classified in one or another group of miracles and then referred to the Revelation — code, where the miracle classes have particular meanings. It seems unlikely that miracles occurring nowadays should be different in their form and content from ones occurring in the Revelation of God.

At this point a question arises what the classes of miracles in the Revelation are. Until now, in apologetics, the biblical miracles have been divided into the raising of the dead, overpowering the will of adversaries, healing the demon-possessed, physical healings and miracles over nature. This classification is being criticised nowadays as not entirely disjunctive and not fully corresponding with the notion of miracle as sign. Setting aside the detailed discussion and attempts at classification made by M. Dibelius, R. Bultmann and G. Delling, we will indicate only the classification by G. Theissen (1974: 93f), which was followed by A. Steiner (1978: 31-34), X. Leon-Dufour (1977: 306-313) and others. It distinguishes miracle-healings (23 in the New Testament), which include the resurrections — as they involve the recovery towards health and full life, as well as the physical healings, just more visibly; miracle-exorcisms (6), which are signs of the coming of the Kingdom of God; miracle-gifts (4), in which God comes to help people in various kinds of need and miracle-legitimations, which justify the words and pretences of Jesus — the miracle worker. What follows is that each class of miracles can have a slightly different meaning. Therefore, while determining the meaning of a miracle, one should take into consideration the kind of miracle and examine it more closely in light of the Revelation of God.

Another pair of elements of sign, inseparable from it, are the creator of sign and its receiver. This pair is a part par excellence of the structure of miracle as sign. This is because a miracle is a sign of God, whose aim is to start a dialogue with human (the phatic and conative function). In the sign and through the sign of salvation, God appeals to the human in order to start a connection. In a miracle-sign, God usually shows His love to humans, does some natural good to him, being a pledge of the higher, supernatural

goods resulting from the contact with God, for He always works towards the salvation and wants to include human in the orbit of this work. While it is true that God has already extended His invitation to human in the Revelation, He renews it in a miracle-sign, updates and particularises it; thus, the Revelation of God becomes up-to-date and present in a particular historical situation. This phatic function of miracle may also aim to maintain the connection of God with humans and to confirm it.

A miracle performs its function of a sign-connection when it has been read by a human and responded to with faith and the start of salvational dialogue. This is when the conative function is fulfilled in the miracle: the human, upon encountering the sign, single-handedly deciphers the sense of it, transmitted by the creator of the given sign.

In order to fully understand a sign-miracle, the receiver must refer it to the code, which is the Revelation of God. The Revelation has fulfilled itself in history through the actions of God, which were the events of the sacred history and the Word proclaiming the sense of these events and miracles. Hence, miracles are an element of the structure of Revelation, and have been, in a way, coded in it, both form and content. It follows that a miracle is not something outside the Revelation but the Revelation has even fulfilled itself in it: miracle is one of the forms of Revelation. Therefore, it can be appropriately understood and interpreted only in the perspective of Revelation (the metalingual function of miracle). Just like no sign can be read without a code — moreover, when isolated from it, it becomes illegible, incomprehensible or even "senseless" and sometimes cannot exist independently of other signs or perform any functions (e. g. only a red traffic light) — a miracle isolated from the context of Revelation may be something peculiar and shocking but devoid of a deeper content or sense.

The place of miracle in the Revelation teaches us that God works toward the goals of salvation, i.e. religious goals. A miracle is a gracious manifestation of God in action, a selfless gift of God and an act of His love. Additionally, it takes place in a religious and moral context. This encoding of miracle in the Holy Scripture shows that miracles can only take place in such circumstances and only have such sense.

Because the centre of the Revelation of God is Jesus Christ, all miracles should be referred to Him. He is the great Sign-Miracle of the love of God. Miracles can be fully comprehensible only against the background of and in connection with the person of Jesus (Kopeć 1976: 76; Léon-Dufour 1977: 351; Monden 1960: 84; Liégé 1953: 216f). Therefore, the question about a miracle, about its sense, is the question about Christ Himself. Moreover, miracles

should be considered with reference to the resurrection as it is the central event of the sacred history. A miracle contains, at least implicitly, the idea of the living God, the Conqueror of death, the Lord who gives life. Hence the faith in resurrection is a foundation of a miracle: the miracle expresses this faith (Charpentier 1974: 5-9; Léon-Dufour 1977: 351)[10] and the faith is the sense of the miracle. Without referring the miracle to Jesus and His resurrection, one cannot fully understand its sense. A miracle also teaches that "the work of God continues" and is still fulfilled in the history, that this reality is not merely a past, historical thing.

The code to which a miracle-sign refers surpasses the natural codes in that the latter came into being by convention. Therefore, they can be changed by the creation of a new code. The code-Revelation is given to us by God. It was not created by convention and cannot be changed. This gives a feeling of stability and certainty in reading the signs of God as well as a guarantee that the sense and understanding of these signs cannot be changed. It should be emphasised here that the code-Revelation has such meaning only in light of faith as it must be accepted by an act of faith.

Additionally, the unchangeability of the code and its right interpretation is guarded by the magisterium of the Church. This undoubtedly increases the certainty of the reading of sign-miracle. As a matter of fact, the teaching of the magisterium about miracles, its "practice" in approaching miracles, could be considered a second code to which a miracle can also be referred and in whose perspective it could be further interpreted, in order to determine its sense. Obviously, this would not be a different code in terms of quality as the magisterium only explains the Revelation; still, the interpretations by the magisterium are at least meaningful.

As discussed above, a miracle-sign performs different functions: referential, emotive, conative, phatic and metalingual; these functions follow from its nature as they are connected with the relations between the single elements of a miracle-sign. In a thorough consideration of each and every miracle-sign, all of these functions should be considered. Therefore, they cannot be simply narrowed down to evidence functions, as it was done in the traditional apologetics. Actually, a miracle considered as a sign rules out its usage as evidence. This results from the nature of sign, which usually allows for multiple interpretations, depending on whether it is monosemic or polysemic; whether the reference of the signifier to the signified is encoded

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[10] This was already said by St. Thomas Aquinas, who, however, somewhat narrowed down the problem, claiming that the Glory of the resurrected Jesus showed itself in His miracles after the Resurrection (cf. *Summa theologiae* 3 q. 55 a. 6 c.)

clearly or not; whether, during its interpretation, one refers to one code and one hermeneutic interpretation or to multiple hermeneutic interpretations. It also depends on the receiver of sign: his preparedness, knowledge of the given signs and codes to which the signs refer, sensitivity, perceptiveness and good will. If these conditions are not all fulfilled at the same time, the receiver may not spot the signs or not understand their sense, or refer them to a wrong code, or finally, misinterpret the purpose. These threats are also possible during an encounter of a human with a miracle-sign. Only when they have been positively solved and the receiver of the miracle has understood its sense properly can the miracle sign become a motive, reason or argument compelling him to make a decision to start a connection with God, maintain it or develop it. Except for the receiver-interpreter of a sign (which might be a community), it cannot constitute any argument or motive since it is not a sign which exists independently of its creator and receiver.

Yet another question arises: does the reading and understanding of the sense of a miracle-sign take place on the purely natural level, or with the assistance of God's grace? Since a miracle-sign has a different ontological structure (its elements are different in terms of quality) to signs (the model of sign is only applied to it as an analogy) and since it belongs to the religious reality, in order to fully grasp its sense — which is the supernatural action of God — one needs grace which enables the human cognitive power to understand it (Monden 1960: 58). Only in connection with the grace of God is it possible to grasp the full sense of a miracle, which then becomes an efficient motive (but not the only one) in accepting the calling of God and His action and, at the same time, a clear premise on which one may become aware of the reasonability of the decision to answer this calling. It should be emphasised that on the natural level, an initial understanding of the sense of a miracle-sign is already accomplished, probably as a preparation for grasping the whole sense, which is only possible by virtue of grace. Only then does a miracle become an adequate reason to prove the reliability of the Revelation being the supernatural reality par excellence. Otherwise, due to the difference of levels, a miracle could not be a means of verifying the Revelation.

Religious Symbol

From a Symbol of Representation to a Symbol of Participation

The term "symbol" comes from the Greek word *sim-ballein*, meaning literally "to throw together" and metaphorically "to collect," "to connect,"

"to exchange," non-metaphorically: "clasp," "knee," "connection," "assembly," "pact," "contact."

