

*Studia Semiotyczne — English Supplement*

Volume XVIII

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Warsaw • 2015 (1993)

Praca naukowa finansowana w ramach programu Ministra Nauki i Szkolnictwa Wyższego pod nazwą "Narodowy Program Rozwoju Humanistyki" w latach 2012-2015 (nr projektu 32H 11 002180).

This publication is funded by the Ministry of Science and Higher Education of the Republic of Poland as part of the National Programme for the Development of the Humanities (project no. 32H 11 002180).



**NARODOWY PROGRAM  
ROZWOJU HUMANISTYKI**

**ISSN: 2451-2745**

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**Stefan Dąbrowski**

## **FROM THE METHODOLOGY OF SEMIOTICS OF CULTURE (STEFAN ŻÓŁKIEWSKI'S ANALYSIS OF STUDIES IN LITERARY CULTURE)**

Originally published as "Z zagadnień metodologicznych semiotyki kultury (Na przykładzie Stefana Żółkiewskiego analizy wiedzy o kulturze literackiej)," *Studia Semiotyczne* 18 (1993), 19–42. Translated by Rafał Jantarski.

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### **1. STUDIES IN LITERARY CULTURE**

Stefan Żółkiewski laid out a detailed agenda for a new scientific discipline giving it the name of studies in literary culture. Its main task is to investigate, from a historical perspective, social functions of literary communication processes made up of literary works seen here as "facts" of communication. It challenges the ergocentric perspective generally adopted in literary studies, and makes a clear reference to Yury Tynyanov who treated literary systems primarily as systems of literary FUNCTIONS. When compared to Tynyanov's approach, however, Żółkiewski goes even further in reducing the autonomy of literature. The cultural substance of the work vanishes in a macro-communicativistic perspective (Żółkiewski 1980: 6–7, Morawski 1981: 316; Jastrzębski 1981; Ossowski 1983: 83; Szary-Matywiecka 1980: 378; Rosner 1981: 49; Rosner 1974: 60).<sup>1</sup>

This first systematic exposition of studies in "literary culture" is dominated by the macropragmatics of literature. Literary culture is analysed through functional models of literature, its social circulation, communicative

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<sup>1</sup>When I say "Żółkiewski" I refer here almost exclusively to his role as theoretician contributing to literary studies, remembering, however, that this is just one of Żółkiewski's many scientific roles and that only when considered TOGETHER are they able to give some impression of the man's scientific personality and bearing on the world of science.

situations, institutionalized strategies that govern the processes of sending and reception, class and economic determinants (as well as various mediations that serve their ends), social practices, semiotic systems, as well as cultural norms, patterns and roles. Literary culture, essentially a highly diverse phenomenon, is here conceptualized and problematized, made to yield to theoretical rigors. For example, “literary circulations” are here characterized through such concepts as “sender,” “receiver,” “ideology” (semiotic function), “communicative situation” and “communicative apparatus” (along with their material functions). The meta-literary consciousness of literary public is here less important than behavioural stereotypes of the readership, one bases on them to help draw conclusions about social functions of literature while leaving its aesthetics or artistic merit out of the scientific picture. One may call this approach the non-normative description of norms that govern communicative behaviour (Żółkiewski 1980: 159, 161, 248, 252; Żółkiewski 1979: 5, 540, 633; Dmitruk 1971a, *passim*; Dmitruk 1971b: 405; Szary-Matywiecka 1980: 378, 385; Mitosek 1982: 132; Macużanka 1984).<sup>2</sup>

## 2. SEMIOTICS VS. MARXISM IN STUDIES IN LITERARY CULTURE

The incorporation of arsenic into copper to make bronze took two thousand years to develop (Weinberg 1975). Semiotics, hermeneutics and Marxism are considered to be the most vigorous methodologies of the day. Each stands entirely on its own. Until just recently Żółkiewski was an (irreconcilable) antagonist of hermeneutics, therefore this particular school of thought is left out of his theoretical project which goes onto fuse semiotics and Marxism. Morawski notes that Żółkiewski’s position is shaped by SOCIOLOGY of literature, SEMIOTIC theory, and MARXIST social philosophy. Having Marxism and sociology next to each other doesn’t seem unreasonable considering that Marxists are allowed to adopt sociological perspectives as a natural consequence of their philosophical convictions, even

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<sup>2</sup>Monopolistic system (i.e. despotic, with a claim to universality) can be described as a system which not only refuses to be a “descriptive plane” for any other system, but also refuses to have any other system as its own “descriptive plane.” In other words, it refuses to reveal a common semantic invariant (for both itself and the other system). This is tantamount to cultural extermination of all other systems except for the system-usurper (see Lotman 1977: 34–61). Żółkiewski’s doctrine, which has been developed multilaterally, itself has a couple of unilateral aspects which rescue the doctrine. Those aspects could appear threatening if not for the fact that it’s not this or the other unilateral aspect but the general monopoly of the doctrine which is threatening.

if their scientific methods are SOMETIMES free from sociocentrism, or even sociotropism (Morawski 1981: 304; Mazurkiewicz 1984: 65).

If we were to believe Foucault, even in the smallest text, the history of ideas seeks to discover the POINT OF RUPTURE that separates the innovative from the traditional (Foucault 1972: 142). Taking this term away from where it originally belongs (doing here a similar thing to what Dmitruk did with the term “formation”), my goal is to identify the point of rupture in the studies of literary culture. In my opinion it can be found at the point where semiotics and Marxism meet. Dmitruk somewhat confusingly says that Żółkiewski’s theory laid out in *Kultura, socjologia, semiotyka literacka. Studia* is fused by its Marxist and semiotic perspective (Dmitruk 1980b: 71). Had Dmitruk said “its perspectives” instead of “its perspective,” he would have recognized, let’s resort to tautology, the difference of different things, and therefore raised the necessary QUESTION of fusing those two perspectives into one. Note, for example, that there is rather a CONFRONTATION (Mazurkiewicz 1984: 60) between the Tartu–Moscow SEMIOTIC School and MARXIST theory of socio-cultural phenomena, which must have been internalized in what Dmitruk happens to call fusion.

Since Marxism and semiotics stretch out to different directions, studies in literary culture can be viewed as a force resulting from the summing of vectors of its “constituent parts.” It has been said that one cannot apply two mutually exclusive systems of measurement to one object of inquiry, but there is no evidence to support the claim that this is the case within the present discussion. This bringing together, as perhaps Roland Barthes would say, of Marxist reason and semiotic thought into a Marxist reflection on the efficiency of sign usage (Bujnicki, Sławiński 1977: 50) is not entirely foreign to contemporary humanities. Therefore, the “fusion” we’re discussing here interests us as a typical as much as a singular occurrence (individual facticity of idiographic nature). Both the individual and the collective may use various world-models (and therefore various “languages,” or systems) which may interact in many ways (Żółkiewski 1979: 320). But how? How does their forced coexistence look like? Rather than describing particular facts, both semiotics and Marxism are concerned with general laws, they meet therefore as two different nomotetisms. Let’s explore those differences further.

As discourses (see Foucault 1972: 68), semiotics and Marxism have different DOMAINS OF VALIDITY (that is, what are the criteria of truth governing propositions belonging to the discourse), DOMAINS OF NORMATIVITY (that is, what are the criteria governing relevance or irrelevance

of propositions, or their marginality), and DOMAINS OF ACTUALITY (that is, notions, concepts, claims, hypotheses, problems and solutions that are still in use or “have fallen into disuse”). Their conceptual, subject-matter and methodologically-theoretical frameworks are different and autonomous. Contrary to Marxism, semiotics is a theory that is not ideological and also cannot be ideologized. Having highlighted those differences we may now say that they are logically incomparable. One may speak of them as alternatives, or that they exist in “confrontation.” One may say they are complementary, but what we are trying to discuss here is their “symbiotic” FUSION. If the semiotics of culture is sometimes criticized for its internal inconsistency (Rosner 1981: 273), then what could be said about the complex synthesis of semiotics and Marxism, a synthesis which would involve merging their conceptual frameworks, assumptions and methods? How would their balancing mechanism work, if there is one, or at least a mechanism that would determine how one relates to the other? Mechanical integration of various machines, for example, poses technical challenges which cannot be overcome easily and universally by employing mathematical formulas (Wiener 1989: 142–143). Here, the very idea of “FUSION” in ITSELF poses a conceptual challenge which (let’s consider it as a primary “deep” difficulty) must further MANIFEST itself in a myriad of secondary problems. What we are therefore discussing here is not a screeching of a “Marxist saw” (already a proverbial phrase among Polish studies scholars), but rather a screeching of a methodological saw. There’s a French saying for our present predicament: *deux orders – désordre*, two orders make one disorder. Morawski claims that at the end of the day this “Marxist-semiotic” (and thus historical and systemic) position held by Żółkiewski appears to be rather unconvincing as it doesn’t do away with practical shortcomings encountered in Marxism or semiotics, and that, on top of that, much is left to desire when it comes to the accuracy of its assumptions and conclusions (Morawski 1981: 313).

It’s said that semiotics is, as it were, a roundtable at which the representatives of various disciplines can sit and discuss what they have in common as far as language and signs are concerned (Pelc 1977: 251–251). But in our present considerations semiotics is approached as a partner rather than the middle ground or roundtable. In studies in literary culture, MUTUAL influences between semiotics and Marxism are undeniably asymmetric, that is, they cannot be characterized by the relationship of commensurability or equivalence. In the argument proposed by Żółkiewski those two “discourses” sometimes run parallel to each other, but his primary purpose is to achieve an UNEQUIVALENT fusion (and any unequivalence necessarily provokes

conflicts), although it would be difficult to argue that this would be simply because the more complex framework overpowers one considered to be less complex.

This unequivocal treatment differs from the Michail Bakhtin's approach, in which neither of the points of view have a deciding sanction (Bakhtin 1984). Socio-communicationism developed by Żółkiewski is a configuration with a dominant, one may even say that there is a dictate of the dominant. For Żółkiewski, Marxism undeniably functions as a "dominating system with a claim to universalism" (Żółkiewski 1984b: 33) and an overarching principle guiding his methodological convictions. Thus, in this double configuration, Marxism could be described as, to quote Zdzisław Cackowski, "a sub system of a protective-provocative-assimilative nature," with an assumption of dialectical tension occurring between isolation and assimilation of this subsystem (Kmita 1974: 294). One may call it the more aggressive, "masculine," determinative element (Sławiński 1971: 45). Kmita would perhaps call it paradoxically "a supersubstructure" (Kmita 1976: 24), a term one would want to clarify further by pointing to its singular moment, namely that it's a "substructure" (a component of configuration) which subdues not only the other substructure, but also the structure as a whole, that being studies in literature and anything they may stand for. Things being so, one must also consider here a communicationist notion of control.

A controlling system is one which works to make desired CHANGES in the other system, defined as the controlled system (Lubański 1975: 31), that in our case is semiotics. It suffers from "repression" (Foucault 1972: 142), foreign and external laws (of heteronomisation), it's subject to the influence of a regulator who speaks from the supreme position of greater power. This functional complementation without equivalence can be regarded as subservience of the subordinated. The very substance of the subordinated is interfered with, ENCROACHED upon. Żółkiewski treats semiotics instrumentally, uses it to pursue goals set out for studies in literary culture and considers it to be a purely instrumental component of the discipline. Its methods are adapted selectively and thus its complex conceptual framework is adjusted and tweaked to be compatible with the new purposes. The results of semiotic analysis are dominated here by the criteria and problems of Marxism which is conceptually impenetrable to semiotic ways of thinking, and if maybe this is not completely true than certainly semiotics is here penetrated by Marxism to a greater degree than vice versa. Zdzisław Cackowski would say that Marxism maintains its identity while subjugating semiotics in the process, that it insulates its "substance" and structure against COMPLETE



“reciprocity” of influence. It would seem that, Żółkiewski, as a founder of studies in literary culture, is a much more independent thinker in his treatment of semiotics than he is in his treatment of Marxism.

### 3. SPECIAL TYPE OF SEMIOTICS

To learn how the game works is to knowingly ignore the irrelevant aspects of the GIVEN game. Semiotics has embraced all perspectives of disciplines investigating language FOR LANGUAGE’S SAKE and sign for SIGN’S SAKE, evolving into the structural and functional theory of SIGN regardless of the form it may take. Żółkiewski sees it as the main force driving reconstruction of humanities and a great promise for sociology of culture that will help the discipline overcome minimalism of the quantitative approach and eventually progress towards the study based on quality, content and meanings. Semiotics is as yet unaware of its abilities, it’s shifting and changing on a journey to self-definition. Semioticians have so far managed to stay clear, so is the word, from the mistakes made by the humanists of older times, which is not to say they’re not erring on their own. Some of those errors are addressed by Żółkiewski who believes that the representatives of other fields engaging in semiotic analysis should also contribute to internal discussions and disputes happening within semiotics proper (Weinberg 1975; Pelc 1977: 251; Umiker-Sebeok 1977; Żółkiewski 1979, p. IV, 420, 569, 609; Janus, Mayenowa: 48; Żółkiewski 1981: 166; Dmitruk 1979a: 407; Heinz 1978: 423).

Żółkiewski reproaches hermeneutics for having meant different things in different times (Żółkiewski 1979: 600). Bear in mind, however, that semiotics itself, in its still relatively short life, has already been approached quite variously. Żółkiewski stresses that various conceptual frameworks can be adopted to pursue what is stereotypically called semiotic analysis (Żółkiewski 1979: 618), pointing also out that just between themselves the Tartuists share a handful of different theoretical perspectives (Żółkiewski 1979: 603). An exception to his wholesale opposition to hermeneutics, Żółkiewski concedes that he feels close to some methods followed by hermeneutics (Żółkiewski 1984a: 63, 1n). He would be perhaps equally eager to say that he feels distant (or foreign) to some methods pursued by semiotics, which would introduce more clarity to his semiotic perspective and show that he is unwilling to accept the actual scale and degree of diversity among competing tendencies in semiotics (Mazurkiewicz 1984: 60). If it’s indeed the process of codification of theory (Legutko 1984: 1078) that is the first step to dogmatism, then semiotics is still a long shot even... from making this very first step.

By itself, mechanics is unable to account for all systems available to mechanical analysis. Mathematics cannot demarcate the field of its fruitful application (Weinberg 1975). Things are perhaps no different with semiotics, various disciplines welcome semiotics as an opportunity to universalize their language and method and also as an inspiration for conceptual invention. John R. Pierce warns, however, that it's the beginners game to seek universal and infallible problem-solving methods, more experienced players rather proceed in a step-by-step fashion, trying to identify better measures to deal with the challenges as they emerge along the way (Pierce 1961: 127–169). One such measure can be to ADAPT the method to the particular problem, rework the tool to make it suitable for the new purpose according to a simple principle of putting the available means to proceed with the task one is presently concerned with. This, to quote Jerzy Pelc, “tendency towards practicality and flexibility in theoretical thinking,” is precisely what Żółkiewski does with semiotics. He adopts and adapts semiotics selectively where it fits best his needs in developing studies in literary culture. He's unwilling to embrace semiotics on its own terms, rather bending it to his own rules, thus creating a *sui generis* kind of semiotics (Kmita 1974: 218; Pelc 1977: 260; Pelc 1969).

As a general language and a general theory, semiotics is a superordinate discipline to studies in literary culture which, as it were, provide a “model” for “interpretation” of semiotics. This somewhat reserved “as it were” is used here to indicate that by speaking about interpretation of an axiomatic and formalized system we're not readily expecting it to be deformed by interpretive practice. But our present discussion about the use of semiotics in this particular area is especially heavy with deformation (also, what we are deforming is far from being a complete system). This is where one begins feeling uneasy about how far deformation of semiotic assumptions, concepts and rules can go, how far can one stretch and bend semiotics to make them serve (after all) extra-semiotic purposes. Isn't it that semiotics is here made to radically change ITS OWN assumptions, scientific perspective, problems, motives, and, finally, its procedures and ways of thinking?

In this new area the rules and principles of semiotic theory are simplified and “watered down,” semiotic concepts are redefined to accommodate a broader scope of theoretical considerations (this is not to say that it must necessarily conflict with the demand for precision, although it surely increases the odds of such a conflict emerging), their theoretical meaning is even substantially tweaked which means that the assimilated semiotic theory was used here merely as “thought material” for various conceptual trans-

formations. Żółkiewski never conceals that semiotic analyses only partially shed light on the problems which the new discipline is meant to elucidate. Let's just add that there seems to be a (serious?) logical incomparability between semiotic theory based on the notions of sign and meaning, on the one hand, and semiotic theory based on the notions of semiotic object and its two functions (textual and material) on the other, although Żółkiewski would maybe argue, perhaps not without reason, that it is about achieving a more adequate approximation towards practical-objective reference of the theory (e.g. Pelc 1987; Bujnicki and Sławiński 1977: 9–10; Sławiński 1971: 101; Kmita 1980: 30, 38).