In Ancient times, symbol as a noun meant a thing consisting of two parts, each belonging to a different person. These parts were used by their owners as a sign to recognise being pledged to each other by the force of a past pact, union or contract. At the same time, these two parts of a ring, a rod, a plate or another thing were used as identification for messengers, guests and authorised negotiation partners. (Wisse 1963: 3-9; Chauvet 1979: 38f). Therefore, it could be said that a symbol expresses a synthesis of at least two elements, the fact of becoming a whole, of being together. Hence, a symbol is not a picture of something but "from something," i.e. a set including different elements, often contradicting each other. A symbol was an operator of a social pact, a sign of recognition and a mediator of identity as after the reassembly of, for instance, a ring from parts belonging to different people, this material sign of friendship not only allowed friends to recognise each other, but was also a proof of its origin within a spiritual friendship. Thus, a symbol connects polar elements, creating one whole (Vonessen 1970: 6-8). Due to the mentioned functions, the semantic field of a symbol could be expanded to every object, word, gesture or person. Exchanged in a social group or among individuals, it allowed the said group or individuals to recognise and identify each other. This correct understanding of a symbol has been vastly lost over the course of centuries.

It can be generally said that in the mental culture of our century, the description by W. L. Warner has been accepted, according to which a symbol is every object that conceptually or expressively refers to something besides itself. In other words, it is something functional, a way of representation or a means of expressing something in all fields of the human spiritual activity (Warner 1959: 3).[11] Hence, a symbol can be a sign, a thing or a gesture

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[11] While the notion of symbol is very ambiguous, its definitions include some elements which correspond to an extent but are still hard to unify. "I understand symbol as an object perceptible by senses, existing in nature or human-made, which evokes in the receiver a thought of something else than itself — an object that is perceptible, partly perceptible or imperceptible by senses — physical or mental, real or fantastic, concrete or abstract, empirical or transcendental — not on grounds of similar appearance, like an iconic sign, and not on grounds of a custom or agreement, like an arbitrary sign but on grounds of some other connection, often difficult to grasp, between this object and the symbolised one" (Pelc 1982:167f, as cited in Wallis 1977). Further Pelc writes: "according to this point of view, the connection is sometimes based on an analogy, sometimes on a metonymy, sometimes no a metaphor, finally, sometimes a certain feature is symbolised by an object in which this feature is prominent" (ibid.).

replacing and representing another object, person, phenomenon, event or abstract idea. In this sense, its function is, so to say, a calling of the presence of object in imagination or at least a mental image of the object, which evokes appropriate emotional states. The function of a symbol understood this way resembles a sign with its function; this is why a symbol itself is usually presented in form of a picture and its meaning is based on a certain convention.

Such an understanding of a symbol has taken root in many fields of knowledge. This will be illustrated by its understanding in literature, formal sciences and theology. In literature, especially of the second half of the 19th century and the turn of the 20th century, a movement called symbolism developed, in which symbols were the main means of expression. This was a reaction to the movement dominating earlier, known as literary naturalism. The purpose of symbolism was for the literary characters, objects or events to express content which has not been explicitly described, as it was in the mentioned literary naturalism. It is these symbols, multitudinous in this literary movement, that were to express hidden contents and turn the attention of the reader towards them. If the content of the symbol was not conventionalised — which was rarely the case as the convention was based on analogy, and not a complete one — they allowed for multiple interpretations. It was believed that the virtue of symbol is its ambiguity and the impossibility to reduce it to one meaning (Todorov 1977). This was particularly visible in poetry.

The notion of symbol has a slightly different meaning in logic and mathematics. In this case, symbols are certain formal signs and their relations, or rather rules of operating on them, for which any objects or values may be substituted (e.g. the variable x in mathematical functions). They are completely content-unrelated; actually, they are pure figures of mathematic language, devoid of sense in themselves (Chauvet 1979: 42f). The same applies

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This great variety of grounds for the connections between the symbolising and the symbolised element is a source of ambiguity and of impossibility to reduce them to some common basis, except the formal indication of the structural elements of a symbol.

When analysing such terms as "index," "indicator," "symptom," "iconic sign," "signal," "symbol" and stating the fuzziness of their meaning or even their ambiguity — due at least to the fact that they belong to colloquial language and to many branches of research — Pelc concludes that their mutual relations cannot be unambiguously determined of defined (Pelc 1982: 174; see p. 136-174). With this, one must agree. The understanding of the world "symbol" varies greatly; its analysis often involves mixing different levels of discussion, which results in invalid generalisations, transposed into a definition of symbol as such.

to natural sciences (particularly physics and chemistry) as the symbols there are purely intellectual, theoretical and not real-symbolic. When using symbols in these sciences, one does not take into consideration the empirical content or its correspondence with the symbols. Only purely theoretical and conventional designation matters.

The abovementioned concepts of symbol influenced its understanding in theology, for example in the discussion of the Eucharist, when the question of the presence of Christ was raised as an alternative: real or symbolic? Another meaning of symbol was used in theology to express what is known as the Symbol of Faith, which was to encompass all dogmatic truths. The Neoplatonist concept was often used, according to which a symbol is an external display of metaphysical and religious truths, a verbal formula encompassing the occult and an introduction to it.

The understanding of symbol shortly presented here is unacceptable as it is narrowed down to a mental representation of another reality or its representation by signs, sometimes equal to a myth. Therefore, it cannot be applied in theology in this meaning.

A proper interest in the topic of symbols has been recorded since the end of the 19th century and it has been particularly intensive these years. H. Buczyńska-Garewicz believes — which might be a slightly exaggerated claim — that the attention turned towards it is characteristic of contemporary philosophy (see *Wstęp [Introduction]* to Langer 1976). The fuller grasping of a symbol was possible thanks to philosophy, anthropology and religious studies.

In philosophy, there are numerous concepts of symbol and, respectively, symbolisation. It is impossible to even hint at all of them. In this paper, only the two of them will be presented which seem the most characteristic and to an extent useful for further discussion. The philosophy of symbol was created by E. Cassirer, the last representative of the Marburg school of Kantianism, which approached philosophy on the epistemological level, studying the a priori formal conditions of experience organisation, which Cassirer called symbolic forms; these, however, will not be taken into consideration here because this type of symbolisation has a philosophical and logical character and follows from the assumption that philosophy does not study the world, but the logical structures of thought expressed in symbols, in which our thought grasps only the world of experience.

The philosophy of symbol with a symbolic character is developed by S. Langer. It follows Cassirer on one hand and on the other hand, the assertion of Lévi-Strauss, who considers the need to symbolise one of the elementary

needs of human nature — a claim already made earlier by A. N Whitehead. Its psychological approach to symbol is also partially rooted in American pragmatism. According to Langer's philosophy, the symbolisation performed by the human mind is a spontaneous reaction of the psyche, some kind of direct need. It seems to be an effect of the natural human existence, for humans have the ability to grasp all phenomena in abstract terms in order to subject them to a symbolic interpretation afterwards. Hence, a human actually lives in a world of her own symbols. This leads to the conclusion that there are no things as such or that we do know them as they are but we only know our symbolic creations. For this philosophy, symbols constitute the only reality of the human world (Langer 1976: 41-71, 108-140).

A.N. Whitehead tightly connects the issue of symbol also with the meaning and activity of the subject.

E. Husserl follows the line of the subject activity. Like K. Jaspers, he defines a symbol as a thought content replacing another one. Such an approach to the problem is connected with the specific relation of meaning and symbol, and thus with the human consciousness. Meaning is here a creation of the active human consciousness, a work of a subject, of the human self, performing its transcendental activity by creating meanings as well as symbols. Hence meaning is dependent on the subject, it seems to be a function of the subject consciousness. A characteristic element of this approach is therefore treating the subject as a constitutive element. This is already visible in the fact that when the subject consciousness directs itself towards objects, it always does it in a certain way. This way of turning towards the world is the meaning-symbolic intention of the conscious acts. Meaning is a result of intentional acts, in which we comprehend everything. Therefore, the scope of meanings and symbols is as broad as the intentional activity of the subject (Pucci 1956; Buczyńska-Garewicz 1976: 23f).

J. Splett, inspired by K. Rahner, carries out an analysis of symbol from the anthropological perspective. In his view, a symbol does not as much bring another reality to attention as it places and includes itself in it. This reality becomes present here and now. It does not melt in the symbolised element of the symbol but it maintains its existence, remains what it is. In accord with the anthropological understanding of sign, it emphasises the moment of interpersonality of the symbol, in which it fulfils itself. This does not only result from the fact that interpersonality is connected with human freedom, which necessarily turns to other people but from the fact that it conditions the occurrence of a symbol. Thanks to the interpersonality of a symbol, it is possible to find oneself in another personal self. As the

author writes, "like 'I' in 'you', so 'you' in 'I' find their expression in one common symbol" (Splett 1973: 189f; Rahner 1976: 23f). Personal freedom, based on symbol, is fulfilled in mutual and simultaneous updating. Thus, the determination of an anthropological symbol becomes at the same time its experience, and vice versa. A symbol is therefore a unified dual realisation of freedom (Splett 1973: 189). K. Rahner calls this type of symbol "a real symbol."

A symbol was revaluated and comprehensively described, though in a different way, by the outstanding contemporary historian of religion M. Eliade, who has thoroughly studied, among other things, symbols functioning in different religions. A symbol is for him a kind of extension of a hierophany. Hence most religious and primal symbols are — according to the Author — "something that replace sacred objects of any kind or partakes in them" (Eliade 1966: 439-441). In this assertion, an ambivalent attitude of the author towards symbol can be seen (he accepts that a symbol may exist in several meanings). However, the bulk of his assertions indicate that he has rather the second meaning in mind.

Actually, a symbol not only extends hierophanies or replaces them, but it also leads to the continuous process of hierophanisation. Thus, a symbol becomes an event revealing the sacred or cosmological reality — depending on the kind of symbols we are dealing with — that could not be revealed in this way by any other indications of sacrum. Eliade claims that the term "symbol" should only refer to those symbols which extend the hierophany or to ones that themselves are "a revelation," impossible to express better in any magical-religious form (such as a rite or myth). Despite such standing, he also accepts the existence of symbols in a wider sense. In this understanding, everything might be a symbol (or everything might perform the role of a symbol), from the most primitive cratophany to the person of Jesus Christ, who — writes Eliade — may from one point of view be considered a symbol of the miracle of the divinity into the humanity.

It is true that both meanings of symbol given by Eliade function in ethnology and history of religion and that they stem from the magical-religious experience of the entire humanity; however, the second signification is too broad and it blurs the specification of a religious symbol. This remark can be justified by the fact that Eliade himself claims that the unification of hierophany with the symbols lying at its root was for the archaic mentality something obvious and seemingly primal (Eliade 196: 443; Lévy-Brühl 1938).

Basing on the narrower understanding of symbol, it can be said that it extends the dialectic of hierophany and transforms objects into something

different from what they are to the secular experience. Thus, the objects become symbols, exceed their own borders and express the transcendent reality.

It has been already noted that the notion of symbol is understood in various ways and that it is hard to unambiguously determine its meaning. This is true to an even greater extent for the notion of religious symbol. As in the attempts to define natural symbols, various topics and thread mingled, so it is in the attempts to define religious symbols. In this case, meanings of natural and religious symbols are often confused, which does not exclude the rule of analogy between them. An example of such an approach may be the views of M. Lurker (1989: 8-16). His work contains assertions confusing symbols of representation with symbols of presence as well as with the notions of manifestation, picture, sign, metaphor, allegory, analogy etc. This assessment is not groundless; it is enough to compare the following assertions of the author: "The meaning of a symbol is not limited to the symbol itself, but surpasses it" (p. 9); "In the case of symbol, only the higher order of existence should be considered [. . .] A symbol represents something more than it is itself" (p. 10); "It is like a screen of something else" and "Hence, a symbol is not a mere reflection of the thing it represents, but contains the entire essence of the represented reality and metaphorically [sic] makes thorough knowledge of it available for human knowledge"(p. 11). Such hesitations of authors are commonplace.

Following on from the previous discussion of symbol it unifies two elements in itself: the symbolising and the symbolised. They should always be taken into consideration, always simultaneously. Neither of them may be omitted without a threat of destruction to the symbol. If the symbolised element is omitted, which is the most frequent threat, a symbol becomes an idol, a fetish of sorts. A problem arises: are they homogeneous or heterogeneous? While the answer to this question would be relatively easy in the case of sign as it contains and gives a meaning which is heterogeneous in relation to the material element and its function is to summon it (*appeler à venir-enprésence*), it is more complicated in the case of symbol. L. M. Chauvet, E. Ortiques and others — based mainly on the analysis of the ancient symbol — claim that they are two elements of the same kind (Chauvet 1979: 38f; Ortiques 1962: 65f). Indeed, foreignlanguageenglishbasing on such an interpretation or on natural symbols in general, one could favour such an interpretation. Things are different in the case of a religious symbol. If this hermeneutic option were accepted for them, they would not contain or express anything more than the symbolising element indicates.

However, even though the structure of religious symbol is identical, the content of its elements is different. Hence, a specific structure of religious symbol may be mentioned. It means that an object, person or phenomenon becomes involved in or unified with the transcendent reality. On these grounds, a symbolic experience — according to C. Lévi-Strauss — arises from the human encounter with a surplus of meaning (cf. *Introduction* to Mauss 1950). A similar opinion is expressed by P. Tillich. Analysing the forms of the Revelation of God, which he considers symbolic forms, he claims that a symbol is something "more" than what is perceptible and comprehensible in it (Tillich 1930: 88-109). Guided by this, M. Blanchot explains that a symbol leads us into another, inaccessible area. Through the symbol, a leap of sorts is made, a level change which is not just a transition from one sense to some other, wider array of meanings; it is rather a transition to something that is different and manifests itself as different from all possible senses since it is a reality which contains another world — the world we enter through the symbol (Blanchot 1971: 130). At this point, we may cite the argument by Eliade, according to whom a symbol becomes unified with hierophany, is its manifestation and an expression of the sacrum. It is the access to the sacrum that we gain through a symbol.

Thus, a religious symbol unifies two different elements, which are mutually heterogeneous.

Interesting remarks on this topic are made by L. Novalis, who claims that a symbol is not a means to an end but the end in itself — that it is autotelic. This way, a symbol would not refer to any external idea: its sense would be contained in itself (Todorov 1977: 207). Chauvet considers the autotelism and transitivity of symbol a pure romantic ideology. Novalis seems to have one-sidedly overemphasised the immanence of symbol. It is true that it contains and expresses another reality, but that said reality comes from the outside, which takes place in religious symbols. This other reality is inaccessible to sensual knowledge. In order to grasp it, one needs faith and a religious authority, which introduces into the theological meaning of symbol, which is a sacral, and thus a heterogeneous, reality

Yet another, slightly more difficult problem arises: does a symbol exist only at the moment of its creation of does it continue without interruption and retain its value permanently? The answer would be quite simple if we remained within the traditional understanding of symbol: obviously, the latter would be the case. With the new understanding, particularly in light of the disparateness of religious symbol, the issue becomes complicated.

Chauvet, following Ortiques and Blanchot, claims that a symbol actually

exists only at the moment of its creation because a symbol functions as living reality, as an act of enunciation and communication outside of which it would not exist at all. (Chauvet 1979: 48f; Blanchot 1971: 131; Todorov 1977: 205f). This approach illustrates well the moment of the creation of symbol as an act of communication or enunciation in linguistic symbols as well as the conjunction and participation of the two realities in it; however it ignores its historical dimension. This is remarked by K. Rahner, Rahner focusses on the symbols in anthropological understanding, but — as it seems — the historical nature of symbol may be extended to any religious symbol. This is what would make empirical-historical research on symbols possible. This view seems to be favoured by M. Eliade, who in a way objectivises symbols. According to Eliade, religious symbolism exists regardless of whether it is currently understood or not. Moreover, it retains its value despite degradation or oblivion. As evidence, he cites the fact that the prehistoric symbols — even though they were forgotten and their sense lost over the course of centuries — have retained their value, thanks to which we can still rediscover and reread them (Eliade 1966: 43).

J. Splett additionally emphasises the eschatological character of a theological symbol. Starting with the assumption that all things have been created for the glory of God and, as such, they are all in a manner *vestigia Dei*, i.e. a visible manifestation of His invisibility (Rom 1, 20), he concludes that they become symbols. We know from the Revelation that the entire Universe is to partake in the glory of salvation; it is to become "New Earth" and "New Heaven." This New Earth shall not be the end of a symbol but its full realisation as it will be a conjunction of the kingdom of human and the Kingdom of God: the kingdoms of the Son and the Father (1 Cor 15, 24). In this unity of people, Eliade sees the ultimate realisation of the theological symbol and a basis of the eschatological theology.