It's quite telling that Żółkiewski is sympathetic towards Bakhtin's "departure from semiotic rigourism of his youth" (Żółkiewski 1981: 168), although at the same time Bakhtin earns Żółkiewski's praise for his "methodological rigourism" (Żółkiewski 1981: 168). Taking semiotics out of its own context must be judged a singular idea (Weinberg 1975). But how can we establish that this is not the case? In comparison to semiotics of the Tartu School, which Żółkiewski both fiercely debates and draws inspiration from, there is no continuation and further development, but rather continuation and negation both at the same time. Żółkiewski is put off by Lotman's semiotic immanentism, arguing with him not simply because he understands semiotics in a different way; first and foremost he does so because his whole approach to culture is different than that of Lotman's. He therefore differs with Lotman at the level of constitutive claims, and only CONSECUTIVELY differs from him at the level of consecutive claims.

By accusing semiotics of immanentism, Żółkiewski wants to say that it never goes beyond itself, or, in other words, that it's itself, and itself only. This accusation, as I said, strikes at its very essence, or, put differently, is a call for a new essence of semiotics. Semiotics as seen in the Tartu School is modified by Żółkiewski even more radically than what Kmita did with Znaniecki's notion of humanist coefficient, which he confessed to modify "on his own." If the theory and its modification do correspond, then the correspondence is of "substantially corrective" nature. Maybe one should speak here about using semiotic theory according to the analogy principle rather than the essence principle, and further label Żółkiewski's use of vastly reorganized semiotic themes as "analogous semiotism," in a similar vein to Goldmann's "analogous Marxism" (Żółkiewski 1979: 620; Kmita 1973: 176; Kmita 1980: 40, 55; Ossowski 1983: 81; Jiří 1972: 111; Żółkiewski 1972: 187–188; Grajewski 1970: 143).

But perhaps the way I see things is somewhat flawed or at least

exaggerated? Let's take one more look at the problem. If I understand correctly what is meant in the first quoted passage on page 55 of his paper *Pożytki poznawcze i granice stosowania analizy tekstów kultury*, Żółkiewski wants to say that his reflections on semiotics as a discipline or "system" of knowledge were guided by a conceptual model which accounts for everything what semiotics as a specialist discipline eliminates, it is also meant to cover what originally falls outside its conceptual framework. This seems to be a countermodel. Much like "poetic phonology" proposed in the Theses of the Prague Circle was fittingly named counterphonology (Dąbrowski 1983: 157) because it was based CONTRASTINGLY on the "ordinary" phonology, the model in our present discussion should be accordingly labelled as a COUNTERSEMIOTIC model. Introduction of the MATERIAL function to reflections on the semiotic object would be a hallmark (and the essence) of this countersemiotic model.

That someone follows a semiotic method in his studies doesn't necessarily mean that he endorses the semiotic (semiotistic?) conception of science (Kmita 1974: 232). But Żółkiewski not only APPLIES semiotic method and even DEVELOPS a type of applied semiotics, but also, largely through arguments and discussions with the Tartu School, participates in GENERAL debates on signs, their properties and the nature and tasks of semiotics, although he never considers his semiotic proposals to be unambiguous or definitive (Żółkiewski 1979: VI). Which is why it's worth at this point citing Jerzy Pelc who, noting that far from discouraging development of applied semiotics, and its goals he considers to be useful, promising, difficult and RISKY, he nevertheless underlines that in its present stage of development, semiotics must be still taking care of its fundamental research rather than its various applications, methodological verification of which remains one of the primary tasks of logical semiotics. The latter "is not responsible" for modifications of semiotic tools done for extra-semiotic purposes, but it should reveal their true nature (Pelc 1987; Pelc 1982: 339).

#### 4. THE TECHNIQUE OF SEMIOTIC ANALYSIS

Żółkiewski's view on semiotics is not entirely consistent. At times he concedes that it's POSSIBLE to speak of a separate, sufficiently general and abstract theory of signs (Żółkiewski 1979: 573), elsewhere, however, he says restrictively that semiotics is NOT AS MUCH a separate discipline BUT RATHER a valuable auxiliary technique for investigating disciplines that abound in signage (Żółkiewski 1979: 534). It seems that out of the two semiotic approaches described by Umberto Eco, that being the theory of

communication universals and the descriptive technique of communicative situations, Żółkiewski favours the latter (Dmitruk 1979b: 407–408), and one which is assigned a limited and specific set of tasks. He also believes that theoreticians from the Tartu School seek to develop homogenized techniques of cultural description rather than indulge in essentialism, that is, theoretical considerations taking the essence of culture as their primary subject (Żółkiewski 1979: 605), although his dispute with the Tartu School focuses largely on what this essence would be. Roman Mazurkiewicz once wrote that semiotics is humbled by artistic language of Medieval Russia (Mazurkiewicz 1984: 383) and it appears that Żółkiewski would welcome a similar degree of humility from his own version of semiotics. As Metz's searched for "analogies of sensuous code elements" to aid his semiotic analysis, our present analysis has for studies in literary culture a "technical and auxiliary value," "indispensable but limited" (Żółkiewski 1981: 174), significant relevance at the initial stage of research (Żółkiewski 1979: 644). If auxiliary is also taken to mean secondary, then it may be quite surprising to hear that if it were that case that semiotics is not capable of overcoming the heterogeneous nature of cultural phenomena then the operational value of semiotic analysis would be secondary and auxiliary at best (Żółkiewski 1981: 169). One would imagine that this speaks for semiotic analysis as something of primary importance, although Żółkiewski refuses to think just that. But if the method introduces highly significant problems to the theoretical picture is it be wise to dismiss it while SOLVING those very problems (see Kmita 1974: 16)?

## 5. THEORETICAL IMPLICATIONS OF SEMIOTICS?

One should treat semiotism as a whole cognitive approach, not merely as a method or procedure. Behind any given conception of semiotics (be it functional or generative, for example) there is a different conception of culture – this is so even if theoretical language of this particular type of semiotics is unable to ARTICULATE such a general conception of culture. Therefore, it's not enough to say that semiotic analysis doesn't free us from cultural theory. If the semiotics of culture, for example, aspires to be an embodiment of a general theory of human communication, the ambition here is essentially culturological. When it explores meanings and world models informed by systems of those meanings, then it's a type of meta-epistemology and a type of a theory that gives an order and a structure to the world. Not every general ontology, and theory of categories in particular, makes it possible for sign theory or semiotic theory of culture to exist under

its assumptions. Conversely, semiotics cannot be reconciled with just any given ontology or epistemology. If one doesn't respect this consideration, one is prone to eclecticism, that is, an incoherence of scientific perspective. Only when this consideration is respected can one legitimately speak of the methodological impact of semiotics on cultural studies as a whole. Even those wishing to perceive semiotics as an early tool designed for solving technical and analytical issues would have to respect its primary assumptions (Rosner 1981: 199, 273–275; Żółkiewski 1979: 638; Jiří 1972: 75; Bolecki 1976: 154, 163).

Żółkiewski is reluctant to go beyond operationalism, that is, the operational norm of scientific efficiency of concepts, he's reluctant to put methodological apparatus to philosophical tests. As regards methodology, he seems to be leaning towards philosophical neutrality since he believes that scientific concepts are retrofitted with philosophy rather than have it found in their substance (Żółkiewski 1979: 578). Speaking from the estranging distance, Żółkiewski says that the French are discussing philosophical (ontological) assumptions as well as the implications and epistemological advantages of semiotics (Żółkiewski 1979: 576, 615). I would call this view of Żółkiewski an aphilosophical approach. He concedes that the use of techniques of semiotic analysis can result in "further, and entirely different, epistemological conclusions" (Żółkiewski 1979: 615) for the sociology of science, or meta-science, but he stops at that, never sharing even very general thoughts about his view on this matter. He also concedes that his own semiotic considerations bring an answer to the most general theoretical questions and are therefore highly significant for his discourse in general, which includes the ideas explored in this paper. They provide him with a general theoretical framework where literature is an integral part of culture (Żółkiewski 1979: VII). Those assumptions can be regarded as culturological. Which means that they weigh much more than just some auxiliary technique useful at the initial stage of research (Żółkiewski 1979: 644). A mathematical machine is only as smart as its user (Lubański 1975: 111), and so is semiotic analysis. Semiotics is not seeking to take the place of other disciplines (Dmitruk 1979b: 407), but wants to be recognized as one.

## 6. THE NORM OF OBJECTIVISM AND EXACTNESS

Semiotic analysis considers only what is systemic (standard?), "grammatical," repetitive, regular, "common," and social, that is, what is relevant communication-wise. Żółkiewski reaches for a semiotic framework for its method. One may even go as far as to say that he reaches for a semiotic

framework to make it more rigorous (Janus, Mayenowa 1975: 18, 30, 49, 51; Dmitruk 1979b: 197; Lotman 1977: 12, Foucault 1972: 79; Szocki 1984: 36),<sup>3</sup> which would be possible thanks to its systemic nature (Hopfiner 1981: 265). He's suspicious of intuitive beliefs (Żółkiewski 1980: 97), which he wants to replace with scientifically correct and objectively verifiable study of meanings. He does so believing that as far as meanings are concerned intuitions are usually misleading (Janus, Mayenowa: 25, 35). This, for want of better reference, could be considered as a Lotmanian theme, since Lotman, a student of Hjelmslev strongly influenced by his neo-positivist logicalism, also strives for objective clarifications through reduction of the human (subjective) factor which tends to be elusive methodologically and unyielding to effective control (Heinz 1978: 308).

But here we must confront the proverbial avalanche of doubts and reservations. There is a variety of opinions in the Tartu School and these are not interpretable in an unambiguous and clear way (Żółkiewski 1979: 603). The systemic nature of "semiotic systems" is sometimes considered to be fictional (Wolicki 1974: 118) or showing merely a system-like resemblance. As a consequence, the exactness of semiotic categories also becomes highly suspicious (Bolecki 1976: 155). Let's also note that some clarifying distinctions made by Toporov are dismissed by Żółkiewski as "perhaps not subtle enough" (Żółkiewski 1979: 618). Semiotics makes no scholar immune to mistakes in the way one understands meanings, and also it's not only semiotics that has the exclusive authority in this respect as meanings are influenced by philosophical and ideological beliefs which may eventually outweigh the respect for semiotic rigorism. Additionally, this declarative as opposed to actually pursued rigorism can go side by side with a more inventive approach to semiotics. For example, Żółkiewski notes that some work of the Tartu School is both methodologically rigorous and highly inventive. Invention quarrels with rigor. Other antagonistically "coexisting" pairs are: objectivity and engagement, perhaps both strongly featuring in the studies of literary culture (see Sławiński 1971: 50), or objectivity of scientifically approached philosophical neutralism and ideology, are after all part and parcel of Marxism and also of Żółkiewski's discourse.

If I'm correct, it was not like this before his paper *Pożytki poznawcze i granice stosowania analizy tekstów kultury* that Żółkiewski introduced a more elaborate notion of "semiotic-structural analysis," a concept already featur-

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<sup>3</sup>This "rigourist" claim is repeated so obsessively that one feels almost tricked into believing that this is indeed how things are.

ing in the work of Katarzyna Rosner,<sup>4</sup> for example. Żółkiewski concludes, however, that the rules of this analysis are also uncertain (Żółkiewski 1984a: 51), that the method is prone to arbitrariness, that it provides no procedure for selection of “facts and phenomena as they appear in their relationships” (Żółkiewski 1984a: 38), and that, consequently, the final say belongs here to intuition, for which, after all, Żółkiewski has little appreciation, but which happens to drive more inventive approaches in semiotics. What’s more, one may even come to see a vicious circle here because a legitimate selection should be based on a perceived state of affairs that one feels is right and therefore strives to achieve. Żółkiewski admits that “the hierarchy of the facts of culture preserved in texts” is hypothetical (Żółkiewski 1984a: 38), which means it’s speculative, and thus uncertain. But the preceding hierarchy, that is, a hierarchy of texts of culture, is hypothetical as well. Żółkiewski never provides examples of those two hierarchies, and, consequently, those two kinds of hypotheses, leaves their meanings rather mysterious, if by hierarchy one understands something else other than merely the promotion and degradation of texts (Żółkiewski 1980: 191). As a matter of fact, all those shortcomings criticised in hermeneutic approaches can be found in the method created by Żółkiewski.

Objectivism, the “the quality of our culture,” as well as desubjectivisation of cognition, are considered to be the advantage, not the “benefit,” of the semiotic method (Żółkiewski 1984a: 60). Żółkiewski raises this point frequently. But now, driven by a cybernetic impulse, he starts claiming the opposite by saying that the cognizing subject cannot be eliminated from the process (Żółkiewski 1984a: 60). This about-face should be followed with a radical change in many of his previous opinions, even if we were to assume that this “resubjectivation” is not purely of psychological, but rather of an epistemological and methodological nature. The “observer” is a personification of methodological competence, or a methodological directive, to a much greater degree than the aforementioned (Żółkiewski 1984a: 60) competence enabling textual creativity: it’s a formal subject of sorts. One should also be able to deduce it from the structural-semiotic analysis proposed by Żółkiewski (since the “observer” category wasn’t introduced to its design in order to modify it). But Żółkiewski himself is not treating the observer in a formal way if he understands them as a “member of a particular semiotic community” (Żółkiewski 1984a: 60). I doubt whether this corresponds with “theoretical assumptions of cybernetic procedure” (Żółkiewski 1984a: 59)

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<sup>4</sup>The subtitle of her book is clearly paraphrased in the title of Żółkiewski’s paper.



since this “particularness” is clearly of a socio-cultural nature.

If the analysis must take into account the observer category, then it would be wrong to assume that it “happens on the other side of subjective perspective” (Żółkiewski 1984a: 65) because observer’s perspective is clearly subjective (with this point we could start building our case for hermeneutics). If cybernetics is inspired by the observer category, and the inspiration could as well come from physics as a natural science (Żółkiewski 1984a: 67), then it makes little sense to have both the subject and the idiographic “on the same side.” If one wants to arrive at objectivism through structural methods, then how can this approach be reconciled with the idea of “substantial contribution to individual psychology, psychoanalysis and social psychology, all of which relate to consciousness” (Żółkiewski 1984a: 36)? If semiotic pragmatics, so valued by Żółkiewski, is dealing with subject-relations, then why Żółkiewski eschews questions about the subject’s reactions to cultural phenomena, thinking them to be “delusive” (Żółkiewski 1984a: 54)? The list of reservations and questions could go on, so let me just note that it’s completely unclear why Żółkiewski, being rather unfriendly towards the category of implied author considering it to be ergocentric, is theoretically inclined to accept the category of observer who is “characterized by his ability to come up with descriptions” (Żółkiewski 1984a: 60). But this makes him an implied observer, “assumed” by those descriptions as the embodied competence to make those descriptions. But isn’t it perhaps so that its redeeming quality is that the observer category is used by cybernetics AS WELL?

## 7. PANSEMIOTISM

Dmitruk maintains that semiotics, humbled by various disappointments, is no longer tempted to be concerned with the world at large (Dmitruk 1979b: 403). But the declared (Żółkiewski 1980: 14) and postulated (Żółkiewski 1980: 130) pansemiotism proposed by Żółkiewski goes that very way. The term itself, “pansemiotism,” suggests some kind of absolute and all-embracing nature. The reverse of pansemiotism seems to be, so to speak, a pancommunicationalist understanding of culture. One could pejoratively speak of pansemiotism as the “semiotic theory of everything.” Neutrally speaking, pansemiotism suggests that all cultural realities have meaning. Since Żółkiewski believes that signs and meanings have systemic characters, his pansemiotic claim is rooted in the idea of pansystemism and antisubjectivistic (desubjectivistic) intent (Rosner 1981: 62, 274; Hopfiner

1981: 226; Mitosek 1982: 139; Dmitruk 1979b: 403–404). “Culture, as it is, is a system” (Żółkiewski 1980: 46). Pansystemism, however, conflicts with historicism that is also present in Żółkiewski’s discourse. Their coexistence in his theory is, I suppose, possible, thanks to the double meaning given to the term “culture,” at times understood as a historical reality (resistant to pansystemisation), while elsewhere conceived as a theoretical construct and interpretive model imposed on or extracted from the reality (and only about such extraction-abstraction one can safely say that culture is a system).

If we were to gloss over those considerations, one would have to ask whether it’s not the case that semiotic techniques, delivering us, as they do, from certain kinds of arbitrariness (Żółkiewski 1979: 524), at the same time bring about other kinds of arbitrariness that are equally disturbing. Even if one wouldn’t say this about the techniques themselves, their fetishization certainly does expose us to arbitrariness, and pansemiotism WOULD be such fetishization if one insisted on understanding it as the exclusive and universal methodology, monopolistic conceptual framework for cultural studies, with its very presence, as it were, disqualifying all other approaches. Curiously, Żółkiewski rejects this view. In other words, his declaration of pansemiotism is without consequence for his methodological standpoint, the pansemiotic aspect is present in form rather than substance. For Żółkiewski, semiotics is not comprehensive enough as it describes only the “inner workings of semiotic systems” (Żółkiewski 1980: 15). He is not satisfied with semiotic immanence, a concept that one may associate with Lotman. But, just as one isn’t physicalist if one also uses other disciplines to describe the world, one isn’t a pansemiotician if the conceptual framework and methodology of semiotics aren’t his sole reference. Żółkiewski goes beyond semiotics towards “matter-of-factness” (and its functions), while for a consistent pansemiotician there wouldn’t be any “beyond” to go to, and it goes without saying that an inconsistent pansemiotician is not a pansemiotician at all. Żółkiewski creates, or recognizes, extra-semiotic mechanisms governing cultural and artistic phenomena, which after all limit the semiotic sphere of influence (Mazurkiewicz 1984: 61). Idealist pansemiotic assumption is challenged by cultural (determinative) superiority of extra-textual systems, and if superiority has also something to do with being crucial, then one needs to say that this idealist feature is hardly essential to the doctrine, and therefore its desirability looks highly doubtful (see Kmita 1974: 69). Additionally, in considering efficiency of semiotic procedures (Żółkiewski 1979: 601), we’ve already established that Żółkiewski treats semiotic analysis as a tool of merely auxiliary importance.