Recognition of a Religious Symbol

Recognition of religious symbols is not widely discussed in literature, yet the views of authors are much more concordant in this matter. It is rather commonly believed that a symbol cannot become known in a purely discursive manner; this is because of its structure, or, more precisely, because of the element of mystery it contains. In this case, intellectual powers of cognition would be inadequate to the object of cognition. Ortiques goes even further, claiming that any attempt to discursively explain a symbol degrades it (Ortiques 1962: 49f; Blanchot 1971: 131). In his view, it cannot be an object of academic study. This view seems somewhat extreme, yet we

must be aware that a symbol cannot indeed become known exhaustively. It always remains a mystery. It is possibly best and most adequately grasped in a religious experience (this applies, of course, to a religious symbol), in which the entire person is involved.

Religious experience, which is the most adequate way of knowing and living a symbol, has a personal character, involving the entire human being, the whole of existence and all cognitive powers. Therefore, the sensory or intellectual knowledge can be neither excluded nor ignored. The former — like in the case of sign — makes it possible to perceive the symbol in its internal dimension and, to some extent, to perceive something — at least initially — as a symbol. In the cognitive aspect, this perception of a symbol leads the intellectual knowledge, whose character is inferential. A religious experience cannot function without it, all the less ignore it as it could easily become an irrational experience — a development feared and avoided by both the Christian faith and theology. On the level of intellectual knowledge, the connection of the symbolising and the symbolised takes place — due to a reference to the code of symbols (in this case: the Revelation of God), the doctrine of the Church, an authority who teaches about it and indicates it. Also on this level, an initial check takes place, whether connection is possible — an attempt to remove contradictions from the symbol which cannot be fully understood by reason.

This is where one needs religious faith, implied by religious experience, or at least an openness towards reality and a good will to recognise and accept reality, also when one has not known or experienced it earlier. Formulated negatively, this means no prejudice towards the transcendent reality manifested in a symbol, no a priori attitude towards this reality, no closed or bad will, which, defying reason, excludes its acceptation and affirmation.

A religious experience of a symbol may be connected with intuition, the indeterminate sphere of a human being (the subconscious). It can bear features of spontaneous knowledge or a reflectional process. In fact, there are many varieties of religious experience as it is connected with the subjective resources of a human being — with all their subjectivity.

At the same time, it is noteworthy that a symbol cannot be isolated from the context of other symbols with which it is closely bound. An artificially isolated symbol cannot be understood deeper as its content becomes in a way poorer. It should be experienced and interpreted against a background of the entire system of symbols. As a symbol reveals the basic unity of different dimensions of reality and presents itself as a whole, it should be read in its entirety by a person completely involved in the symbolic experience. It

creates a kind of symbolic manner of thinking, which allows the experiencing subject — as Eliade writes — to move freely among different plains of reality in order to know them and partake in them (Eliade 1966: 446, 448).

If a symbol, especially a religious one, is understood in the way described above, it should be distinguished from an allegory (a graphic presentation of a notion) , image (visual presentation of something), an archetype as understood in psychoanalysis as well as religious studies or anthropology, and from a sign although It has most in common with the latter.

An Attempt to Apply a Religious Symbol in Theology

It seems that due to a specific structure of a religious symbol, which unites two heterogeneous elements, of which one is visible, material and personal and the other one meaningful, religious and supernatural, it can be applied in theology, which seeks categories of expression for the supernatural, religious reality. This reality is, in a way, expressed in the temporal and historical reality. There are several fields of theology in which religious symbol could be applied. It might be applied in a theological treatise "De creatione" and in the revelation of God in his creations and through them (the relation of God with the world and His presence in the world), in Christology, ecclesiology, sacramentology, particularly in the sacrament of Eucharist (eucharistology), miraculology and, perhaps, in other treatises or fields of theology. In this paper, due to its limited length, the application will be exemplified by an attempt to apply religious symbol in Christology.

One of the key problems of Christology, the study of Jesus Christ, the Son of God, who was made man and performed the work of salvation for humankind, is the question of the union of two natures, the divine and the human, in one person of the Son of God. It depends on the answer to this question, whether we can truly say: but he was at the same time a true man and a true God.

The notion of religious symbol understood from a personalistic perspective seems to reflect well the complex existence of Jesus Christ, which does not mean that it can be applied without reservations. The symbolizing element would be the human nature of Jesus and the symbolized — his divine nature. The two elements would transpire from each other completely, becoming a personal unity but at the same time remaining separate. In this case, how can the eternal existence of the Son of God, consubstantial with the father, be explained? We can only talk about Jesus Christ as a symbol from the moment of incarnation of the Son of God. This does not exclude, or it even assumes, the previous existence of the symbolized element, which,

as the more important one in the symbol, can exist earlier, regardless of the symbolizing element, before it is connected with it. In this case, since the symbol in question is Unique, they symbolized element — which we accept in our faith, just like in the case of the Symbol of Jesus Christ — exists eternally, which was indicated in numerous assertions by Jesus Christ about His equality to the Father and His having been sent by the father. Therefore, the symbol of Jesus Christ would be an expression of what is absolutely precursory to all creation, eternal and final. Hence, the symbol applied to the person of Jesus Christ does not negate the truth of the pre-existence of the Son of God, the Logos.

The theandric union of the divine when the human was expressed in a personal symbol, in His extraordinary existence and work, which indicated that through the symbolizing element, the symbolized element is expressed and its work revealed (e.g. miracles, teaching about the Father, the eschaton, and the salvation, the works of salvation — death on the Cross and resurrection).

This unique symbol was the core of the history of salvation, the central reference point of all events with the religious character and the source of all sense of salvation, which results from his nature; each symbol, including natural symbols, is connected with the category of meaning and sense. Actually, the symbol-Christ can be called the Pre-Symbol in order to distinguish him from other religious symbols, especially that he is the source of all symbolization in the Christian religion. In Him, the works of liturgy and cult would take source, as well as the effectiveness of preaching the word of God as an update of the primary symbol, aiming to make Him available to the human, to sanctify the human and to allow him to partake in the Pre-Symbol.

The application of this category to Christology leads also to some difficulties which are hard to explain clearly. The core problem is to what extent the concept of Pre-Symbol corresponds with the death and resurrection of Jesus. It has been mentioned that symbols do not necessarily need to be lasting and that they degrade — though there are also opinions of their continuity. In this case, the death is the problematic part. At the moment of the death of Jesus, did the symbol cease to exist? In normal conditions, the answer should be positive because the symbolizing element stopped performing its role and started existing anew at the moment of resurrection; however, the body of Jesus was glorified, so that the Pre-Symbol exists from that time in another way, in the supernatural, heavenly reality. This answer should be further nuanced because it depends on the answer to the question,

when the resurrection of Jesus took place: already at the moment of death, on the cross, as St John the Evangelist suggests, or after 3 days, and it is traditionally believed. Assuming the first interpretation, it can be said that's the Pre-Symbol did not undergo destruction but a transformation, a metamorphosis — but what about the descent of Christ into hell and with the formula of faith "on the third day he rose again?" In today's theology, a view is becoming more and more common that the former expresses the dogma about the universal range of the salvation of Christ, including those who lived before His performance of all the work of salvation, while the expression "on the third day" — being connected with the Jewish anthropology — should not be considered to contain chronological information about the event of the Passover but rather the theological truth that the event of Resurrection is a decisive and final intervention of God in the history of salvation (Léon-Dufour 1971: 175-225f). In such an interpretation, the Pre-Symbol would not have been destroyed but rather transformed at the moment of death. However, is this interpretation absolutely certain? It is hard to say but there are arguments in its favour.

The attempt to apply religious symbol to Christology seems — in the opinion of this author — to better express the union of the divine and the human in Christ and His meaning to Christianity as a source of symbolization. It has not attempted to solve all problems of Christology but possibilities explaining Christology using the notion of symbol have been indicated.

It seems that the symbol might be applied analogously in other fields of theology mentioned in the introduction to this part of the paper, of course upon consideration of their specific character.

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Krystyna Tarnawska-Kaczorowska
A WORK OF MUSIC AS A SIGN: ITS SIGNIFICATIVE ELEMENTS, STRATA AND STRUCTURE

Let us begin with some examples of a language that is strictly musical, autonomous and non-referential. These examples refer to elements which constitute the fundamental level of the structure of a work of music, its Stratum I: MATERIAL[2] (see Fig. 1). These examples refer to

1) sound (acoustic signal) itself: a^2, C̲, fis;

2) articulation: *legato*, *sforzato*, *sul ponticello*, *frullato*;

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[1]This is the Polish-language version of the paper I gave during the Second International Congress on Musical Signification on 10-12 November 1988 at the University of Helsinki. Proceedings from this congress will be published in early 1995 by Walter de Gruyter, Berlin — New York as a part of the extensive anthology *Musical Signification* (ed. E. Tarasti).

[2]My conception of the seven-level structure of a work of music was formed a decade ago and it has been slightly revised and modified since then. It was presented in October 1979 at the Polish-American Semiotic Conference in Bloomington, Indiana (regrettably, no professional musicians were present in the audience), and in December of the same year at the Polish Musicological Conference in Poznań (its proceedings were not published). It appeared in print in *Polish Art Studies* V (1984), Wrocław: Ossolineum, pp. 119–146, entitled *The work of music as a many-layered meaningful structure* and comprising two parts: *I. Methodological assumptions*, *II. Exemplification*, based on *Variations in Rondo Form for String Quartet* (1978) by Tadeusz Baird. This is my only analysis-cum-interpretation in which the hermeneutical tactics follow, as far as it is possible, the order of the strata; its parts were accordingly entitled *Material*, *Colour*, *Form*, *Expression*, *Aesthetics*, *Meaning* and *Symbols*.

3) dynamics: *forte, mezza piano, crescendo, tutta la forza*;

4) rhythm: crotchet, dotted minim, triplet, rest;

5) metre: 3/4, 5/8, $\mathbb{C}$, measure metre, MM $\flat = 152$;

6) tempo: *lento, vivacissimo, con moto, ritenuto*;

7) melodics: a two-beat ascending melody, a melody with the second interval as predominant;

8) harmonics: major third, perfect fourth, augmented tritone, fourth-chord, subdominant, various formalised systems of notation for the harmonic flows;

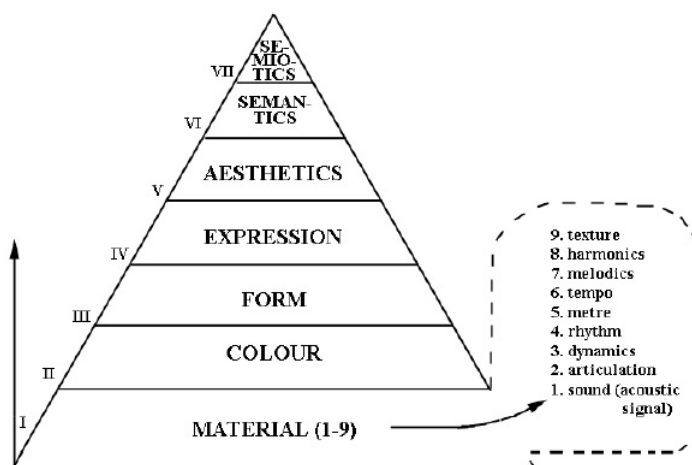9) texture: homophony, polyphony, homophonic texture, monophony.

Fig. 1

The following examples refer to the next level up, Stratum II: COLOUR (TIMBRE): lyrical soprano, male choir, flute in high register, fortepiano, string instruments, woodwind quintet.

Stratum III: FORM includes e.g. motif, the ABA_1 form, eight-bar period, the first part of a symphony, rondo episode, theme of variations, second, fugue, fantasia.

Yet even the most fervent believers in the asemantic character of music (who are now on the defensive), the advocates of academic (i.e. fragmentary) musicological analyses, the inheritors of the neo-Positivistic aesthetic orientation and the propagators of quantitative methods in the theory of music — even they no longer limit themselves to this impersonal and ultra-objective vocabulary. Officially, they are still defending the status of musicology as a science which is based on strictly rational methodological directives (in the 19th-century sense of the term 'rational') and which actualises the paradigm

of scientistic[3] ideology; they also circumspectly refuse to acknowledge any problem of "spirituality" in art. Yet even then, without realising the contradiction, they make use of a vocabulary and phraseology that betrays their subjective attitude and individual experience; they adopt a style that implies their conviction of the heteronomous, referential and semantic nature of music, "understood as the transmission of humanistic values" (Baroni 1988: 15). In addition to the examples quoted above, their musicological writings contain such observations and expressions as a "surprising" *sforzato*, a "succulent" *forte*, an "lopsided" quintuplet, a pause filled with expectation or a tune filled with melancholy, a "ragged" rhythm, a "giddy" presto, a "passionate" phrase, "brutal" chords and "filigree" textures, the "shimmering" timbre of an instrument, a "heroic" first subject, a "mysterious" atmosphere and a "dramatic" narration.

The reason for this is that music provides adequate means for referring to the external world and for pointing outside itself. My more than ten years' experience as an analyst-interpreter (or a "hermeneutist") of music — mainly of Polish music of the 19th and 20th century: Chopin, Szymanowski, Baird, Lutosławski, but also Regamey and Skryabin — has convinced me that music can indeed indicate, denote, connote, communicate, express, suggest and symbolise; these are its chief semantic functions.

In particular, music refers to four areas of extra-musical reality:

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[3]A brief outline of the state of research in the second half of the 20th century and concurrently a presentation of my own approach is found in the opening to my paper *Hermeneutics of musical composition. Theoretical and practical issues* given at the 14th Congress of the International Musicological Society ("Transmission and reception of musical culture," Bologna, August/September 1987) at the Round Table VIII: Analysis and interpretation in musical criticism (the proceedings were published in 1991: *Atti del XIV Congresso della Societa Internazionale di Musicologia. Trasmissione e recezione delle forme di cultura musicale, Bologna 27 agosto – 1° settembre 1987, Ferrara–Parma 30 agosto 1987*: I Round Tables a cura di A. Pompilio, L. Bianconi, D. Restani, F.A. Gallo; Round Table VIII — La critica musicale tra analisi tecnica ed ermeneutica, Chairman: Joseph Kerman, pp. 645–690). This is perhaps the right place to quote Joseph Kerman, who chaired the Round Table VIII: "There is a widely held conviction that musicologists are, if not actually failed musicians, then at any rate persons of sharply limited musical sensibility — persons who know a lot of facts about music and very little about 'the music itself'. That could be true of certain musicologists. But with the majority of them, in my experience, it is not so much a matter of inherent unmusicality as of a deliberate policy of separating off their musical insights and passions from their scholarly work. I believe this is a great mistake; musicologists should exert themselves towards fusion, not separation. When the study of music history loses touch with the aesthetic core of music [. . .], it can only too easily degenerate into a shallow exercise" (Kerman 1985: l8–l9).

(A) PHYSICAL REALITY. Music can reproduce some physical objects that exist in the real world, i.e. it can constitute their sound denotations (a postillion's horn, church bells, clocks, the whistle of a railway engine; this involves their literal meanings) or at least imitate them (*imitazione della natura*) by means of a repertoire of onomatopoeic equivalents (icons). The similarity of this imitation to the imitated object varies; it is closer, for instance, in the case of a thunderstorm, birdsong, the gurgling of a stream, the gallop of a horse; it is more remote in Debussy's *Pas sur la neige* or Honegger's *Pacific 231*, where literalism yields to symbolism and a special musical polysemy emerges.

(B) PSYCHICAL REALITY. Music can evoke, connote, suggest or convey a range of emotional states, the "affective contents," as it has been called by Nicolai Hartmann, or the inner landscape of the soul. According to Langer (1976: 329), music "expresses […] the composer's knowledge of human feelings." Music is "the speech of feelings" exalted by the Romantics, the language of experiences, passions, emotions, moods and climates.

(C) NON-OBJECTIVE REALITY. Some abstract notions, qualities or extra-perceptive mental representations — for example triviality, sublimeness, pathos, drama, the *sacrum*, emotions related to flight and ascent, symmetry, violence, conflict, the waltz feeling, the balladic atmosphere or the pastoral mood — can be rendered perceptible by music.

(D) CULTURAL REALITY. This is the fourth area into which music penetrates, and it is here that it undergoes a sonic reincarnation, reanimation and reinterpretation. The musical (and, more generally, cultural) legacy of the bygone eras: the techniques, idioms, conventions, *topoi*, ideas, forms, subjects, trends etc. undergo the same processes. Music reveals and exploits the semiotic potential of its own centuries-old tradition, as well as the traditions of other areas of culture. The formulas "music in music"[4] and "music about music" (Adorno, 1974: 23l–237), explored by Stravinsky as an example, pertain to this very issue.

The division into (A), (B), (C) and (D) is not disjunctive.