Those who accept LIMITS of semiotic productivity, shouldn't depreciate what lies outside the discipline in terms of subject matter (expressiveness and aesthetics of literary works not reduced to their communicative aspects) or methodology (hermeneutics). Limits in the productivity of certain ("our") disciplines shouldn't be treated as limits beyond which one can find only failed disciplines, but rather as limits for the given type of productivity.

## 8. PANIDEOLOGISM

Żółkiewski may be preaching pansemiotism, but he also practices panideologism, which undoubtedly comes as a result of Marxism as his preferred epistemological perspective which considers social sciences through the notions of class and ideology (Kmita 1973: 349, footnote 20). Żółkiewski writes that "the textual character of ideological structures [which are always linked to class, and therefore political, interests – S. D.] is what makes them operationally distinguishable" (Żółkiewski 1980: 81). In short, and hopefully without giving a false account of his view, textuality is an indicator of the class-determined domain of ideology, or "ideological systems of culture" (Żółkiewski 1980: 80). IF the study of the ideological cannot in itself be free, as social sciences cannot, from the stigma of ideology, and IF the study of class determinants cannot in itself be free from political associations, then, taking into account what was said above about textuality, semiotics itself must be ideological and political. Perhaps semiotics must be ideological whenever one chooses to bring it together with theoretical priorities of the Marxist perspective. Let's quote one more oscillatory, and therefore confusing, passage: "the whole sphere of signs IS ideological [and "ideological" maintains its genetic reference to the "class" – S. D.], but signs' persistent continuity throughout history DEPRIVES them of their ideological unambiguity" (Żółkiewski 1980: 80 - emphasis S. D.). How things stand, then, IS or is DEPRIVED, and therefore is not? Or, "rather is," or "is rather deprived"? And: if something is ideologically ambiguous, and thus ideologically unclear, is it still ideological in any way? This returns us to the familiar conclusion: if the sphere of signs is ideological, then semiotics would have to take the ideological into account, and this would eventually lead to semiotics being ideological too. Żółkiewski indeed belongs to those thinkers who see it that way.

Stefan Morawski notes that by marrying ideology with semiotics, Żółkiewski takes advantage of only one of the opportunities for heteronomisation: he ideologizes semiotic processes (or, more precisely, semiotic systems), wrongly assuming that the precision of semiotic analyses won't suffer in

the process. One other opportunity which he doesn't take is to apply semiotics to ideological texts to challenge their self-interpretation and authority (Morawski 1981: 313). Let's seize on this remark and ask again what is the relation between ideology (after all pervading both the whole discipline and its scientific results) and scientific procedures that are guided by objectivism and verifiability. This seems to be an essential question if semiotics is governed by method and ideology is governed by rhetoric (Głowiński 1984: 1167).

Żółkiewski uses the term "ideology" without intention to tame its ambiguity. It has little to do with Marx's understanding of normative ideology which is conceived as false consciousness that knows neither its origin nor function, and which is opposed to the notion of critical consciousness (rather than true consciousness, as one might've expect). Ideology as false consciousness is underpinned by the interests of various groups or classes, whereas ideology itself, as a defence and justification of those interests, is understood as epistemologically false illusion that relates to the social subject rather than reality. This is why for Marx his own point of view was anything but ideological (Kuniński 1981: 118–121).

When he uses such phrases as "systems of cultural signs, ideological systems" (Żółkiewski 1979: 520), Żółkiewski understands ideology VERY BROADLY. One could easily say that he identifies ideology with social consciousness (Ossowski 1983: 81) or that he considers the ideological to be identical with the cultural.<sup>5</sup> Ideology is understood as an aggregate equivalent of: 1) world-conceptualization, 2) world-modelling, 3) institutionalized axiology of the world, 4) social functioning of any substance and value, be it of philosophical, religious, ethical, artistic or scientific nature, because in the language of ideology, understood in a way where it has no particular limits, EVERYTHING is associated with what is REGARDED as the fundament of ideology, or, to make a reference to Foucault, EVERYTHING is soaked with ideology. Żółkiewski sees art as a part of ideology (Żółkiewski 1979: 141, Foucault 1972: 185; Kuniński 1981: 124; Głowiński 1984: 1168), he also believes literary consciousness and literary ideology to be one and the same thing (Żółkiewski 1980: 248). He speaks of "ideological (literary) forms" (Żółkiewski 1984a: 49), writing that "ideology is how one indulges in mass culture leisure, how it organizes statistically visible patterns of behaviour" (Żółkiewski 1979: 127–128). It seems that it would be impossible to draw

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<sup>5</sup>One should therefore ask what logic governs these identifications as Żółkiewski already identified the cultural with the textual and the process of communication, even if those identifications are limited to certain elements or aspects.

a clear line between strictly ideological and the ideologized (see Kuniński 1981: 118). Since ideologies are instruments created to pursue class-political interests (Kuniński 1981: 121), it appears that culture here is understood in a radically political way. This is not only an implicit, but also explicit view of Żółkiewski who said in an interview that “our culture is becoming more and more political and this process will continue into the future” (Macużanka 1984: 7).

Having said all that, let’s only add that it was only following the impatient and relentless insistence of Zofia Mitosek that we can nevertheless witness the extent to which Żółkiewski has restrained politization of his discourse. Mitosek notes that in his earlier selection, *Kultura, socjologia, semiotyka literacka. Studia*, Żółkiewski didn’t hesitate to judge literary situations or promote various political and cultural agendas, while his recent book, *Wiedza o kulturze literackiej. Główne pojęcia*, is somewhat less inclined to consider our cultural styles in the spirit of the “high ideals of Marx,” instead replaced by a “universal cognitive perspective,” something which Mitosek calls “narrowing of perspective” through the “gesture of pure theory” (Mitosek 1982: 140–141). But what would be the name for the situation where “universalism” means as much as “narrowing?”

## 9. BETWEEN SEMIOTICS AND SOCIO-COMMUNICATIONISM

The word about Thomism is that it literally drowns in Aristotle (Marías 1984: 1071). What I will say about semiotism of studies in literary culture is that it literally drowns in socio-communicationism. Between themselves, Marxists may argue whether or not the GENERAL theory of social being and historical process is in certain aspects similar to the traditional pre-scientific speculative philosophy of history (which it, as a scientific theory, replaces), but risks of incommensurability notwithstanding, one can by analogy say that Żółkiewski builds a GENERAL materialistic conception of literary socio-communication based on historical materialism. Jiří Levý believes that the model of communication cannot grasp the literary work (or literature?) as a solid and historically conditioned fact (Jiří 1972: 112). I will call this position pure (cybernetic) communicationism. Levý’s belief is taken further by Żółkiewski whose conception can be described as empirical (historizing) socio-communicationism. While Medvedev and Arvatov sought to eliminate the opposition between formalism and sociology (Balbus 1975: 28–29), Żółkiewski heads towards a methodological fusion of semiotics and sociology. He believes, and passes on this belief to his followers,

that humanist conscience cannot ignore sociological reality (Lalewicz 1975: 158). This reminds us of Żółkiewski's dispute with the Tartu School and his complaint that Lotman's continuation of Russian formalism proposes a too narrow an understanding of culture which the Tartu School conceives to be merely a semiotic mechanism that produces, processes and stores information. Żółkiewski argues that such understanding of culture doesn't take into consideration how relationships between cultural texts look like and what are the circumstances in which they are functioning. One might say that Żółkiewski opposes semiotics that retain their complete autonomy and refuses to engage with sociology. Ivanov, "always referring to various languages," is preaching semiotic autonomy, while Żółkiewski, underscoring the decisive role of social practices, favours semiotic heteronomy. If we were to assume that Żółkiewski builds on the foundation of semiotics, we would have to concede that, as he continues with the construction of his theory, this foundation is largely replaced by a different and much more massive fundament. Similarly to Mukařovský who went beyond the *Theses* of the Prague school after 1934, Żółkiewski goes beyond the legacy of the Tartu School. What they have in common is that they both gravitate towards sociologism and communicationism, eventually departing from the idea of systemism (Balbus 1975: 8; Żółkiewski 1979: 602, 605; Żółkiewski 1984a: 58, 1n; Rosner 1981: 57; Żółkiewski 1972: 178-198; Stanosz 1978: 238).<sup>6</sup> That is not to say that going beyond systemism means that one abandons systemic thinking altogether. Which makes for the very particular position they both find themselves in.

Semiotic analysis always begins with a particular text of culture (Żółkiewski 1984a: 18), while socio-communicationism sees only types, collections and series of texts. If only for this reason one should bear in mind that what Żółkiewski actually does is apply semiotics to studies in literary culture, which, strictly speaking, is something different than the semiotics of literature. He explores a mutual penetration happening between semiosis and the structures of social order, going away from structural semiotics towards analysis of the real intracultural communication processes, abandon-

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<sup>6</sup>One cannot argue that meaning is always systemic (objectivistic formula) while maintaining that meaning is always for someone (subjectivistic formula), or say both that meaning is systemic and that meaning is a correlate of the process or act of communication (communicative situation). See Rosner 1981: 20; Żółkiewski 1979: XXV. It's worthy to note that Lotman is also confused, although maybe less clearly, with the same difficulty that troubles Żółkiewski. Namely, he's introducing non-systemic descriptions of intra-cultural processes of communication that cannot be reconciled with systemic semiotic analysis (Rosner 1981: 258).

ing semiotic normativism in the process (Rosner 1981: 259). As an approach, systemism is selective and interested only in particular aspects of the reality. Situationism, on the other hand, that is, the study of communicative situations, is aggregative and concerned with multifaceted completeness and totality. For Żółkiewski, semiotic systems (and world-models) are transformed in response to changes occurring in communicative situations, which in his theory function as independent variables (determinants), with systems (and models) taking the role of dependent variables. If we were to apply this description to the communicative situation which is internally composed of three aspects – technological, social, and semiotic – then one would have to note that technological and social aspects are determinative of the semiotic aspect of the situation. Also, communicative situations determine social roles and how they are performed (Żółkiewski 1980: 100; Dmitruk 1979a: 9; Hopfiner 1981: 266).

Drawing, as it were, from Dewey who believed that meaning is essentially a property of behaviour, Ivanov conceives the learning process of semiotic systems as a mechanism for behavioural programming. Precisely this way of thinking is used by Żółkiewski to progress from semiotics to sociology. He repeats that what modelling semiotic systems express is also expressible in the language responsible for the programming of individual and collective behaviour as well as behavioural motivations, adding that description of programming of these behaviours and motivations can be translated into the language of sociology (Żółkiewski 1979: 334; Janus, Mayenowa: 88–89; Kmita 1980: 174). Semiotism and sociologism both reform one another to create semi-sociologism where systems of signs and meanings can explain not only communication practices (Żółkiewski 1979: XXV), but also creative practices (Żółkiewski 1980: 171) and organization of the society as a whole (Voloshinov (Bakhtin): 108–109).

“For a Marxist, communicative situations are composed of characteristics of the social formation in which the given text functions as a message. Ultimately, these characteristics (...) relate primarily to modes of production prevailing in the given society, and refer to consciousness of its social structure. Communication processes have a mediatory role in these dynamics” (Żółkiewski 1984a: 25).

This is what I call the socio-fundamentalism of Żółkiewski who proposes here a two-pronged semantic amplification. By saying “communication,” he primarily means communicative situation, which he further identifies with its social context (which is here understood VERY BROADLY indeed). This is why the mediatory role of social communication (Żółkiewski 1984a: 43)

and mediatory role of social context, or even cultural context (Żółkiewski 1984a: 50), are considered to be interchangeable concepts in Żółkiewski's theory. Morawski argues that Żółkiewski takes the conceptual pair of *praxis* and *mimesis* and reshapes it as *praxis* and *semiosis* (Morawski 1981: 310–311). Concepts and methods of analysis are, to a degree, semiotic, but that cannot be said of perspectives and motives of those analyses. Even if the problem is inspired by semiotics, the research is conducted from the socio-communicationistic perspective (e.g. Ossowski 1983: 81; Dmitruk 1980a: 88; Rosner 1981: 12–13; Żółkiewski 1979: XXIV, 325; Błaszczewicz 1980: 146; Dmitruk 1980b: 72). Let's now look into details of this cultural description presented so far in more general terms.

Conceived in opposition to aspect-driven methodology, one way to proceed with of the aforementioned amplification is to propose a multifaceted and progressive expansion of the object of scientific inquiry. This approach constitutes a transition from semio-aspectivism to socio-globalism. Żółkiewski explicitly states that semiotic-communicational perspective is too narrow and needs to be transcended. The semiotic aspect of the “semiotic object” is burst apart from the inside and undermined by the bustling abundance of sociological themes and aspects. Żółkiewski writes:

“While speaking about material functions of semiotic objects, we're essentially leaving the domain of communication relations. This is similar to the characteristics of social roles of the sender and the addressee in extra-communicational aspects of their political, productive or economic behaviour, among others. We're transcending communication in a similar fashion when we're creating comprehensive characteristics of a communicative situation by describing it primarily through relations that communication practices have with other practices. Which is why both semiotic objects and senders or addressees are distinguished with regard to how they refer to both communication relations and the higher-order relations in culture as a whole, understood here as a participation in culture of a particular type and style” (Żółkiewski 1979: XIII–XIV).

This openly conceded lack of homogeneity of criteria for establishing basic theoretical concepts must result in a lack of homogeneity of the theory built upon those concepts.

In his understanding of the semiotic object, Żółkiewski seeks to establish a connection between the system of meanings and the system of practices, further tying the latter to the system of material objects, “goods” that drive the class struggle (Żółkiewski 1979: 606). Semiotism is embedded in activism, while activism is embedded in technologism, economism, and



the theory of class struggle (socio-political theory). That the embedding process goes in this and not any other direction shows that Żółkiewski seeks, firstly, to account for the interconnectedness of all phenomena (which means that, if one may say so, his theoretical project would have no specific direction), and secondly, that he seeks to expose forces that govern cultural phenomena (Żółkiewski 1979: 622) which in his view are external (which sets out his theoretical project in a particular direction). Striving to account for phenomenal interconnectedness, which is, not less than the individual, *INEFFABILIS*, leads one away from the possibility of this process to be ever successfully completed. This clearly follows on from the characteristics of classification criteria: easily comparable on a textual-systemic level, but much less so on the social level of practices (Żółkiewski 1979: 631). What COGNITIVE value is thus in PRIORITIZING classification of practices if this particular sphere is essentially resistant to classification? As Żółkiewski concedes that comparison of “social characteristics” would be difficult without semiotic analysis, or textual-systemic analysis (Żółkiewski 1979: 631), it would rather speak for things being the other way round. Since Żółkiewski puts methodology first and reserves ironic comments for philosophers, let me just say that there are methodological arguments to perceive things the other way round (that is, criticise the priority of practices), whereas philosophical-doctrinal arguments (social philosophy) can be taken to support this claim. The priority of practices follows on from the priority of “assumptions” (Żółkiewski 1979: 622). After all, doesn’t Żółkiewski concede that criteria for classification of practices are acknowledged through, and CONTROLLED by, the classification of texts (Żółkiewski 1979: 631)? But what’s primary cannot be controlled by what’s secondary.

Let’s look at the issue differently and from another angle. One would expect that Żółkiewski takes away communicational INTENT from the definition of sign to make another point in his criticism of teleology (Żółkiewski 1984a: 15). But in a quote from Marx, and in Żółkiewski’s commentary to that passage (Żółkiewski 1984a: 16), there is a recurring category of purpose, or intent, conceived as something that organizes human behaviour. What he therefore does by taking away communicational INTENT is explaining semiotic practice using extra-semiotic practice, much like how literary practices (part of semiotic practices) were explained (both in their objective-causal and subjective-motivational aspects) through extra-literary factors (Żółkiewski 1980: 172–173, 242–243, 252, 268). It seems that the original claim that practice CONDITIONS TRANSFORMATION of objects into signs is now taken to mean that practice TRANSFORMS objects into signs. Quoting

Lévi-Strauss, Źółkiewski argues that the choice of the tool signifies social choice of the tool's type for the given type of practice. He further argues, doing little to support his claim despite the argument being debatable, that the pattern of practice is encoded in differentiating properties found in the outcome of the practice. Źółkiewski speaks about the "working man of the semiotic community," "historical social practices in the semiotic community" (Źółkiewski 1984a: 16), thus effacing the difference between semiosis and labour (as well as between semiosis and *praxis*). This may also be surprising because Peirce and Marx are mentioned separately and with no suggestion of associations between the two. It's possible to trace the origins of signification back to the elementary acts of production, but it doesn't mean that the mature sphere of semiotic practice can be characterized in a similarly un-autonomous fashion, i.e. by assuring that "there is no communicative intent in the world of typology of intent, the only intent there is the productive intent" (Źółkiewski 1984a: 16).

One could perhaps agree that the semiotic sphere is broader than the sphere of semiotic intent, but the only reason to do that would be to include symptoms to the broadly conceived sphere of signs. One cannot agree to questioning semiotic intent, especially if it's done for the sole reason of promoting productive intent. It appears, however, that in the studies in literary culture semiotism is an oppressed discipline.<sup>7</sup>

There is one more difficulty. Discussing *semiosis*, Źółkiewski writes that "intent is something what we speak about from the subject-perspective. An individual, however, neither creates signs, nor does he use them individually" (Źółkiewski 1984a: 16). This may be even true. But the same would have to be true for *praxis*, which would be at odds with the notion of productive intent: intent is something what we speak about from the subject-perspective, and an individual neither creates social practices, nor is he individually engaged in them, rather participating in a collective (mass) involvement in the given practice! If my analogy is correct, it must be so for BOTH elements, and if it's false, it must be so for BOTH of them as well.

It may be so that the mistake effacing the difference between *semiosis* and *praxis* has its origins in synecdoche or metonymy used to describe this phenomenon. Anything SOCIAL has at its bottom an element of communication, a necessary if not sufficient condition, which in turn has SIGNIFICATION as its reverse. Social practice is fundamental to all other practices, therefore . . . , etc. Only when we climb this ladder of synecdoche

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<sup>7</sup>Oppression always entails infringement of the rights of those oppressed.

and metonymy we begin to understand how one can mould such a phrase as “participation in the semiotic community through its social practices” (Żółkiewski 1984a: 17). Unfortunately, as we can see from the language used to express this thought, rungs of this ladder are made of purely stylistic material.

Let’s dwell for a while on the difficulties encountered in our discussion of practices. Żółkiewski himself concedes that one won’t solve the problem of classification of semiotic systems through classification of social practices (Żółkiewski 1979: 626). Semiotics has a broad autonomy in relation to practices, it may even be said that semiotics has no origin in practices. This is so because the relationship between semiotic systems and social practices, or even communication practices, is not, to borrow from the vocabulary of classical logic, attributive, that is, necessary and constitutive, but almost accidental, or contingent. It’s true that some systems are unique to certain practices, but we cannot speak here of one-to-one relations or relations based on the principle of exclusivity. Practices are multi-systemic, with fields of those systems spanning various practices or even types of practices (Żółkiewski 1979: 727). Besides, social practices, much like the texts of culture (Żółkiewski 1979: 629), are not “given,” but isolated BY US “depending on the theory of a particular practice” (Żółkiewski 1979: 630), or even depending on “classification theories.” Practices are therefore controlled by theories carved out of the wealth of human activity where things converge, mutually penetrate and influence each other. It’s those inner intricacies that make Żółkiewski say that “criteria arising from theories classifying various types and degrees of social practices are not comparable” (Żółkiewski 1979: 631), which means that one can rule out in advance the utopian idea of a single framework to accommodate description of those phenomena. Additionally, if each practice consists of a plexus of separate techniques distinguishable by particular strategies (Żółkiewski 1980: 41), then it would appear that each practice has various purposes and tasks to fulfil, whereas each technique is there to handle just a single purpose. Also, if social practices make up social realities, then techniques function as their non-autonomous components, one could perhaps go as far as to say that they are ideal, abstract aspects of practices. There are no pure, single techniques in social reality (as there are no single-system texts) because techniques constitute patterns of behaviour (see Żółkiewski 1980: 41) which function as the “privilege for the producer” (Żółkiewski 1980: 42).

## 10. CLASS

Continuing our discussion, let's mededicate at least a couple of passages to the problem of CLASS, as Źółkiewski is certainly a class-oriented thinker, showing class preferences (Źółkiewski 1980: 205) in cultural studies, undoubtedly recognizing, much like his closest follower Dmitruk, that superstructure is one particular battlefield of class struggle (Dmitruk 1980a: 88), and that both collective and individual cultural activity is conditioned by class and has class functions. His beliefs, however, are not dogmatic or radical. Źółkiewski recognizes supra-class national literature and literary tradition (Źółkiewski 1980: 153–154), he acknowledges that writing can easily transcend any given class (Źółkiewski 1980: 152), he won't support "class distinctions in literary preferences or aesthetics, or categorizing readers with regard to class or making divisions according to social circulations" (Źółkiewski 1980: 243), although he seems to be departing from this latter opinion in the following sentence when he speaks of "permanent correspondence" between the typology of literary audience and class stratification. This disregard for nuances following the sheer force of his "fundamentalist" approach is highly indicative of Źółkiewski's discourse.

But if class properties are properties of semiotic SYSTEMS realized in the text, then why aren't they deciding about the structure or origin of the text, but merely about its "social function" (Źółkiewski 1980: 205), which after all is conditioned by such extra-systemic factors as material function and communicative situation? If semiotic systems EXPRESS<sup>8</sup> consciousness of the semiotic community (Źółkiewski 1980: 195–196), one type of which is certainly artistic consciousness, then why shouldn't systemically determined "class properties" be perceived as a "sociological equivalent" of this consciousness (Źółkiewski 1980: 205)?

Źółkiewski believes that the principles of (class?) structuring of any given culture depend on human needs, while hierarchically differentiated needs depend on where one finds oneself in the (class?) social structure (Źółkiewski 1980: 240). But there seems to be a circular reasoning in this opinion. To say that "it's often a distinctive class property to absorb national culture" is not only paradoxical, but also follows a misconception if we were to assume that "class" means as much as "specific in its class aspect." What cannot be treated as a distinctive property of a class cannot be a class property, and indeed what's national is not something by which class can be defined. Absorption of national culture cannot be recognized as something specific to a class, nor can it be considered as its essential aspect.

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<sup>8</sup>This is just one example of Źółkiewski's failed attempts to eliminate expressiveness from his discourse.

Let's conclude this section noting once more that it is but a selection of inconsistencies and confusions, a list of which is yet to be compiled in full.

## 11. TROUBLES WITH THE POINT OF DEPARTURE

An information theorist and a philosopher would perhaps say that primary concepts appear to be, to a degree, relative (Lubański 1975: 93–94). One imposes a conceptual framework on one's object of inquiry to break it down into its constituent parts, therefore everything treated as "basic initial data" is already cognitively processed and not necessarily of a "purely objective" nature. Which is why, for example, de Saussure's system of natural language is CONTRASTED with "empirically given speech" (Żółkiewski 1980: 7). Żółkiewski himself asks in what measure texts, as elementary initial data, are nevertheless already abstracted (Żółkiewski 1979: 629).<sup>9</sup> This seems to be a peculiar question for a scholar who's "praxistic" thinking (denoting *praxis* and practices) gets the better of "symbolic" thinking (denoting signs and meanings), who starts classifying SEMIOTIC objects by establishing their MATERIAL function as well as practices which generate this function (Żółkiewski 1980: 100), who associates changes in meaning with changes in production practices (Żółkiewski 1980: 74), who rejects the view that texts are elementary data (Żółkiewski 1980: 146), and who, finally, acknowledges that the theory of social practices and the underlying general theory of culture (let's say, philosophy of culture) precede and condition semiotic analysis of texts (Janus, Mayenowa: 52). Mitosek sees it as a revolution in literary studies that analysis of a work should begin with a description of communication processes, that the meaning of a text is determined by its pragmatics,<sup>10</sup> and that its meaning is shaped by the circumstances of the reading process (Mitosek 1982: 137–138).

Let's assume that a scholar deals EXCLUSIVELY with basic empirical data and his own conceptual constructs. Żółkiewski believes that it's the process of communication (implicitly: not a literary work) that has to be considered as basic, or initial, empirical data (Żółkiewski 1980: 104, 105). Under this assumption, this approach forces a literary work into the category of conceptual constructs and takes away its cultural concreteness, but one has to say that it sits uneasily with our common cultural experience. It appears that the process of communication, much like processes in the history

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<sup>9</sup>If text data are not immediate, then systems must be less so.

<sup>10</sup>We shall take up this matter elsewhere, for now let's only remark that Jerzy Pelc said that it may well be disputable whether the semiotics of sign is made up of syntactics, semantics and pragmatics (Pelc 1987).

of literature or production processes, cannot be regarded as basic empirical data. The communicative situation could be considered as such data but Żółkiewski treats it as a “generalized concept” (Żółkiewski 1980: 67). The act of communication could be regarded as such data, but Żółkiewski is not interested in the individual, but in the recurrent and the repetitive. Let’s just ask a rhetorical question: must elementary initial data be the point of departure for our study?

Żółkiewski agrees with Lotman that semiotic, or semantic, analysis should be treated as the FIRST step, one PRECEDING RECONSTRUCTION of the reality modelled in the analysed texts. He also agrees that it should serve as a RUDIMENTARY documentation of dynamics, functions, goals, circumstances and typologies of cultures, one gradually supplemented with information about those phenomena coming from other sources. At the same time, however, he maintains that preliminary reconstructing hypotheses precondition semiotic analysis and must be concurrent with it, thus abolishing the priority of semiotic analysis, or at least accepting a typical hermeneutic circle, despite his strong opposition towards the hermeneutic method. He does so never minding his prior reflections where he advocates a beginning that, so to speak, gets ahead of itself, which is a paradox indeed (Żółkiewski 1979: 535, 608; Janus, Mayenowa: 47, 60; Błaszczewicz 1980: 145; Lotman 1968).

Żółkiewski wrote that the semiotic function of the semiotic object, i.e. its textuality, can be given cognitive priority only “from the perspective of methodology” (Żółkiewski 1980: 60). If we were to understand this passage as “methodological perspective, but not the subject matter perspective” then we would have to add that he also wrote that analysis of social practices, which precedes semiotic analysis, has its own epistemological difficulties and problems present in grand theories of culture (Żółkiewski 1979: 638).

Żółkiewski maintains that his idea of a double beginning, which advises starting with a textual description while already having historical reconstruction of communicative situations ready at hand, is INCONSISTENT only OSTENSIBLY. This is so, argues Żółkiewski, because already at the outset one can build various reconstructions based on previous accumulations of cultural knowledge (Gadamer’s idea of prejudgment, perhaps?) (Żółkiewski 1979: 530). This opinion, effacing the difference between what “one” knows and the system of knowledge, could’ve been legitimate, if by “inconsistent” one would falsely mean for example “workable” because it’s precisely this workability that Żółkiewski conceives here as an argument (“knowledge... enables...”). But when “inconsistent” is given correct and

logical meaning, his argument, supposed to disarm the anticipated objection, falls flat. Proposing to “begin” two things at once and AHEAD of anything else is internally contradictory, and therefore doesn’t work from the methodological point of view. Thus, perhaps by default rather than by design, this eradicates the hierarchy of cultural values embraced by the author, that being primacy of socio-pragmatics over literature and literary studies, distinguishable enough despite Żółkiewski’s assurances that literary studies and studies in literary culture complement one another.

Let’s consider THE SAME but in a different light. CLAIM: semiotic analysis is not the first step in Żółkiewski’s method. DEMONSTRATION: If we agree to differentiate between technological and semiotic planes - distinguish fishing, for example, from meanings associated with this particular activity, - and if we agree to first single out our object of inquiry, then the first step made by Żółkiewski in his method is made EITHER on the technological plane (singling out practice), OR on the utilitarian-practical-material plane (singling out utilitarian knowledge: axe, clothes), but NEVER on a semiotic plane (singling out the text), where only the second step is made. If I understand correctly the point at issue between Żółkiewski and Antonina Kłosowska (putting aside their disagreement concerning the scope of “symbolization”), for the latter the inquiry begins with the text of culture, while for the former with the social object. For Żółkiewski, the step labelled “semiotics” is neither the first, nor the last one. The OBJECT singled out by means of extra-semiotic procedures is FURTHER subject to semiotic analysis, which is then not only “transcended,” but also, so to say, “overcome,” although not exactly in the Hegelian sense of the term. This would imply that the way in which the object of inquiry is singled out doesn’t overcome heterogeneity of cultural phenomena, and that the post-semiotic phase of inquiry happening further on provides no guarantee for this overcoming to be realized.

The notion that objects singled out in this extra-semiotic mode are “SEMIOTIC objects” (because cultural phenomena “can be described as texts,” see Żółkiewski 1979: 230–231) seems illegitimate and appears to be a major source of conceptual difficulties that one should look into separately, especially if we were to agree that singling out of the OBJECT is an empirically-descriptive (if not deictic) procedure, while singling out of the TEXT is a conceptually-interpretive process. Having effaced the difference between the object and the text Żółkiewski may now argue that “we can (...) observe the text directly” (Żółkiewski 1979: 231). Direct observation ensures access to the material and sense data, but not the semiotic data.

Semiotic data is identified through a complicated cultural competence which includes the ability to refer to or reconstruct systems of cultural meanings. Before one can receive the textual message, one must first establish what type of text one is dealing with. This equally concerns both ritual texts and texts of philological significance.

## 12. TWO PRAGMATICS?

Żółkiewski considers pragmatic analysis to be immanent, intra-semiotic, or intra-textual, even Lotmanian, one is tempted to say. But he also speaks of a “separate pragmatic analysis of cultural texts carried out on a different level” (Żółkiewski 1979: 620–621), it apparently being a separate thing from semiotic analysis. The term “pragmatic analysis” has clearly two meanings, which is as disturbing as the double meanings of such terms as “text” and “function.” Soviet semioticians use them in a broad and narrow sense, the former being superordinate to the latter. What, then, are the two meanings of “pragmatic” in “pragmatic analysis”? If we were to consider pragmatics to be a part of semiotics, then the immanent character of Lotmanian pragmatics very much holds, and what Żółkiewski calls “a separate pragmatic analysis” (Żółkiewski 1979: 620) would logically appear to be some sort of pragmatic but extra-semiotic analysis, perhaps of a sociological variety. And those two sorts of analyses should be accordingly differentiated between while recognizing that they’re two entirely different things. This would draw a clear line between semiotics and sociology.

I don’t think Żółkiewski would agree with that. But there is yet another approach that one can adopt when considering this matter. Namely, one can differentiate between IMMANENT “pragmatic semiotic analysis,” which determines textual projecting of the function, and TRANSCENDENT analysis, which determines the actual functions. Or better still, between internal, textual analysis and external, communication-situational analysis. “Pragmatics” would be a generic term (and also the associated concept), while “internal pragmatics” and “external pragmatics” would be terms (and concepts) of specification. All three would fall under the term “semiotics.”

This, however, would raise the question why, and on what grounds, only one of three elements of semiotics would be split into two genera. Also, one would have to note that following this split, and because of the newly introduced notion of “external pragmatics”, the difference between semiology and sociology would become blurred. This is because “external pragmatics” emerges here as a semio-sociological concept, with its sociological aspect overshadowing the semiotic one. Without settling this issue here once and



for all, one can say that Lotman and Żółkiewski differ in such a way as a semiotician with inclinations towards logic would differ from a sociologist with inclinations towards semiotics. The former imposes language-like models on culture, the other does the same with societal-like models. They're similar in that each excessively stresses just one of the aspects of cultural reality.

One can hardly object against discussing syntactic and semantic properties of the text, but things are entirely different with pragmatics, which describes the relationship between the external subject of communication and the message, and therefore characterizes not the TEXT itself (see Żółkiewski 1979: 53–54) but the aforementioned RELATIONSHIP. One could perhaps speak of pragmatic properties of the TEXT if we were to turn the whole notion of pragmatics upside down and discuss how the text refers to the receiving subject of communication. For example, a wake-up call, an appeal, Tyrtaeus' lyrics, a courtroom speech, a sermon etc, all clearly have immanent pragmatics (which may not be of immediate interest to the sociologist of literature), which directly influences the structure of the textual MODEL of the receiver, one which is sometimes only suggested but at other times aggressively forced upon. Pragmatics that sociologists would find interesting is, so to say, empirical, although I believe that literary scholars, and also sociologists of literature, should be interested in both of those types of pragmatics, which, for example, spectacularly clash in a sacrilegious prayer discussed by Żółkiewski. And, immanent pragmatics aside, which is never neutral, it's only empirical pragmatics that is influenced by the communicative situation, current functional models of literature and its kind of circulation (Żółkiewski 1979: 54). When Żółkiewski criticises Lotman for neglecting pragmatic issues (Żółkiewski 1972: 182), what he undoubtedly means by this is social (empirical) macropragmatics, for which intra-textual pragmatics is as yet only a project of pragmatics. Apart from that, Żółkiewski seems to be endorsing the claim that semantics should build on (empirical)<sup>11</sup> pragmatics (e.g. Pelc 1987), meaning FACTUAL use of

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<sup>11</sup>If semiotic analysis is necessarily systemic in nature, then it's not true that it's logically possible to have a „pragmatic aspect of semiotic analysis” which doesn't concern the empirically extra-textual (Żółkiewski 1980: 78). In this approach, what's pragmatic is also extra-systemic. The phrase „pragmatic aspect of semiotic analysis” marries mutually exclusive notions, similarly to the phrase „semiotic object” which identifies an object that has two aspects and functions which are impossible to grasp through a single semiotic analysis or method. Żółkiewski essentially identifies the semiotic with the textual. When he speaks of semiotic analysis that has syntactic and semantic aspects, there is no doubt that he means TEXTUAL ANALYSIS. But pragmatic analysis is not an analysis of a text, even if we consider it to be semiotic, but

signs and texts. For Żółkiewski, “meaning of the text” is a value analysed as a social function contingent upon other cultural values, hierarchized by the receiver according to their significance (Żółkiewski 1979: 528). This is when Żółkiewski speaks of the pragmatic aspect of analysis. But if the “meaning of the text” is analysed also through its semantics, then we are perhaps allowed to say that semantic analysis examines interiorized meaning, while pragmatic analysis explores social exteriorization of the textual meaning. One may as well come to the conclusion that the “social role of the writer-sender, with all its ethos” is a FUNCTION of this exteriorization. One may further say, quintessentially, that the social role of the writer-sender is a FUNCTION of the social role of the receiver-reader who exteriorizes meanings of the literary work. I think that Żółkiewski would tend to agree with this view.