I must limit myself to signalling my own intuitions, not findings, concerning the broad topic of the semantic potential of music, for two reasons: firstly, I lack sufficient competence at the moment; secondly, I wish to focus on a different, even though closely connected issue.

Let us now recall the first three strata which I distinguish in the structure of a work of music as its physical, ontic foundation. The material stratum

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[4]The volume *Muzyka w muzyce* (1980) is dedicated to these issues.

(I) has nine components ranging from the simplest to the most complex, which provide the vocabulary and grammar of music. Elements of the colour stratum (II) pertain to the colouration, the timbre of the work. The form stratum (III) comprises various constructional elements which create the architecture of the work at all levels. These strata remain in a hierarchical dependence (see Fig. 1, read from the bottom up). Each stratum is built upon the preceding ones, forming a superstructure. The sonic *signifiants* derive their origin (i.e. their physical existence) from these morphological levels, and, in turn, they cast their influence on the higher strata where, step by step, they become semanticised and transformed into SIGNIFICATIVE ELEMENTS; "The 'signs' are scattered among the musical structure," commented Karbusicky (1987: 432).

The strata constitute the total structure of the work and they can be separated only in a theoretical perspective. They may also be perceived as aspects of the work and/or as various levels at which this work is viewed and understood.

The next strata are as follows:

Stratum IV: EXPRESSION does not seem to require additional explanations. It refers to the expressive course or aspect of the work and focuses on its various expressive qualities.

Stratum V: AESTHETICS focuses on, among others, the following aspects: the sum of the means, methods and conceptions used by the composer, their effectiveness and functionality; the artistic idiom and idiolect (the creative *parole*); the aesthetic categories manifested in the work (e.g. beauty and its derivatives, the tragic, comic, poetic and other qualities); the distinctive and unique features of the work (e.g. the logic of its structure, its inner coherence, the degree of conventionality/originality, its relation to tradition, its artistic perfection, the degree to which its idea conforms to its actualisation). The aesthetic object evolves at this point. The analytic and interpretative procedure begins to be oriented ergocentrically, i.e. towards autotelic musical values, towards the work itself, and it becomes concerned e.g. with how the *parole* (the individual artistic message) relates to the *langue*, which can be the style or the creative achievements of the given era. In this stratum, as in all the others, there is a relatively well-ordered "micro-aesthetic" threshold, which is distinct from the complex "macro-aesthetic" grade (Eco 1972: 108, note 69).

Stratum VI: SEMANTICS is where the semantic markedness of the components supplied by the lower strata — components which are characterised by diverse degrees of complexity, but which are all potentially qualified to

become carriers of meaning or meanings — is collected, animated, construed, selected, ranked and decoded. The signification of the work of music is determined at this point. The sum of its meanings (Stratum VI) is a part of the work of music just as much as its aesthetic values (Stratum V) and expressive qualities (Stratum IV).

The elementary referential, extra- and supra-musical senses, which are articulated at the level of the semantic stratum, but still remain dispersed, offer substance for the next, uppermost stratum. This is Stratum VI: SEMI-OTICS, the semiotic or symbolic meta-level, in which — if the work of music permits this — all the signifying components are accumulated, integrated and reduced to a common sign or symbolic denominator, thus creating a higher-level interpretation, a superior non-discursive sense/sign/symbol, i.e. a supersign (Bense 1980: 189; see Appendix).

I adopt here the broad interpretation of the concepts of meaning[5] and symbol,[6] which originated with Husserl and was further developed by scholars specialising in symbology, which is a relatively young branch of the humanities closely connected with hermeneutics. The concept of ”symbol” has a different meaning for a logician and for a chemist, a mathematician, a philosopher, a religiologist or a psychoanalyst. The departure point for my considerations is provided by the interpretation of ARTISTIC SYMBOL current in philosophical and cultural anthropology, which takes human awareness under consideration as a constitutive element of all sense and meaning.

Symbolism in poetry caused the symbol to be identified, so to speak, with art. Art, including a work of music (but only a great and significant one; I wish to stress this), constitutes a sensual vehicle of spiritual substance, of the universe of transcendence and of extra-sensual horizons: ”the unconscious, metaphysical, supernatural, and surreal” (Durand 1986: 24). ”Art may be defined as a symbolic language,” says Cassirer (1971: 275); inspired by him, Susanne K. Langer (1976) considers art to be a symbolic transformation of subjective content into objective forms. According to Gadamer (1987: 347), ”a symbol is that by which something is recognised again.” Gilbert Durand (1986) is one of those who undertook the effort of revitalising symbolic

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[5]On the scope of the concept of meaning and generally on the difficulties in defining it sense, see e.g. Harman 1971: 66, Hanna Buczyńska-Garewicz: *Filozofia a świat svmboli* — introduction to Langer 1976: 23f, Pelc 1970: 182-183, Stanosz 1974: 101, Katz 1980: 64f and Rossi-Landi 1982: 144.

[6]Karbusicky (1987) argues that the concept of ‘symbol’ in its narrow, Peircean sense is useless when applied to a work of art.

thought. In his view, the object of symbology is to provide a synthesis of the various overly specialised and overly divided modern human sciences.[7] In his approach, the symbol (symbolic sign) is the basic category and tool of hermeneutics. The most brief characterisation of the symbolic sign is as follows: it is referentially ambiguous and polyvalent; it is not at copy, but a signal (or a shadow) of the signified object; it conveys a sense which not fully constituted, but "as if unready," and which thus "allows multiple interpretations" (Jarociński 1966: 31) of, let us add here, an intellectual, emotional and axiological nature.[8] Its non-transparency (i.e. the fact that its original, explicit sense points to another, hidden or veiled sense) gives it a dynamic character. "The symbol only appeals when I let myself be carried away by its sense, and not when I consider it from outwards as a mere motionless structure," explains Ricoeur (1975: 77–78). One more of Ricoeur's insights is that "one should understand so as to believe, but one must believe so as to understand" (1986: 331).

The two perspectives: of an *animal symbolicum* amid the total universe of symbols which the human world actually is and of an artist versus reality, are united in semiotic mediation (the culminating point of my seven-level model) through the intervention of a musical hermeneutist, who discovers that the music he is trying to understand and interpret "sings joy or pain, adoration the glory of existence or the cruelty of fate, or genesis of the universe" (Dufrenne 1980: 439). We may consent to call the language of music a "faded metaphor," as Tarasti does when he locates music "close to the so-called non-verbal sign-systems" (1985B: 93). We may also assume that music belongs to languages having a "software structure" (as opposed to a hardware one, see Nalimov 1976: 37, 238f), i.e. languages that do not unconditionally connect (associate) signs with the signified objects. With regard to this, Fromm (1977: 28–29) says: "Symbolic language is a language [. . .] governed by a logic [. . .] of which not time and space, but intensity and association are the supreme categories."

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[7]The book by Capra (1987) must be mentioned here. Although starting from experiences and assumptions of a different kind, the author, who is a physicist, advocates the paradigm of a holistic view of the world, as opposed to the Cartesian view and to Positivistic reductionism. Capra's paradigm is in opposition to the model of science that treats numerical measurements as an absolute quality, if not a fetish, while showing complete indifference, perhaps even helplessness, towards subjective experiences and the universe of values.

[8]"A symbol is never explained once and forever, but has to be continually deciphered anew, just as a score of music is never deciphered once and forever, but demands ever new interpretations" (Corbin 1959: l3).

To return to my conception of the structure of a work of music, not all the components of strata I to V are marked with meaning; only a part of them participates in semiosis. Significative constituents vary in semioticity (Bense 1980: 191), which is generated mostly, sometimes solely, by the CONTEXT and is manifested owing to that context. Even in the case of musical quotations and self-quotations[9] derived from other works of music, their immanent meaning is overlaid with the context-generated meaning.[10] For instance, the introductory motif from Wagner's *Tristan und Isolde* has even more intense romantic and amorous connotations in Tadeusz Baird's *Goethe-Briefe*, where it is assigned to the violas, whereas the same motif used by Debussy in the "cake-walk" passage from his *Children's Corner* is deformed and caricatured, with the punch-line, so to speak, provided by what is really a giggle in the *scherzando* mood: the parodistic commentary of the piano.

The extensive subject of the context that creates, exposes and shapes the meaning of certain units of a work of music deserve separate treatment. This is because context includes the musical code (in the broadest scope, embracing the cultural circle, musical tradition, stylistic conventions and the composer's personal idiom), the work itself (together with its title and, potentially, its author's comments), as well as both the immediate and the distant "environment" of the semantically individuated unit, i.e. the proximity of other musical elements remaining in vertical and horizontal (paradigmatic and syntagmatic) relations, their morphological and functional kinship and their combined influence on signification. (There exist also extra-musical contexts, i.e. historical, biographical or referring to the genealogy of musical genres.) The more or less wide-ranging co-situations determine, although in a varying degree, the emergence of Joycean "epiphanies" in a work of music. During these epiphanies various molecules, phases, events, sonic processes, their combinations and configurations, their interactions

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[9]I have discussed the problem of a quotation in music in my paper entitled Musical quotation. An outline of the problems," presented during the 3rd International Congress on Musical Signification, $1^{st} – 5^{th}$ September 1992 at the University of Edinburgh.

[10]Yet musical compositions also contain conventional symbols (some themes, motifs, leitmotivs) which MEAN only due to CONVENTION, enforced by the composer's arbitrary decision, or in which convention is, at least, one of the semanticising factors (the other factors being content and the symbols' own semantic potency). Some works by Messiaen (e.g. *Vingt Regards sur l'Enfant Jésus*), the music drama *Tomorrow* by Tadeusz Baird, which includes motifs/symbols of the sea, fate, tomorrow and evil, or Skryabin's *Prometheus* are cases in point.

and interrelations are imbued with meanings and transformed into symbols.

To conclude with some additional observations: the model (theoretical construction) presented herein is a spatial, three-dimensional figure. It is not a triangle, but a cone that most accurately renders the complexity of the concept, the idea, of the structure of a work of music, that is "what makes compositions 'work', what general principles and individual features assure the music's continuity, coherence, organization or teleology" (Kerman 1985: 61). The full structure of a work emerges on the basis of (1) its notation, (2) its various concretisations, i.e. sonic actualisations, (3) some ideal (model) of its concretisation created mentally on the basis on (1) and (2), i.e. the score and various performances. By "full structure" I understand, among others, its two aspects: the *forma formata* and *forma formans* (both terms used by Frits Noske; the processuality of music, its dynamic and kinetic nature have been pointed out by Tarasti, see e.g. 1985a: 82–83).

This model is applicable in the conditions of the European cultural circle and the area of the so-called artistic music (although, with some reservations or small corrections, it would be applicable also to musical folklore, tape-recorded music, as well as some avant-garde sonic manifestations). This is linked with the hypothesis that the significative and symbolic qualities of a work of music are among the indicators (probably the main ones) of its worth. In other words, the worth of a work of music depends on, firstly, whether it gives sufficient premises to articulate a full, seven-level structure, and, secondly, whether the foundation for the two uppermost levels is artistically believable and aesthetically authentic enough to give sufficient significance and weight to the meanings generated on their basis.

The fact that it is impossible to expound strata VI and VII in some works of music which we instinctively feel to be outstanding does not necessarily indicate that the above hypothesis is incorrect; it only means that the work in question is still waiting for a hermeneutist who would be possessed with an adequate musical competence (Stefani 1987) and extra-musical competence and who would discover an appropriate key to its interpretation. My thesis is that an UNDERSTANDING of a work of music (let it be noted that I have been using the term 'work', not merely 'composition', throughout) is full and appropriate (i.e. corresponding to the intention of its composer) only when all its strata are considered.

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I am convinced that the model proposed herein is helpful to musicological theory. It shall be even more applicable if it is supported by hermeneutics

oriented pluralistically[11] with regard to aesthetics. Even though ready-made directives for research approaches do not exist (the most useful piece of advice is *Wer den Dichter will verstehen, muss in Dichters Lande gehen*), this model may serve as a methodological bolster: on the one hand, this stratification makes particular aspects of the work easier to distinguish, and on the other hand, it makes us realise how incomplete, indeed fractional, most musicological analyses are.

Of course, the problem of axiological choices and evaluations made by the interpreter is never absent. It emerges on all levels of this theoretical construction, but it is situated aside, so to speak, outside the model; even the act of selecting the work to be analysed and interpreted inevitably entails its evaluation. As it has been put by Morris (1964: 66): "Regardless of whether works of art are signs or include signs, discussions of their significance involve axiology."

The conception of this model breaks with the anachronistic opposition: pure (absolute) music versus programmatic music, and with the false dichotomy: autonomous music versus heteronomous music (the advocates of autonomy simply do not climb above stratum V). On the other hand, the conception of this model does not invalidate the 19th-century idea of contrasting musical form with musical contents. The stylistic differentiation, in turn — and let it be remembered here how problematic is the *differentia specifica* between Classicism and Romanticism — is made, in my opinion, mainly at the level of the expressive and aesthetic strata (IV and V).

The hierarchic seven-level structure of the work reflects the nature and essence of music more accurately than it is done by some linguistically oriented semiotic approaches, which make use of formalised methods. This is because those approaches focus on the syntax of selected elements of stratum I and therefore overlook the issues of the musical contents, significance, symbolism and artistic message (it is not without reason that they were criticised by Kneif 1974: 349–351).

To conclude with some noteworthy correspondences:

Fig. 2 notes de Saussure's division of a sign into the *signifiant* i *signifié*, as well as Peirce's conception of the sign as a tripartite relationship: (1) the material carrier of meaning (vehicle), (2) the object to which the sign refers, (3) the meaning (interpretant), and elements of semiosis in the interpretation of Ch. Morris with its fundamental concepts: I. the sign, II. the designate (*significatum*), III. the interpretant, IV. the interpreter.

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[11]On this issue see e.g. the outstanding text by Tomaszewski (1982).
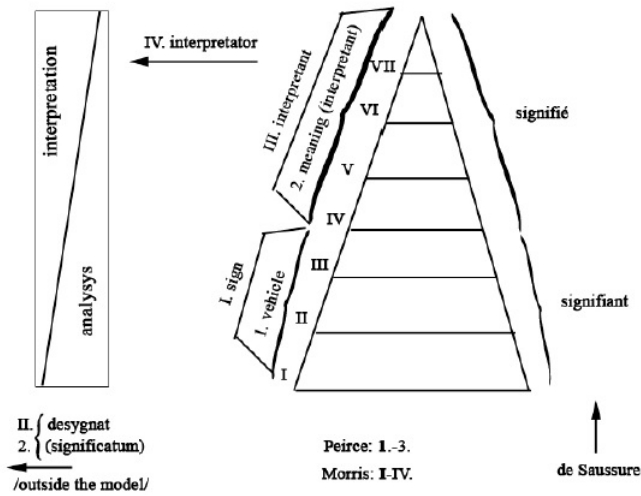
Fig. 2

Fig. 3 notes three of the six functions distinguished by Jakobson in his model of the act of (linguistic) communication: (1) the expressive, (2) the aesthetic, (3) the cognitive function. In addition, Fig. 3 shows two models which "govern the musical discourse": the "technical" and "ideological" models proposed by Tarasti (1985a: 80, 82).
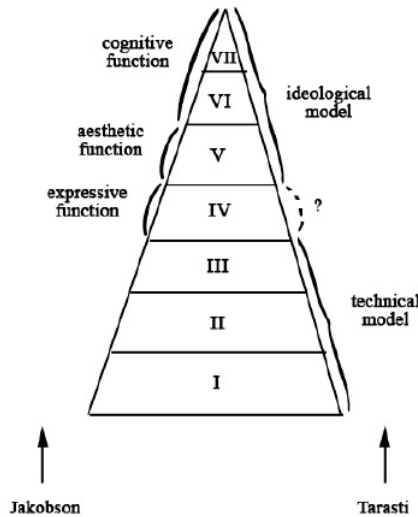

Fig. 3

Fig. 4 shows connections with Gino Stefani's (1987) conception of musical competence, by which he understands "the ability to produce sense

through music" (arrows indicate options, choices, "either/or" situations; arches indicate a conjunction of all the strata without exception).
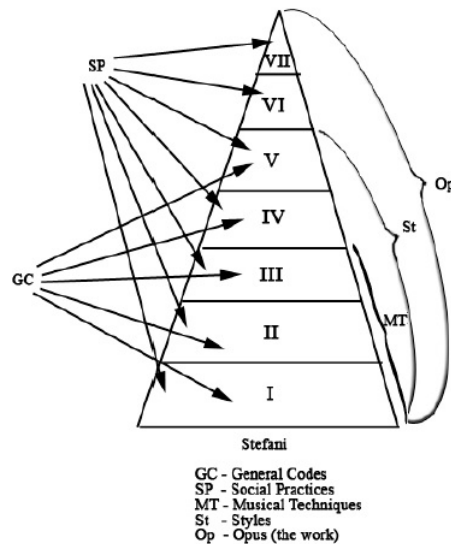