### 13. FINAL WORD: MULTIPLE INSPIRATIONS AND COORDINATION

Żółkiewski is responding to a variety of theoretical and methodological “impulses” (Żółkiewski 1984a: 61). He’s taking concepts and themes from various scientific disciplines and is morphing them into, to quote Morawski, singular and uneasy symbioses. His absorption can be viewed synchronically, by looking into particular configurations, or diachronically, by looking into changeability of changes. Disciplines he chooses from include, for example, Marxism, structuralism, sociology, cultural anthropology, history, and communication sciences such as semiotics and the theory of information). Each uses a different set of premises and methods, and ends up building a different world-picture. Thus, the work of Żółkiewski indeed “merges structures of various systems anew” (Żółkiewski 1980: 149), and it does so with full awareness of the risks associated with logical inconsistencies of a system built upon different languages (Kmita 1982: 50).

Lotman says that the greater the number of contradicting rules in a game, the richer the game itself (Sławiński 1971: 230). But this is not how a thinker should proceed, rather, he should be primarily concerned with the consistency of his discourse to make sure that what he has to say makes sense for others, proceeding in such a way as to offer a uniformed theoretical perspective (Lalewicz 1975: 134, 2n).

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a procedure that ANALYSES A RELATIONSHIP WITH A TEXT. To be sure, SITUATIONAL DETERMINANTS OF THE RELATIONSHIP envisaged by Żółkiewski cannot be part of semiotic analysis (Żółkiewski 1984a: 33). It resembles rather some sort of pragmatogenetism or sociologizing parapragsmatics than anything similar to textual analysis (similarly, analysing storage conditions of a painting is hardly an analysis of the painting proper).

For these reasons I deemed it instructive to take a closer look at the internal organization of studies in literary culture, even if my discussion was limited to only some of its themes.<sup>12</sup>

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<sup>12</sup>As a way of excuse for possible omissions or deficiencies of this argument, let me just say that the present paper is but a selection of themes from my original and twice as long discussion of the topic.

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Wiesław Kotański

## FOUR MODELS OF SEMIOTIC COMMUNICATION

Originally published as "Cztery modele komunikacji semiotycznej", *Studia Semiotyczne* 18 (1993): 49—65. Translated by Małgorzata Szubartowska.

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All social actions undertaken within reality involve acts performed to create, process, transmit, and gather, as well as receive, replicate, or even destroy messages on a given subject. It is signs that constitute the material which undergoes such operations and the operations are generally carried out by people, although certain human actions of this sort may be simulated by machines. We will not be discussing the material dimension of signs, although their great diversity in this respect is worth bearing in mind, as they may take the form of gestures, movements, sounds, inscriptions, light or colour signals, compositions, structures, and sometimes even smells or tastes. We will limit our explorations to linguistic signs, both phonetic and graphic, for this category has been developed relatively well in different civilizations all over the world and therefore deserves the most careful attention. A linguistic sign may be considered either an acoustic object, produced as a sound and received aurally, or an object produced graphically on a physical base (like paper, board etc.) and thus received visually.

Any operation which involves signs may be called semiotic, from the Greek *semeion* meaning "sign"; in scientific jargon the term "semiosis" is also used to designate a particular semiotic act, while the branch of science which deals with acts of semiosis is called semiotics. This branch may be otherwise defined as the general theory of signs, which takes interest in all types of signs, especially the ones used to form ethnic (also called natural) languages. Semiotics itself, as the science which organizes human knowledge and experience in terms of communicating with others, uses the



so called metalanguage — a form of language serving to describe other languages, in this case languages used among different ethnic groups or in different human environments. Needless to say, even people lacking academic qualifications can talk about the practical aspects of linguistic issues in their own environments. Such a discourse always qualifies as metalanguage; it can be referred to as the first-order metalanguage, while a scientist who discusses this metalanguage uses it on a whole different level — she uses the second-order metalanguage. Theoretically, one may speak of an entire hierarchy of languages of higher and higher orders, and it is not insignificant whether one has a thorough understanding of this hierarchy, as it can sometimes prevent her from drawing false conclusions. For example, the sentence "John heard that Wawel had collapsed" does not inform us about what had happened to Wawel but about the fact that John heard someone say it, but it does not by any means have to be true; John could just as well be lying that he heard that. Lying, confabulating, deceiving, and joking are all forms of semiosis, so when one hears a statement "I think that I'm going to die tomorrow", it only means that such a thought ran through its author's head, although these kinds of announcements are usually mistakenly considered premonitions, prophecies etc. From now on we will try to avoid metalinguistic issues, however interesting they are, in order not to overcomplicate the descriptions of basic semiosis.

Semiosis is therefore one of the forms of human behaviour. Humans sometimes behave in a semiotic manner without engaging in any kind of asemiotic activity which would have a clear connection with a given act of semiosis (e.g. talking to oneself while standing still) or, more often, an act of semiosis bears obvious relation to an asemiotic activity accompanying the semiosis (e.g. producing echo, chanting while marching, giving a command and executing it, an actor moving on stage and speaking his lines, etc.). Such a case is important because very often asemiotic situations accompanying semiosis provide us with the opportunity to notice a string of coincidences when specific sound sequences recur regularly right before or after a certain asemiotic event, which leads us to conclude that there is a semantic connection between the two phenomena (e.g. the word "car" appears in situations with a four-wheel motor vehicle involved, which allows us to assume that the word is linked to such vehicles).

If that was the only method we adopted to learn the meanings of words, our semiotic behaviour would be riddled with misunderstandings and inconsistencies to a much greater extent than it actually is. Fortunately, there are different modes of learning meanings, especially through verbal specification

of details or by establishing extemporaneous semantic conventions between communicating people. Conventions may also be regarded as a certain norm which regulates common understanding of the semantic spectrum of a word or a phrase and this norm is being established in a society by constant exchange of individual experiences. Despite temporary difficulties, an almost uniform standard and pattern of the use of words in speech is gradually set. The richness of one's vocabulary also depends on one's semiotic experience, and it is generally considered a norm that an average speaker in a given social environment, excluding children who have just started learning, knows specific words spectra, however this belief may also be false, since vocabulary deficits are very common.

Although we have been mainly discussing the semantic convention in language and although we have recognized the fundamental importance of this convention in semiotic behaviour, it is also worth emphasizing that other types of linguistic conventions come into play, even though some refuse to grant them the status of norms or conventions. It must be taken into account — in our view — that a well pronounced and correctly accentuated word sends a signal to native users of a given language about the possible homeliness and nativeness of the speaker's semiotic habits, while bad pronunciation arouses the suspicion of otherness, maybe even hostility. The same would certainly apply to syntactic habits, that is, the ways in which words are linked together to form larger meaningful entities. Such socially-established standards of pronunciation, syntax, meanings, vocabulary, etc. can also be viewed as competences of language speakers. At the same time, average mature individuals, who function normally within their ethnic groups and participate in consuming their cultural heritage have similar semiotic competences, although obviously there are certain discrepancies between individuals when it comes to mastering these competences. Not only children, but also members of a different social group who attempt to acquire foreign competences usually succeed only partially, yet an individual may sometimes measure up to the general level.

Such a long list of competences (which could probably be more detailed and rich) conclusively proves how complicated the mechanisms of human speech are and how much effort it takes to master a foreign language to near perfection. Putting aside the acquisition of a foreign language, we know that even in the case of a native tongue, learning native conventions in fact never ceases; every member of a society is learning her entire life how to use his maternal language more and more accurately and she keeps making mistakes and gaffes. Through contacts with the world, one expands her vocabulary and

particularly develops her ontic competence, that is the ability to describe and understand the world. Also one's syntacto-synsemiotic abilities constantly develop, so that one's creativity in using language grows as well, sometimes even to the extent that the asemiotic level becomes overpowered by the semiotic one, as it happens, e.g., in the case of writers, poets, public speakers, men of science, etc.

One of the most important phenomena within this scope is the presence of lacunae or unknown quantities (in mathematical terms) in interpersonal communication. Since they are, in principle, the missing links in semiotic chains, they can refer to either one of the competences necessary for a successful production of an utterance. From a descriptive viewpoint, noticing the lacuna, consciously attempting to fill it and discussing the phenomena connected with it are all activities which belong to the scope of metalinguistic phenomena.

Also, formulating questions while communicating is treated as a typically metalinguistic activity. When one asks if she wrote the name "Shakespeare" correctly, she is usually concerned if she conforms to the general orthographic norm. On the other hand, the orthophonic norm is interesting to someone who asks about the accepted pronunciation of the word "tortilla" or "murza", etc. Relations between words are perfected by asking others about the difference between the expressions "madam" and "lady", or if it is accepted to say "Pink is different than blue" or "Pink is different from blue". But the most common questions are "What is tinfoil?" or "What does <<statute of repose>> mean?", etc. — this is how the person asking attempts to fill the gaps in her semantic competence. This applies as well to questions such as "What is that?" or "What do you call it?" followed by pointing at the object: the purpose of this practice is to eliminate unknown quantities from one's vocabulary. The questions may also refer to accidental circumstances: "When did that happen?", "How much does it cost?", "Is it warm outside?"; this does not refer directly to linguistic issues, but it extends the inquirer's knowledge of her environment, which contributes to the production of stereotypical descriptions of the surrounding world, and it is precisely the expression of what surrounds us that is a necessary condition for successful communication between members of a community.

Thus, the question-answer mechanism may be worth regarding as a mechanism of language formation just like the practices of repetition and assimilation (i.e. operations using analogy, e.g., according to linguists, forms of Polish demonstrative pronouns "tego" ["of this"] and "temu" ["to this"] were created by analogy to personal pronouns "jego" ["his"], "jemu" ["to

him”]; another example: in children’s speech the form ”mouses” may easily replace ”mice” or ”goed” may be used instead of ”went”. The name for this mechanism may be borrowed from the logical term ”erotesis” (from the Greek *erōthesis* meaning ”question”). Erotesis shows in a general manner the entire procedure of posing questions and receiving answers, which is of course present during the entire human life, but it is used with exceptional intensity in the early, formative stages of speech development and it has a crucial influence on later phases of one’s linguistic existence. It is even the foundation on which the entire linguistic structure is built. Certainly, it is impossible to recreate the abundance of trivial erotetic interactions between a child and her mother, her grandmother, her siblings, or her playmates, although they have been described to some extent. Meanwhile, these interactions deserve proper consideration as this is precisely the source of our confidence that we are using the right words, even though most of us cannot by any means justify our confidence in linguistic terms. For an average user of informal language, there exist no other linguistic patterns than the ones they acquired in their childhood when they were asking people around them for a given piece of information.

As long as metalinguistic elements used by an educated person are discussed, one can speak of linguistic formulae for assessing the correctness of an utterance, while in the case of a person using language spontaneously, the method for speaking correctly and recognizing the beauty of certain utterances is developed on the basis of the knowledge gained during erotetic interactions. No matter if it is jargon, slang, or a dialect that serves as the criterion, it is still one’s metalanguage, one’s source of norms for speech acts. (Note that assimilation and repetition are also metalinguistic in character, since e.g. ”I repeat” or ”I imitate” are in a sense operations with respect to quoting the object language.)

Although linguistic habits of a given environment ought to be treated with due respect, as long as they do not violate social aesthetic and ethic sensibility (like swear words or obscenities), every civilized society displays a tendency toward unification, aiming to solve local, environmental, dialectical, and other differences, as well as to create a language common to the entire society. These tendencies are supported by the standardized education system of a given territory, the mass media (radio, television, cinema, press, books), the army, the church, theatres, and associations etc. It is in the interest of all aforementioned institutions that all individuals remain within the range of their influence, use the same language or at least be capable of receiving one standardized style of writing, talking, and understanding; what is more,

if particular individuals can meet these expectations, they usually benefit from it.

It usually takes the form of a well-planned and coherent linguistic policy of a country, which applies to all subordinated institutions that are implementing this policy. Even if on a given territory such a policy is pursued with a certain reluctance, the society itself spontaneously produces patterns and chooses its preferences. The language used by actors and radio or television presenters occasionally becomes the standard pronunciation, while the language of major writers and journalists becomes a pattern for the production of impeccable utterances. But the choice of a pattern can be more or less free and random, based on arbitrary criteria. It seems that the only reasonable, nonetheless imperfect, criterion, is to rely on the judgement of linguists who provide us with an impartial examination, as comprehensive as possible, of the justifications for using this or that linguistic form or material and who are capable of arguing rationally for or against the use of particular forms. Such a solution was generally adopted in most civilized societies, and the fact that eminent poets and writers of fiction see no need to fully conform to linguists' suggestions poses no problems. A good linguist acknowledges the possibility to create and introduce new words or phrases into the language if this proposal is justifiable and it does not shock the receiver enough to compel her to protest. Distinguished authors are usually recognized also by linguists, who can treat them as "dictators of linguistic trends" imposing new standards, standards which every now and then even the specialists must accept, thus gaining the exciting opportunity to support them with theoretical arguments.

Therefore, it is assumed, and we want to stick resolutely to this assumption, that every individual who uses a given language bases her linguistic operations, consciously or not, on certain patterns, norms, and in some cases even on the laws of this language. Except that in different moments patterns which are different in terms of level and origin are being followed: from naive linguistic convictions of an incompetent and often conceited individual, through basic linguistic knowledge gained thanks to attending a school or reading printed texts, to linguistic studies in their most subtle form supported by a real contact with actual linguistic practice. We call these overall patterns metalanguage, and now comes the time to present a simple model of how — in our opinion — the metalanguage affects speech acts, in other words, how it affects semiosis. Charles Morris's (1938) theory of signs will be particularly useful for designing this model, although we will make use of other theories to some degree as well (e.g. Bühler 1934).

First and foremost, we should agree to restrict our examination only to communication between members of one society in a specific period of time. For the sake of simplification, we shall leave out more complex cases such as situations when a foreigner attempts to make contact with a group to which she does not belong, regardless of whether she succeeds or not. The temporal and spatial framework will be represented as a circle circumscribed around the entire graph (Figure 1). Inside the circle there is the plane of communication, i.e. the process of transferring a message to a receiver or receivers (those who listen) by a sender (a speaker; there may be more than one speaker/sender, but it is rare).

At the same time, it is common knowledge that communication is the most essential function of language. It is thanks to communication that all members of a society are relatively equally supplied with information which organizes the environment, so that it becomes generally understandable and safe for those who inhabit it. The exceptions to this rule only confirm it by prodding the society into making the transfer of messages more complete and improved. The sender performs the role of the 'speaker' when she linguistically (graphically or phonetically) expresses certain contents. This necessary feature of speaking could be called exteriorization or externalization. The role of the receiver seemingly consists in listening to the linguistic text and extracting its meaning, but in fact, listening is merely the preliminary phase of a much more complex process, namely, of making the form and the content of the received message part of one's nervous system (interiorization or internalization).

Interiorization may be more or less persistent depending on various factors, which are the subject of psychological study, but what is important is that the content of the message may sooner or later influence the will and the behaviour of the listener; in other words, her reaction and only her reaction proves if she understood the message correctly or not. It is extremely difficult to provide a theoretical analysis of this phenomenon, since the receiver may and can exteriorize her reaction at any moment, even long after the internalization has occurred, as it often happens. The person who observes both episodes is in position to link them together, but the person who witnesses only one of them does not know the precedence or the sequence, therefore they can only recreate the missing elements in their imagination. In an abstract (theoretical) description, the situation is usually simplified, and it is assumed that the reaction to the message-stimulus directly follows interiorization; this is the simplification we are going to make now.