GC - General Codes
SP - Social Practices
MT - Musical Techniques
St - Styles
Op - Opus (the work)

Fig. 4

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APPENDIX

(Commentary to tape-recorded examples of musical works)
We have to confess that [...] the greatest, most productive achievements of the humanities leave the ideal of verifiability well in the rear.
(H.-G. Gadamer, *What is Truth?*)

Below I present some examples of how the meaning and sign content of the two highest layers can be read. This presentation is necessarily simplified and as concise as possible; it omits the "material evidence" provided by the contents of the lower layers. The extensive COMMENTARY to a work of music,[12] which any comprehensive analysis and interpretation must be, is here reduced to the main points and the conclusion. I have deliberately chosen instrumental works, and not, for instance, songs with a literary text; some of them lack even such a slight semantic hint as an evocative title. I shall

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[12]Apart form the first work, I have provided the five remaining ones with such an extensive commentary:

a) *Variations in a Rondo Form* for string quartet by Tadeusz Baird, in: *Przemiany techniki dźwiękowej, stylu i estetyki w polskiej muzyce lat 70. Materiały XVII Ogólnopolskiej Konferencji Muzykologicznej (Kraków, 8-10 grudnia 1983)*, ed. by L. Polony, Akademia Muzyczna w Krakowie, Sekcja Muzykologów ZKP, Cracow 1986, pp. 159-191. For an abbreviated version in English, see note 1 to the current article.

b) *Concerto lugubre per viola e orchestra* by Tadeusz Baird. This text (27 pages plus examples of notation) was commissioned in 1980 by the editorial board of "Res Facta" for issue 10. The final issue of that periodical, no. 9, appeared in 1982.

c) *„Muzyka żałobna" na orkiestrę smyczkową (1958) Witolda Lutosławskiego*, in: *Witold Lutosławski. Prezentacje. Interpretacje. Konfrontacje. Materiały sympozjum poświęconego twórczości W. Lutosławskiego (17 kwietnia 1984)*, ed. by K. Tarnawska-Kaczorowska, Sekcja Muzykologów ZKP, Warsaw 1985, pp. 68-117.

d) *Rozumienie muzyki — na przykładzie „Mi-parti" Witolda Lutosławskiego*. The paper (23 pages plus examples of notation) was given at the session in Bydgoszcz on 7th April 1979. Its proceedings were never published.

e) *„Koncert" na wiolonczelę i orkiestrę Witolda Lutosławskiego*, in: *Muzyka w muzyce...*, pp. 232-255.

focus on two outstanding creative personalities: Tadeusz Baird and Witold Lutosławski. The artistic paths of both composers are characterised by great consistency, which makes it possible to attempt a synthetic examination of their works.

TADEUSZ BAIRD (born in 1928, died all too early in 1981) was described as heir to the Romantic tradition after Alban Berg. Focused on the artistic "I," he composed music as an inner biography, describing the adventures of his soul in sounds. To him, music was the very personal speech of feelings.

1. *Epiphany Music* (the title refers to James Joyce's concept) undulates in the ebb and flow of capricious expressive climates. It is a sequence of improvisational and impressionistic emotional reactions, a succession of lyrical micro-situations. It is the artist's self-expression in sound.

Muzyka epifaniczna / Epiphany Music / Musique epiphanique / Epiplianische musik for flute, clarinet and cellos concertante; total time 12′30″; 1963.

From the beginning — 2′5″.

The National Philharmonic Orchestra; conductor: Witold Krzemiński

2. *Variations in a Rondo Form* are the composer's spiritual self-portrait painted in sounds, an intimate monologue (in a consistent monophony or quasi-monophony) constructed of varying and very distinct expressive contrasts. Further contrasts are supplied by the variation and rondo techniques which, in hermeneutic terms, symbolise changeability and stability.

Wariacje w formie ronda na kwartet smyczkowy / Variations in a Rondo Form for string quartet; total time l8′30″.

From "Molto allegro, agitato, ardente" (after no. 155) to c. "Andante, misterioso" (after no. 175)

From c. 15′l5″ to c. l6′45″;

The Varsovia Quartet

Several of Baird's song cycles focus on Eros, while the following is one of those devoted to Thanatos:

3. *Concerto lugubre*, inspired by the death of Baird's mother. The funereal culmination is provided by a sign/symbol: the mournful memento of snare drums, which concurrently belongs to the musical and extra-musical reality. The role of the artist's *porte-parole* (or his *alter ego*) is fulfilled by viola, kettledrums and, towards the end of the composition, alto flute. It is an example of a work of music whose meaning (symbolism) is suggested by its title. In this case, the task of the interpreter lies primarily in verifying the suggestion/premise contained in the title. In these musical obsequies, the category of "sorrowfulness" is expressed through the dark timbre of

the instruments, the asceticism of the melody (with very spare cantilene), the expression, dramaturgy and formal scheme. The *lacrimoso* tone and the lugubrious mood are complemented by the impulses of rebellion and protest evoked mainly by the rough harmonics, turbulent rhythm and sharp dynamic, agogic and other contrasts.

Concerto lugubre na altówkę i orkiestrę / Concerto lugubre for viola and orchestra; total time c. 19′; 1975.

From c. ”Adagio” (no. 100) to bar 146 ”poco allarg.”

From c. 13′ to c. 15′.

Stefan Kamasa; The Polish Radio and TV Orchestra in Cracow, conductor: Jacek Kasprzyk

WITOLD LUTOSŁAWSKI (b. 1913, d. 1994) was most probably one of the most original musical personages of our time, on a par with Messiaen. Through his music, he would express the WORLD: the dilemmas of history, the human condition, the age-old oppositions of such values as beauty and triviality, order and anarchy, good and evil, freedom and constraint.

4. *Musique funèbre* is dedicated to the memory of Béla Bartók. This masterpiece, in which Leonardo da Vinci's maxim ”hostinato rigore” is manifested many times and in diverse ways, pays homage to a composer who sought new artistic orders and rules. It is also a tremendously powerful work. The Prologue is dominated by solemnity, concentration and determination; the Metamorphoses are impetuous and passionate; the dramatic akme of the work, i.e. the rapacious, violent Apogee, witnesses an accumulation of energy; the Epilogue provides tranquility and calm. Completed in early 1958, this work is also an apotheosis of heroism; the music provides sufficient evidence to consider it a tribute to the Hungarian nation.

Muzyka żałobna na orkiestrę smyczkową / *Musique funèbre* for string orchestra / *Musique Funébre* pour orchestre à cordes / *Trauermusik* für Streichorchester; total time c. 13′30″; 1958.

From c. no. 215 to c. no. 255.

from c. 8′ to c. 10′.

The Polish Radio National Symphony Orchestra, conductor: Witold Lutosławski.

5. *Mi-parti.* In the final, ecstatic culmination, the violins (Lutosławski often conferred more than the usual distinction on string instruments) rise upwards slowly, almost agonisingly, but incessantly, all the while merging into unisons. The vibrant, extremely noble and intensely beautiful line is at times highlighted with the subtle ornamentation of flute, oboe, harp and celeste. The direction, discipline, colour and condensed emotions are semantically branded, even more strongly because of the contrast with

the three earlier tirades supplied by trumpets and trombones, which are clamorous and offensive in their empty rhetoric.

Mi-parti na orkiestrę symfoniczną / *Mi-parti* for symphony orchestra; total time c. 15′; 1976.

From no. 43 to the end.

From c. 11′ to 14′20".

The Polish Radio National Symphony Orchestra, conductor: Witold Lutosławski.

6. The Concerto for cello and orchestra contains a drama of forces and ideas played out between the soloist and the orchestra (mainly brass instruments). The drama concerns a model existential situation (which, let us note, was present already in the music of the Romantic period), i.e. the conflict of an outstanding individual with the collectivity. The melodious and beautiful universe of the cello, filled with human friendship, heroism and determination, is confronted with the strident, common, threatening world ruled by a drive towards destruction.

In the poignant coda (the last musical example, 6b), the cello triumphantly reaches the peak of its potential.

Koncert na wiolonczelę i orkiestrę / *Concerto* for cello and orchestra; total time c. 24′; 1970.

a) from no. 85 to no. 97.

b) from c. no. 136 to the end.

Soloist: Roman Jabłoński; The Polish Radio National Symphony Orchestra, conductor: Witold Lutosławski.