When the receiver reacts positively to the message, manifests it (exteriorizes it) by making a movement, a gesture, a facial expression, or a comment. Lack of such an exteriorization means a negative reaction. Of course, a positive reaction may be misleading, because the receiver has every right to conceal her actual reaction by making a confusing movement or by saying something not related logically to the message. A detective must be able to interpret such situations properly, but a linguist is allowed to resort to a simplification. Not to overcomplicate matters, it seems that it is enough to carry out a scientific study of the positive reactions in both the existential (the very occurrence of a reaction) and the logical sense (the existence of a logical consequence between the reaction and the message). What kind of logical consequence? Generally speaking, a message that entails a reaction is either a meaningful syntactic structure or a single word, and such linguistic forms immediately refer the listener to their denotation, that is, to a class of objects (as well as events, facts, issues, etc.). If the behaviour (including the verbal one) of the reacting party overlaps with the classes of objects referred to in the message, it implies a relationship between the message and the reaction, but it is the most basic case of a direct logical consequence. Logical consequences may just as well be indirect, in which case several in-between thresholds are to be crossed before one can conclude that the message has been understood. For example, when a burglar hears a police officer cry "Freeze!" and starts running instead of surrendering, it must mean that she did understand the content of the exclamation, but refused to conform to it, as she does not wish to get caught by the police. In the same way, the decision to leave your umbrella at home (or a statement "I'm leaving my umbrella") is an indirect proof of the understanding of the information "Today there will be no rain", since you usually take your umbrella with you when it is supposed to rain. There can be numerous indirect situations like that and it is not always easy to follow their logic, although very often a quick and appropriate indirect reaction can entail major consequences.

We have been trying to prove with the above brief examples that even though the receiver's reaction to the message can take various forms, what underlies it is the proper understanding of denotation, in other words, the message's semantics, as well as a certain coordination of the elements of the denotation with the receiver's behaviour in response to the message. The typology of such coordination should be the aim of an in-depth study, but as far as we know, not much has been done in this area yet.

A few words of comment should also be said about the situation in which the receiver's reaction is observed by the sender of the preceding message

(which is an act of interiorization as well) or by a third party otherwise uninvolved in the communication. It may also happen that the receiver herself wonders about her own reaction and thus becomes the sender. Whatever the case, the point is that the place of the sender and the receiver may be held by different individuals, who are performing the roles appropriate to a given process, as indicated in the graph (Figure 1). Similarly, if one has missed the adequate reaction, she might take interest only in the transferred message; or the other way round — the reaction may be taken for the message; but then one loses sight of coordination, which makes the discussion less complete.

On the basis of all foregoing clarifications, a simple model of semiotic communication may be proposed.

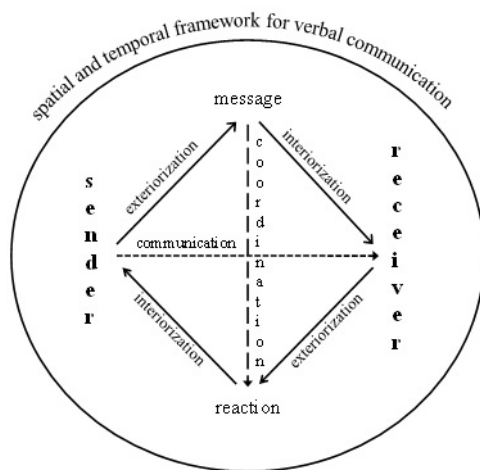


Figure 1.

Note: we assume that there is a hypothetical relation of ‘coordination’ between the message and the reaction, however — in our view — it is merely a product of the observer’s (e.g. the receiver’s or the sender’s) mental process, in which case one can speak of an ontological non-concurrence of the communication process and the existence of coordination; for that reason the arrow on the graph is represented by a dashed line. To be more specific, the very communication may occur thanks to the ‘exteriorization — interiorization’ phases, so on the graph it must as well take the form of a dotted arrow.

Once this model is established, the previously announced normative patterns can be introduced: patterns which are followed by the participants



of the act of semiosis so that they can play their parts efficiently. Since their roles are different, corresponding metalinguistic patterns must be just as diversified. Anyway, we agreed earlier that every language user has some convictions about how and what to communicate or how to react (exteriorization), as well as about why and when to respond to the message or to the reaction (interiorization). Adopting a theoretical approach, used only in special situations even though it offers the most accurate and possibly the most precise description of the relation between the sender and the receiver in the communication process, we can speak of patterns of receiving procedures, patterns of message creation, patterns of transmitting procedures, and patterns of reaction development; reaction, being eventually received (perceived), ought to be included in the model as well.

Transmitting procedures, according to Bühler's theory, are envisioned as a field of speech acts, in other words: speaking; which corresponds to Morris's pragmatics as the branch of semiotics which deals with relations between signs and their active users (e.g. phonation, graphic qualities, expression, communication). Message creation is in fact the second aspect of the actions undertaken by the sender, but because of its particular importance for semiosis scientists treat it separately. Bühler uses the terms "text" or "linguistic product" and considers it a fairly static element of speech acts; to Morris, on the other hand, it is a branch called syntactics and it is concerned with relations between elements of a compound expression. The latter is closer to a dynamic approach and it deals with the rules for the formation of expressions by combining simpler units into more complex entities. It seems that pragmatics and syntactics brought together constitute the exact equivalent of exteriorization. However, pragmatics, or a transmitting activity, has its own power source; namely, thanks to the receiver's reactions, certain impulses are transmitted to the sender which provide her with motivation and sometimes inspire to produce another statement; generally speaking, we call it interiorization.

In Bühler's theory, the moment of reaction corresponds to understanding (also called a speech act), while Morris uses the general term "semantics", that is the science of the relation between signs and the environment to which they refer (designation, i.e. signifying concepts, naming, denoting classes, connoting an object's qualities and fulfilling, which is the temporal and spatial concurrence of events or phenomena and the locution's content, etc.). The semantic aspect of a particular reaction discussed above influences the process of further exteriorization; semantics as a general set of meaning-related rules is, along with pragmatics, an exact equivalent of interiorization,

which can perhaps be explained as the process in which meanings attach themselves firmly to the remembered acoustic material.

Receiving procedures (such as listening or interpreting the content) are not usually treated as an independent object of study. It is assumed that even if the sender seeks to form her utterance so that it is easily receivable to her interlocutor, she rarely takes into account the latter's personal preferences (acoustic, syntactic, and semantic). However, some predictions may be made based on direct observation of the interlocutor (e.g. when talking to a child, one starts using a simpler language; when talking to an elderly person, one refrains from using teen slang; when approaching one's superior, one adopts a humble attitude, etc.). However, in such cases, phonation, semantics, syntax, and vocabulary usually do not depart from the general norm; rather the opposite — there is a tendency to impeccably conform to the socially-approved norm, as it is generally more appreciated. Consequently, the ideal or the standard of receiver's behaviour is the common language. If it was defined traditionally as a set of socially-established acoustic signs (secondarily also written) operative within the society with rules governing their use, it would seem that this standard, or rather a set of patterns, is superior to the other three (pragmatics, syntactics, semantics), but it is a rather unfortunate approach.

In our view, the receiver's language ought to be defined in terms of the relation it represents; as opposed to pragmatics (which describes the relation: sign — individual), it shows the relation between the sign and the society. This means that the social circumstances of language use, the environment, the traditions, hierarchy, and authority should all be taken into account, and that language changes constantly in the face of new civilizational needs, although at the same time protects its identity and does not allow any changes that would prevent, e.g., three or four different generations living at the same time from communicating. Sociolinguistic studies apparently take this direction, but their attitude towards the three above-mentioned branches has not yet been properly discussed, although it would seem reasonable, if not required. In accordance with the Greek terminology of other branches, I would like to propose the term "ethoglottics", meaning the dominant worldview of a given period expressed through language. Not only does this worldview change, but it also exerts a tremendous impact on speakers, although it may still be home to anachronic views that were excluded from science, since society is reluctant to accept rational explications and favours irrational, traditional elements (e.g. we say "The sun rises", even though it is a known fact that it is the Earth that turns and not the Sun; a sentence

"He's full of the devil" may be recognized as a metaphor by an educated person, but a superstitious one may well take it literally).

The conclusion is that a human being sees the world through the etholanguage ('ethoglossa') of her social group, therefore this phenomenon deserves a proper place in the language system. It does not mean at all that the categorization of the world is fully determined by the language structure, but what it does mean is that particular languages reflect in their vocabulary and in their morphology (derivation or inflection) the distinctions that are important from a cultural point of view and typical for a given society. It results from the fact that the language of a given society is an indispensable part of its civilization and its culture and that lexical items reflect those features of objects, relations, and activities that are important in one's collective existence, so the worlds inhabited by various communities differ from each other linguistically. Hence, users of different languages will behave differently in the same environment, because their languages provide them with different praxeological suggestions. It can be also put this way: one does not know a given custom, but the knowledge of customs is rarely transmitted through movements alone; the movements are usually accompanied by a linguistic comment, which acts as their unconditioned stimulus and it is more common to make use of this stimulus than to actually reproduce the movements. For that reason, non-verbal customs are considered separate and extraordinary, but in this text we are preoccupied with the cases of linguistic manifestations of customs.

On the other hand, it just so happens that during the course of historic events, cultural territories begin to overlap, and then expressions from two different languages or more, sometimes completely dissimilar, start denoting a similar custom, function, symbol, dish, piece of furniture or clothing on different territories, which conclusively proves that within certain domains the worlds of societies speaking different languages may become alike. But it seems more important to focus on the differences which lead to mutual misunderstandings and to those which are difficult to overcome.

This brief sketch of the central thesis of ethoglottics, to some degree clearly modelled on the claims made by such linguists as Wilhelm von Humboldt, Edward Sapir, or Benjamin Lee Whorf, directs ethoglottic study towards lexical material and morphology, which was traditionally included in grammatical descriptions of language and which perfectly completes syntactics. It does not seem correct to introduce here the entire 'language system' and its 'grammar', as Bühler does, because according to the adopted scheme, pragmatics, syntactics, and semantics shall be considered separately,

in other words — there is room only for vocabulary and morphology; the language system comprises of four abstract branches. Yet we ought to assume that these four branches are interconnected and that the analysis of the message's content expands the ethoglottic resources of the receiver, which corresponds to interiorization (according to the model). On the other hand, the receiver, in reacting to the message, exploits her ethoglottic resources in order to coordinate her reaction with the message about the interlocutors' common environment and thus exteriorizes her new semiotic experience, which is the very essence of exteriorization on the part of the receiver.

As to the reflection of the world in linguistic productions, we will return to this subject later in the text. For now, in order to summarize what has been said so far, we shall present a complete, synchronic model of semiotic communication. "Complete" meaning that the simple model of communication presented before (cf. Figure 1) will now be elaborated by adding the metalanguage, or four normative patterns. The model is synchronic in the sense that it describes the act of semiosis carried out at a particular time and place. It means that it is being modified within these limits; yet the very process is theoretically abstracted from its space-time continuum for the sake of clarity of description, so, in that sense, the process is as if immobilized. Obviously, when enlarging the observed fragment, one can notice more relationships and semiotic changes, but for methodological reasons it is advisable to clearly see the simpler process first and only then can it be expanded with more details and additions.

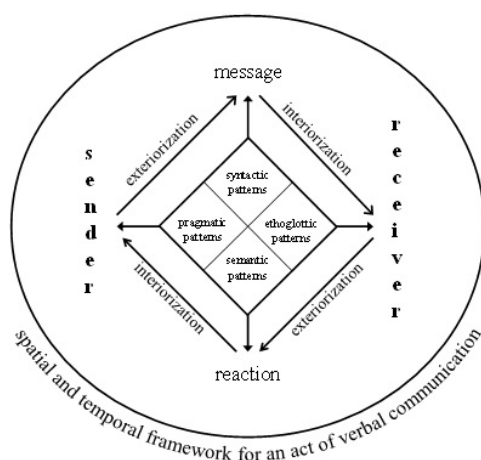


Figure 2.

The study of semiosis and human communication is not restricted only to the synchronic model of communication. Although the methodology of synchronic studies is absolutely necessary, rational, and systematized, it is obvious that human semiotic activity develops in time and space. Numerous phenomena, incomprehensible from a strictly synchronic perspective which treats them as primary data, accepted without any questions about their origin, can be explained only through language evolution, which is the subject of diachronic linguistics. There is no need to despair if someone is not interested in either language evolution or language origin, but it would be just as unjustified to condemn someone who takes particular interest precisely in those two, especially that — as we have already said — no unbridgeable chasm separates synchrony and diachrony. The point is simply to broaden the temporal and special framework of scientific observation. Besides, being interested in something and poorly solving problems are two different things. The latter used to be the bane of diachronic linguistics, particularly because it would underestimate the systemic nature of language, but this weakness can be overcome.

Next, we will propose another model in the attempt to explain the evolution of language in time if it is to keep its systemic quality, i.e. the durability of opposite dependences between various relations in a given synchronic language system. It must be emphasized that we will not discuss particular formal elements of language. They too form a system in which no element is loose but remains in relations to the others. Our task will be to show the primary relations, that is the relations between equivalent relations, since limiting ourselves to secondary relations (to paired objects between which particular relations occur) would easily lead to the system's breakdown into unconnected fragments. When one analyzes relations between an infinite number of objects, it is better to treat these relations as ordered pairs, that is as objects characterized by a specific relation and constituting adequate sets (classes, multitudes). Such sets of ordered pairs allow us to diachronically order the process of language development without losing its systematic quality.

If only these four sets discussed above were to be taken into account in terms of their metalinguistic function (sets which can be just as well regarded as branches of linguistics or four aspects of linguistics theory), it would still be, in our opinion, a poor presentation of the language system, although the general relations which we have described above do occur within the branches. We will briefly enumerate these relations: sign — sender (pragmatics), sign — message (syntactics), sign — society as receiver (ethnolinguistics),

sign — reaction (semantics). What probably belongs here as well is such relations as: sender — receiver (communication), message — reaction (coordination), sender — message or receiver — reaction (exteriorization), message — receiver or reaction — sender (interiorization). Of course, it would be possible, if required, to come up with double terms for exteriorization and interiorization. The same goes for the relations between the pairs of sets of a higher order: pragmatics — semantics, pragmatics — syntactics, pragmatics — ethoglottics, semantics — syntactics, semantics — ethoglottics, syntactics — ethoglottics, but it is not our task to describe them in more detail.

Since our actual purpose is not to enumerate all possible relations but to achieve an orderly vision of the language system, we need only those pairs which stem directly from the earlier established sets. Our method of reasoning — in accordance with Bühler's theory — will be based on producing abstract definitions of various semiotic concepts out of symbols which represent axiomatic conceptual categories and which at the same time are the simplest factors or features constituting the speech phenomenon. The definitions take a classic form, that is they consist of a type (*genus proximum*) and of a difference (*differentia specifica*). The names of categories are paired and intersect each other. The first pair is subjectivity — intersubjectivity (su—in), the second one is process — effect (pr—ef). Each following pair will lead to the change of *genus*, while the elements used earlier become *differentia*, which makes it more precise. We will present this in a form of a dichotomically ramified tree (a dendrite). The symbols of the regulatory categories which belong to the definitions will be preceded by the names of sets and subsets. I call such a model of presentation a combinatory model of language communication. The part of the tree which we have already discussed looks as follows:

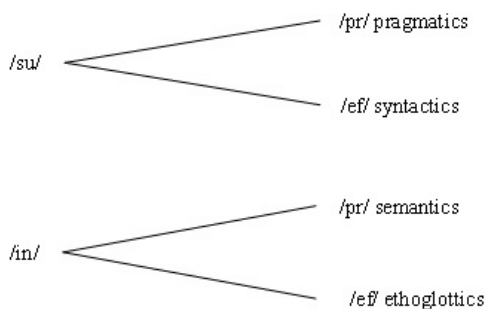


Figure 3.

The next pair of regulatory categories will be: /de/ description and /no/ nomothetics, which is the establishment of rules, laws, and principles. The point is that there are two ways of approaching the tasks assigned by environmental conditions. One of them can be expressed through the question: "What is the purpose of human activity?", and the other one through: "What should be the purpose of activity?". Both points of view carry out very important functions in human life, that is in every aspect of human behaviour and in the activity of entire social groups. Yet they differ so much that the answers to the questions they pose must not be treated equally, much less put into practice. It is because an activity inspired by "What is the purpose?" is grounded in specifics and its performance remains within human capabilities, while attitudes dictated by "What should be the purpose?" tend to be irrational and subjective, they tend to be the expression of dreams, fantasies, delusions, etc. Supporters of the latter attitude are quite numerous and they are usually willing to identify it with the former. The two attitudes are sometimes confused even in academic dissertations, although they ought to be differentiated there as well. The first attitude prevails in science, where it is called 'descriptive science'; its Latin equivalent — description — has already been used in the text and it basically consists in studying the state of a particular phenomenon in a specific time and place.

Scientists seldom engage in establishing a perfect, infallible state, although a priori, deductive and formal sciences (especially formal logic and mathematics) strive for infallible, formalized reasoning and even assume that their formulae apply to every area of study, provided that it can be reduced to the patterns of proper reasoning. The difficulty lies in the extreme generality of these patterns, so that it is hard to apply them to all sciences and to everyday needs, where much less general expressions are required. There have been attempts to bring logic closer to the world of objects, to the reality in which people live, and we may presume that in due time, as it happened in the case of linguistics, applied logic will emerge, oriented to the practical use of logic in various areas of life and aimed to make human reasoning more efficient for the sake of social relations. It seems that such branches as interrogative logic, modal logic (preoccupied with concepts of necessity and possibility), or deontic logic (concerned with obligation) can be regarded as examples of branches similar to applied logic, although they do not yet intend to approach the concepts formulated by ordinary men; they rather adapt common ways of thinking to logicians' requirements...

When we use the term "nomothetics", we do not mean the formal and deductive approaches, which lead to infallible reasoning. The idea is to present

certain linguistic relations by imagining them as if, at a given stage, they were as unquestionable, flawless, impeccable, and exceptionless as possible. And this goal is usually achieved through generalizations, systematization, and sometimes simply by improving already-existing approaches or making proposals based on simultaneously investigated phenomena. While the material aspect of certain linguistic branches is undoubtedly to be classified as description, that is to say the portrayal of the actual state, the theories concerned with establishing the best ways to present its formation should rather be called nomothetic, since it is only one scientist's opinion that a specific phenomenon should be presented this way or the other, while another observer could propose a completely different version. Similarly, two subdivisions can be attributed e.g. to pragmatics — /de/ articulation and /no/ phonemics; to syntactics — /de/ syntax and /no/ syntagmatics; to semantics — /de/ designation and /no/ sememics; to ethoglottics — /de/ vocabulary and /no/ morphemics. A careful reader, familiar with linguistic issues, will easily notice that the presupposed dichotomous structure of the tree compels the author of this text to resort to shortcuts, simplifications, and ambiguities, which could be explained perhaps only by a detailed elaboration of the first premises, but the purpose of the text is to give a general idea of our theory, without going into details, as these may still change.

Therefore, the author wishes to offer a rather tentative description — merely a bird's-eye view — of yet another attempt to develop a combinatorial model of communication by means of the fourth pair of regulatory categories. We believe that it would be consistent to end our model's branching with the indication of two directions that each activity takes: one being extravert, 'for show' so to speak — that is /ex/ exposition — and the other — introvert, in other words 'for personal use', which is represented by /pe/ perception. For each of the eight subdivisions described so far, it seems possible to propose two new ones, however some of these suggestions are not to be found in the works of other authors. Some cases are questionable or at least they need further explanation, but we are unable to provide one at the moment. We will present this classification in a form of a complete, dendritic structure, since particular fragments can be grasped only when the whole picture is given (see Figure 4).

This model of verbal activity is the basis from which we can proceed to the presentation of a diachronic model of linguistic communication. Such a model can be developed around the opposition pr—ef or de—no (there are probably other ways of presenting it, but right now we shall content ourselves with these two). To make it more simple, we will describe only the



first model. The second one was based on the same principles, so the reader herself, if interested, can attempt to interpret it to recreate an even more detailed model.

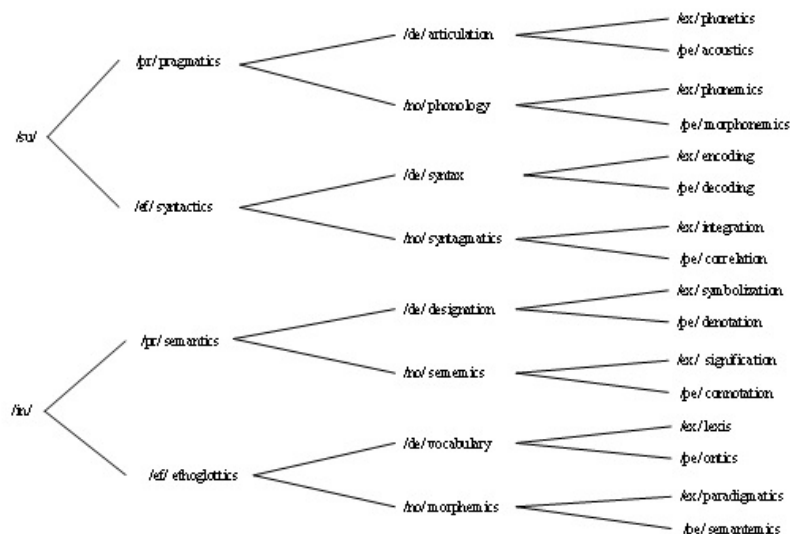


Figure 4. Combinatorial model of the language system

The symbols pr—ef represent the opposition between the categories ‘process’ and ‘effect’ (i.e. the result of the process). Combinatorial rules allowed us to determine that the process is represented by four language disciplines: articulation, sememics, designation, and phonology. The same goes for effect; there is syntax, vocabulary, syntagmatics, and morphemics. Both groups of disciplines are represented in our chart (Figure 5) in two configurations (in the corners of the quadrilaterals), which expresses the view that the two groups are opposed to one another. If we treat ‘process’ as ‘transformation of  $x$ ’ and ‘effect’ as ‘ $x$  transformed into  $y$ ’, then the sets ‘process’ and ‘effect’ constitute an ordered pair: ‘ $x$  transforms into  $y$ ’. An important feature of such a pair is that we can attribute symmetry to it, that is, we can accept intuitively yet another ordered pair: ‘ $y$  transforms into  $x$ ’. The reservation expressed by the words “intuitively accept” is justifiable when we consider e.g. the sentence “A stone transforms (in a sculptor’s hands) into a sculpture”, which cannot be symmetrically turned into: “A sculpture transforms into stone”. However, a certain generalization seems acceptable,

namely that every result of a transformation may become the object of further transformation and when that happens, the relation  $x-y$  actually becomes equivalent to the relation  $y-x$ , so it indeed proves symmetrical. Since such symmetrical substitution may repeat itself indefinitely, we can see the mechanism which in the discourse of mechanics (or cybernetics) is called feedback. To put it simply, every process leads to a result and every result can give an impulse for a new process. This symmetry (equivalent to feedback) is represented here by a two-headed arrow pointing in opposite directions.

However, there are twelve arrows of this sort in our chart. At each of the eight terms that altogether form two configurations, three arrowheads are pointed. Since each of these terms' definition consists of three symbols, the second head of every arrow points at a term different from its counterpart only in terms of one symbol. For example: articulation was equipped with symbols: su.pr.de. Out of the three arrows directed at articulation, one leads to designation /in.pr.de/, indicating the opposition 'subjectivity — intersubjectivity' (of the process), the second one leads to syntax /su.ef.de/ and indicates the opposition 'process — effect' (in description); the third one leads to phonology /su.pr.no/, indicating the opposition 'description — nomothetic' (against the background of a subjective process). Similarly, it is possible to formally define the arrangement of each pair indicated by an arrow.

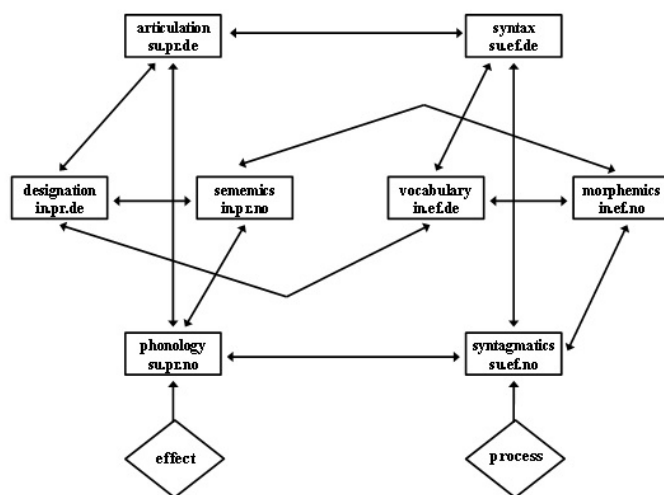


Figure 5. Diachronic model of communication based on the opposition  
pr—ef

Clearly, a metaphoric reading of every pair's meaning must be more complicated, but the reading of the 'process — effect' pair offered above can serve as an example of how to do it. Due to the length limit of this article, we must abstain from more attempts of this sort to interpret the meaning, but let us just repeat the general conclusion: each of the twelve pairs can be presented as both symmetrical relation and feedback, which means that linguistic communication is not only a movement from process to effect, since such movement is followed by yet another process and effect etc. and it is not limited in time (we should add that it is not a circumferential, but a spiral movement, because every 'turn' occurs in a different time span). Apart from a few dominant movements /su.in, pn.ef, de.no, ex.pe/, we must remember about the internal movements around smaller orbits. Our model includes twelve orbits (while in the opposition de—no in Figure 6 we indicate 32 of them). Thus the presented diachrony illustrates great variability and dynamism of linguistic issues, which is exactly what was to be demonstrated. All this activity takes place in a certain time and space, so it ought to be imagined as the movement of celestial bodies recreated in a planetarium. Anybody who cannot see this, simply deforms the vision of language, reduces it to a static model, which is hardly sufficient for a proper understanding of language issues in their entirety.

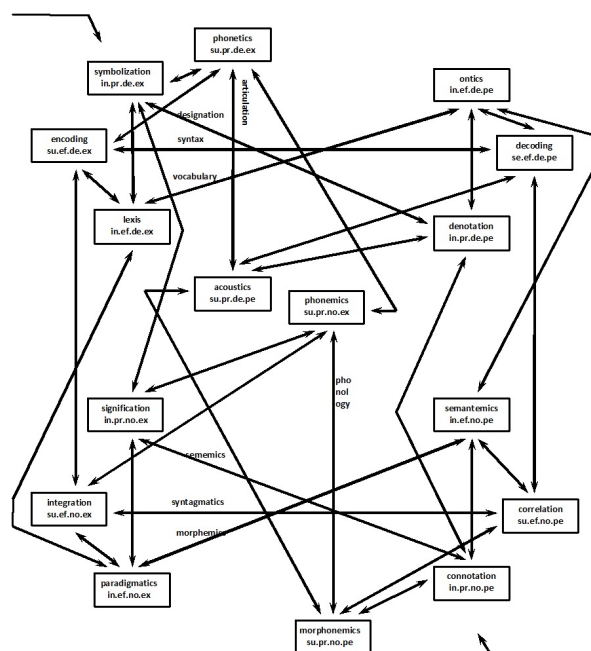


Figure 6. Diachronic model of communication based on the opposition de—no

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**Krystyna Jarzabek**

## **MIMICS AS AN ELEMENT OF INTERPERSONAL COMMUNICATION**

Originally published as "Mimika jako element komunikacji międzyludzkiej," *Studia Semiotyczne* 18 (1993), 67–76. Translated by Agnieszka Ostaszewska.

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"Of all parts of the body, the face is most considered and regarded, as is natural from its being the chief seat of expression and the source of the voice."

Charles Darwin (1988: 351)

The basic tool of human communication is the language. Knowledge of its system makes it possible to generate verbal utterances. In direct, natural communication between people, these utterances are usually accompanied by non-verbal means of communication. They include i.a. human kinetic behaviours, performed with the help of hands, face, head, torso and legs.

Scientific deliberations concerning kinetic behaviours of members of various language-culture-territorial communities were undertaken for the first time in the United States. The first to engage in these deliberations already in the first decades of the 20<sup>th</sup> century were linguists of anthropological interests and anthropologists fascinated with the human communication. In the 50s there was developed kinesics — a separate branch of science examining human body movements performed in the course of communication.<sup>1</sup>

Irrespective of the development of research in the United States, human kinetic behaviours, both communicative and non-communicative, were also of interest to European scientists.<sup>2</sup> Considerable achievements were made in

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<sup>1</sup>The basics were developed by R. L. Birdwhistell (1952; 1960; 1966; 1970).

<sup>2</sup>These were for example: A Switzer, Ch.Bally (1966: 110-116), a Frenchman P. Guiraud (1974: 60-62, 102-106), an Italian U. Eco (1972: 334-371). An immense and original contribution into the work of human kinetic behaviour analysis was made in particular by an Austrian I. Eibl-Eibesfeld (1987: 25-37, 67-76, 155-181, 196-224).

this field by British science.<sup>3</sup>

In the Soviet Union, the research from the scope of kinetics was commenced in the 60s of the 20<sup>th</sup> century. Some Soviet scientists included this research in the field of the interest of paralinguistics (Kolšanskij 1974). Movements of the body participating in human communication above all absorb linguists (e.g. Nikolaeva, Uspenskij 1996; Filippov 1975). Some works were written on this topic in connection with the research of informal speech (e.g. Kapanadze, Krasilnikowa 1973). Kinesics is also of interest to psycholinguists (Gorelov 1980; Kuliš 1982) and scientists inclined towards etnolinguistics (e.g. Smirnova 1997). Soviet scientists saw also the need of including the research of human body movement in the process of foreign language teaching (Nikolaeva 1969; Vereščagin, Kostamarov 1976). Also specialists engaged in *savoir vivre* (Formanovskaja 1982; Stupin, Ignat'ev 1982) and semiotitians (Stepanov 1971; Ivanov 1976) contributed towards the analysis of kinetic behaviours.

In Poland the period of greater interest in kinetic means participating in human communication falls in the 70s and 80s of the 20<sup>th</sup> century. This topic was above all taken up by linguists (Cienkowski 1963; Pisarek 1985), in particular those who were directed by their curiosity towards sociolinguistics, functional stylistics or both of these disciplines (Janasowa, Nowakowska-Kempna 1979; Krawczyk 1983; Wilkoń 1982). The problem of cooperation of verbal utterances with kinetic behaviours occupies also the researchers of customs and social behaviours (e.g. Rojek 1984). Human body movements participating in human communication also draw the attention of specialists from the field of foreign language teaching (Machowska 1977; Korosadowicz 1989; Jarzabek 1989).

The above list of disciplines which covers with its scope the research of human kinetic behaviours indicate that this research is of multilayer character. Yet there is not much of it, when compared with the entirety of the research of the language. That the research in this area is unappreciated may be evidenced by the fact that so far there has not been developed (although some attempts have been made) a form of notation of moves participating in human communication, a notation based on the language signs. This might result from the fact that in common perception human body movements constitute an additional, yet not an indispensable and therefore not worthy of attention, element of human communication. What is interesting, though,

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<sup>3</sup>In commencement of its works in this respect a considerable role was played by an anthropologist, sociologist and ethnographer B. Malinowski, who created the so-called theory of situational context. The essence of Malinowski's situational context was presented in a thorough manner by J. Szymura (1985: 177-205).

this feeling is shared by some linguists. In their opinion the issue of kinetic behaviours supporting human communication is something so obvious and known to such an extent, that it should not constitute an object of scientific research.

This article is aimed at provision of data undermining the legitimacy of such feelings and opinions expressed. Due to the small size hereof, we will limit the field of observation to mimics. i.e. moves made by eyes (eyeballs, eyelids), eyebrows, forehead, cheeks and tongue. It has been attempted to prove herein that human body movements, even so minor as facial movements, are important in the process of human communication; therefore they cannot be unappreciated or even omitted in the research of full communication: both verbal and non-verbal. Despite the adoption, consciously and purposefully by the way, of a popular form of communication, the observations contained in this article are based on:

- live observation of communicational and non-communicational mimic behaviours of Poles,
- analysis of mimics recorded on photographs,
- steered conversation on provision of certain information, expression of opinions and emotions in a mimic form,
- analysis of mimic behaviours of literary characters,
- analysis of certain dictionary entries from selected dictionaries in the context of the use of mimics.

This text contains:

- views of certain researchers on inborn and conventionalised human mimic behaviours,
- discussion of mimics performed in an unconscious manner,
- analysis of conscious mimics,
- summary.



## INBORN AND CONVENTIONALISED HUMAN MIMIC BEHAVIOURS

Charles Darwin already in the 19<sup>th</sup> century ascertained as a result of the research carried out that the principle mimic moves made by a human being are either inborn or inherited, i.e. are not learned by an individual (Darwin 1988: 25-37, 155-180). Suffering and sadness are expressed by a slant position of eyebrows, lowering of the corners of the mouth, crying. Reflection connected with effort or noticing something difficult or unpleasant causes frowning. Wellbeing, happiness or joy are expressed by a smile or laughter. Anger, outrage or rage are expressed by showing teeth and frowning. In Darwin's opinion, the fact that most of mimic movements are inherited is confirmed by the fact that the same movements to express psychological conditions are used by children as well as adults; by mentally retarded and mentally ill persons as well as healthy individuals, by persons who are blind or mute from birth as well as by persons who can see and hear. These movements are common for all human races and the representatives of all continents, living in various cultural conditions. In Darwin's opinion some mimic behaviours (e.g. laughter) were shared by our ancestors, even before they deserved to be called humans. For this reason, the mimic movements are in the repertoire of not only the human species but also of animals.

Inborn or inherited movements do not usually depend on the individual's will. Despite this fact many shades of facial expressions are recognized instantly, without the process of conscious analysis. No-one, as Darwin claims, can clearly describe the expression of sulkiness or cunningness, and yet such facial expression can be recognized in various human races. Everyone on first sight is able to recognize sadness or happiness.

Apart from inborn movements there are, in Darwin's opinion, also mimic movements which are not common in various human races. These are learned, conventional movements. An individual acquires them in the juvenile period by imitating other members of a given community. With time, these movements become habitual, but are performed purposefully and consciously. They are different in different races and representatives of various regions of the world, similarly as their languages differ from one another.<sup>4</sup>

A similar, and with respect to certain issues, an even more elaborate argumentation concerning the inborn character of certain human mimic

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<sup>4</sup>Ch. Darwin based his assertion on questionnaire research conducted among the inhabitants of various regions of the worlds, analysis of photographs and drawings prepared by informants and on his own direct observations.

behaviours, was provided by Irenäus Eibl-Eibesfeldt, an Austrian etilogist working in Germany (Eibl-Eibesfeldt 1987). There are no doubts, he writes, that a baby can smile without being taught to do it. Deaf-and-numb persons grow in constant darkness and silence, do not see the smile of their mother and do not hear the sound of human voice. Despite this these persons smile and laugh (make correct sounds) when they are happy, they cry when they suffer and frown when they are angry. To the argument that these children learned how to smile when they were rewarded with friendly treatment the first time they demonstrated a behaviour resembling smile, this scientist replies that even children with severe brain damage, who were unable to learn how to put a spoon into their mouth, smile, laugh and cry. It is impossible to imagine that these children could be able to learn such complex movement patterns, when they were unable to master much simpler activities. Eibl-Eibesfeldt further indicated that much more characteristics than one usually thinks are inborn, which he learned on the example of a ten-year-old blind, yet well-hearing girl. When she played for him something on the piano he praised her and she blushed, then quickly turned her head towards him and then lowered her eyes, exactly in the same way embarrassed seeing girls do (Eibl-Eibesfeldt 1987: 31).

Similarly as Darwin, Eibl-Eibesfeldt claims that many from amongst the inborn human moves belong to the archaic phylogenetic heritage. This results from the fact that they are shared with the anthropoidal monkeys with the closest relation to the humans. Eibl-Eibesfeldt included into the inborn moves connected e.g. with a threat, which we share with the monkeys, showing teeth in the expression of rage.

Baboons, which are armed in extremely long fangs, when threatening, pull the corners of the lower lip far down, so that these teeth are revealed in all their length. The same is done by humans, despite the fact that they do not have such big fangs. The movement pattern has therefore survived the reduction of the previously presented teeth.

Similarly to Darwin, Eibl-Eibesfeldt admits that apart from inborn mimic gestures, people perform also conventional movements. He elaborates this idea, demonstrating a large range of kinetic forms of greeting and leave-taking of people stemming from various cultural areas, civilisations and races, from distant regions of the globe.<sup>5</sup>

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<sup>5</sup>When collecting documentary material in support of his theses, I. Eibl-Eibesfeldt worked with a film camera, with the use whereof he filmed people (without them knowing about it) in various parts of the world. To each filmed document he prepared a protocol with data what a given person was doing before being filmed and thereafter,

From the cited opinions of both of these researchers it follows that certain mimic moves are common for all inhabitants of the Earth. There are however not that many of them, since every language-territorial-cultural community creates above all its own, conventional movement sets, which are used by its participants purposefully in the course of communication. These are the most important in the course of communication between representatives of alien communities.

## UNCONCIOUS MIMICS

The face is this part of the human body, which participates in articulation of sounds, voice emission and consumption of food. Apart from the basic function of the face, thanks to the contraction of its muscles, it is possible to "read" various information: a part thereof is communicated in an unconscious, non-purposeful and automatic manner, yet a part is of conscious, purposeful and conventional character. On a human face unconscious mimics is intertwined with consciously generated nuances, and intended facial expressions, i.e. purposeful facial expressions are intertwined with those which are automatic. Therefore, sometimes it is difficult to clearly distinguish between spontaneous mimics and conscious mimics.

Human eyes are subject to the least control. For this reason they most easily give away the emotional state. There is a reason, why we say that the eyes do not lie. From the observations of psychologists (Borzyszkowska-Sękowska 1984a; 1984b; 1984c; 1984d), psychiatrists (Kępiński 1997), as well as from observations made by people every day, it follows that shining eyes usually express joyfulness and matt eyes express sadness. Wide pupils of the eyes may indicate fear, fixing the eyes on one point demonstrates focusing of attention. "Restless" eyes signify distraction, absent-mindedness and anxiety. Distrustful persons cast stealth, fast and often sideways looks. This is also a quite common syndrome for people troubled by guilty conscience, who fear being judged by the society. Fatigue makes the look heavy. Shy eyes are characterised by bashful "lowering of eyes," which gives away anxiety. "Unconscious" eyes signify considerable weariness, sleepiness, high emotional elevation, fury, anger and paralysing fear. Persons of fiery, burning, sparkling as well as wild eyes are under the influence of strong emotions. Thanks to hardly describable movements of the eyeballs and eyelids, the eyes may be: cunning, curious, mischievous, ice-cold, mild, persistent, reluctant, indifferent, gloomy, crafty, yearning, provocative, cold, evil, fearful, timid. In

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and in what social situation a given mode of behaviour took place.

accordance with the opinions of the writers quoted in dictionaries a look may be: scrutinizing, tender, pleading, inquisitive, critical, open, scornful, sharp, piercing, ice-cold, absent, distracted. With no other part of the face can a human being express with such fullness and power his internal conditions. For this reason eyes sometime say more about us than we might expect or more than we would like them to.

A lot may be "read" from the movement of mere eyelids. Thanks to them people are able to eye somebody up and down, to make big or sweet eyes,<sup>6</sup> to shoot with the eyes. They also avoid somebody's stare or exchange the looks with somebody.

A meaningful element for many experienced feelings are the eyelids together with eyebrows. Strong tension is accompanied by narrowing of the space between the eyelids and frowning. These movements are also indicative of hostile or aggressive attitude. Eyes wide open characterise persons who are hungry for adventures, new stimuli coming from the environment. The more we are surprised or startled the wider the eyes are open and the higher the eyebrows are raised.

The whole range of feelings may be expressed with the mouth open in various ways: surprise, being scared, suffering, astonishment. Tightly pressed lips signify pride, secretiveness, stubbornness, cruelty, obstinacy. The expression of the lips informs of self-assurance, resignation, weak will. And how many shades of smile are there? Dictionary authors list the following kinds of smiles: mild, sweet, playful, evil, ironic, sneering, insolent, bitter, vicious, helpless, sad, challenging, embarrassed. If we say that the smiles flourishes, plays in the corners of the mouth, then in each of these descriptions there is a different smile. In sad moments the corners of the mouth drop, in happy moments they are lifted. Also the forehead says a lot about the human feelings. It sometimes is cloudless, cheerful or overcast. There is also an expression *clear forehead*. When a person concentrates heavily, exercises his attention, his eyes fix on one point, the eyebrows are pulled together, and there appears a horizontal fold on the forehead. A surprised person rises his eyebrows, which causes vertical folds to appear on the forehead.

As a result of the muscle movements the human face may be ice-cold, appalling, scared, evil, open, unfriendly, full of cruelty, good-hearted, nice and proud. The face — the proverbial mirror of the soul — is sometimes wry with fear, beaming with happiness or full of misery, over-brimming

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<sup>6</sup>Some of the movements mentioned in the article are reflected in the phraseological resources of the Polish language. This topic was presented by A. Krawczyk (1983: 137-144).

with joy, full of hidden worries and extinguished hopes. It is changed by wrinkles — signs of worries, hardships and struggles. It is a reflection of human life, i.e. suffering, happiness and strives. It may for example be huffy, arrogant, daring, apathetic, stupid, embarrassed, sullen, firm, indifferent, official, solemn, formal, apologetic, mysterious, sour.

Mimics performed without the use of human will, i.e. unknowingly, unconsciously, is not aimed, obviously, at specific purposes or immediate communicating something or with somebody. It is of the character of signs for those perceiving it. These are more like signs or syndromes. Proper interpretation of facial muscles movements is facilitated by the fact that human emotional reaction usually precedes the reactions directed by his will. Therefore, sometimes, before a person chooses a desired facial expression other people will be able to read his true colours. In each interaction of two human beings one may perceive the moment of "filling in of the frames" of a given situation. Then the partners to the contact see each other the way they really are. Therefore, irrespective of the fact whether at a given point mimics is performed intentionally or unknowingly, it says as much to the eyes, as the words say to the ears. Thus, it plays an important role in human communication.

Mimics is a set of movements appearing in space and evolving through time. There are however certain mimic behaviours which are not subject to temporal changes; these are permanent behaviours constituting a certain mask.<sup>7</sup> This mask appears with age, and therefore the faces of young people are less expressive than the faces of old people. At that time the face reveals, independently of human will, their personality, psychological silhouette, it reflects the features of the disposition, expresses their character. Facial expression manifests the sphere of a person's emotional life. Depending on the fact what a given person experienced the most, the face reveals anxiety or happiness, love or hate, satisfaction, bitterness, disgust, stubbornness, self-assurance, resignation, inertia, loneliness, sadness. It also records surprise, as it does sardonic laughter.

### CONSCIOUS MIMICS

The mimic behaviours discussed so far are not subject to human will or control. They have the character of signs for the person perceiving and interpreting them, yet they are emitted unknowingly. Therefore, they are not aimed at communicating something to somebody. Apart from the behaviours

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<sup>7</sup>This was noted i.a. by T. Kowzan (1976: 309).

of this type, a human being shapes his meaning also in a conscious and purposeful manner, in accordance with their will. A material difference between unconscious and conscious mimics is therefore reflected on the level of emission and not perception; the difference is made by the will of sending information or lack of such will. Sometimes it is difficult, as already noted, to differentiate spontaneous mimics from conscious mimics. And so for example, the set of eyebrows and eyelids may depend on human's will. A person may freely decide to look focused (by opening the eyes wider and rising the eyebrows), contemptuous (by looking down and at the same time squinting the eyes and lowering the corners of the mouth). Not only the look of eyelids, eyebrows and forehead is subject to our volitional control. A human being has control also over the look of the mouth, and therefore we are able to smile, even if we do not have any greater reasons for it. Therefore conscious steering of the mimics in interpersonal communication makes it possible to express feelings which are not always consistent with the actual condition.

Irrespective of the fixed, but unconscious mimics, which is "painted" on the human face by life itself, a person most often consciously assumes a certain mask, adjusted to the role played in the society, be it the professional, social or family role. Moreover, the mask is adjusted to the environment, the circumstances and the situation. It may for example be a mask of: a teacher, a pupil, a priest, a judge, a doctor, a nurse, a father, a well-wishing person, a self-assured person, an embarrassed person or an unhappy person. A different mask is put on when we congratulate someone, and a different one is put on when we are giving our condolences. Putting the mask on is a necessity or a lie. The used thereof is required by the rules adopted in a given society, and therefore, a person who does not care about it is often considered to be unfit for the society, helpless and not knowing the rules applicable therein. What a man wears on the face is recognized thanks to the knowledge of the convention known to the viewers and actors of the everyday life theatre. Thanks to this convention a man may pretend to be someone else than he really is, to present values, which he in fact does not have. He may also hide those values, which he wishes to hide and emphasize other — such that he considers important.

The basic group of conscious and purposeful communication mimic behaviours are the mimic signs supporting the verbal communication. These signs, together with the communication they are connected with, are a creation of a specific community having a separate language, they function in a specific geographic area, which is inhabited by this community (therefore limited territorially) and they are marked by civilisation, culture and history

of this community and are a component of the knowledge which is obligatory for this community. The basic function of these signs is communication. Irrespective of that they may express the emotional attitude of the sender of the communication to the contents expressed or may cause certain reactions of the recipient. Thanks to the fact that they are a part of the common consciousness, the communicational sense intended by the sender is identical with the sender which will be ascribed thereto by the recipient. These signs are acquired. Representatives of a given society need to learn them in order to correctly use them in the process of communication. Most of the signs discussed appear in the conditions of oral, direct, spontaneous and unconstrained conversation, conducted in the most typical situations of human life (in such case they are in the most active and the closed connection to the conversation).

Below I present examples of mimic signs used in the communication of Poles:

BLINKING OF AN EYE — is to draw the recipient's attention, warning him of something or alluding to something.

EYES WIDE OPEN — express surprise.

BLINKING THE EYELIDS — means confirmation of something or consent to something.

RISING EYEBROWS — reflects the condition which the sender experienced as a result of seeing or hearing something weird, extraordinary, not understandable, or something that surprised him.

PULLING THE EYEBROWS TOGETHER — expresses dissatisfaction, unpleasant surprise, anger.

LOWERING OF THE CORNERS OF CLOSED MOUTH — expresses lack of knowledge.

LOWERING OF THE CORNERS OF THE MOUTH AND BLOWING THEM — means contempt or negative attitude towards someone or something.

A SNEER WITH SIMULTANEOUS SQUIRTING OF THE EYES — has ironic and mocking undertone and is a prove of ridiculing someone.

STICKING ONE'S TONGUE AT SOMEONE — is aimed at teasing someone or showing a kind of revenge.

There are but a few of these signs in the communication of the Poles. Mimics is usually an ordinary auxiliary means during performance of signs made by other parts of the body. It companies e.g. such kinetic behaviours as beckoning of a finger, showing of the thumb, showing of a fist, patting somebody with the hand on the shoulder, placing a finger on the mouth,

tapping one's forehead with a fist, blowing a kiss, pointing the index finger towards the door, kissing the tips of the fingers, rising a hat, a bow.<sup>8</sup>

Particular kinetic signs, irrespective of the fact, whether mimics pays the main or only auxiliary part therein, are composed of a complex of minor movements, from which each has its own form, size and tempo. These movements need to appear in a relevant moment and in a relevant order. Therefore, they are included in direct relations with other movements.

These signs are closed wholes, which cannot be broken into smaller meaningful parts. They are also not directly dependant from one another, since they do not relate with other signs. It is impossible to construct from these signs, apart from but a few, any superior structures. They constitute a set of signs, with the use whereof one is able to express only those meanings which are connected with a particular sign, and those meanings which are additionally ascribed in the sentence, situational and cultural context.

Only a part of the signs is performed once only; many of them are repeated by the sender several times, and some of them are repeated as long as they are understood. A limited number of signs facilitates official communication, and most frequent movements accompany spontaneous and friendly contacts.

Mimic signs which are used by the sender in the process of communication cooperate closely with the verbal utterance — the recipient must after all receive the information sent as one whole. They may double the words, make them clearer, emphasize them, as well as provide them with a new informational layer. Mimics may multiply or weaken the impact of the words, may modify their meaning or contradict them. Lack of consistency between the uttered text and the accompanying mimics lowers the credibility of such text. Mimics may also add something new, not necessarily connected with the context of the uttered words. Thanks to immense expression capabilities, mimic behaviours sometimes replace, and quite successfully, the words. In such case they are an independent carrier of information. They appear in communication when: they may reach the recipient faster than words, the participants of the communication are separated by a small space, verbal communication is distorted by noise, one of the interlocutors has troubles hearing, it is necessary to keep quiet, the circumstances exclude the possibility to use words, the sender does not want to interrupt someone's verbal utterance, it is required to observe certain discretion or to keep the

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<sup>8</sup>A full characteristic of the signs mentioned in this article, including their form, meaning, scope of use and the degree of connection with the verbal expression, is contained in the book by K. Jarząbek (1989).



communication secret, the sender feels strong emotions of negative or (rarely) positive character, and the signs turn out to be more adequate in a given situation than a verbal utterance.

### SUMMARY

1. From the oldest of times, in face to face contacts between the humans a considerable role was played by mimics. Irrespective of the fact whether it is of inborn, inherited character and not learned character or whether it is conventional and learned, whether it is performed unconsciously or purposefully, it provides a lot of information to persons who are watching the sender at a given time.
2. The most important role in interpersonal communication is played by the facial movements which are made consciously and purposefully. Information provided in such manner are read thanks to the knowledge of convention, known to the senders and the recipients. Despite this, the signs of this kind are not always true or credible.
3. Mimics performed without the participation of human will is unconscious and is not aimed at direct communication of something to someone, it does however have the character of signs for someone who sees and interprets them. These signs in many cases say a lot to the observers. This pertains in particular to individual features of the author of the kinetic behaviours and his true not pretended feelings towards somebody or someone.
4. Mimics often says more about a person than his words. From the movements of the face — the conscious, and more often the unconscious ones — it is possible to read the feelings, states, conditions, impressions, intentions, will and the attitude towards other people. The face most faithfully reflects the human inside, and therefore it may reveal to the recipient sometimes more, than the sender wants to show or the recipient wants to see.
5. Human mimic behaviours may be replaced by verbal expressions thanks to the knowledge of full-value language, which is independent from other forms of communication systems. It is however not omitted in direct, natural communication by any community. The fact that humans have not learned to record mimics with the use of special signs does not mean that it may be treated as an element of minor importance for social contacts.

6. This article merely signals the problem indicated in the title, presenting it only in the context of the communication of Poles. It would be purposeful and at the same time interesting to examine the differences which decide on the variety of mimic communicational behaviours of the members of various communities.
7. The movements of human body should be included — to a greater extent than so far — into the field of examination of researchers interested in interpersonal communication.

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**Kazimierz Trzęsicki**  
**FUZZY SETS AS EXTENSIONS OF**  
**COMPARATIVE CONCEPTS**

Originally published as "Zbiory rozmyte jako zakresy pojęć porządkujących,"  
Studia Semiotyczne 18 (1993), 125–140. Translated by Wojciech Wciórka.

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The extension of a name in a given sense (the extension of a concept) is a set of all designata (referents) of this name.<sup>1</sup> Such a description of the meaning of the term "extension of a name" is in need of further explication. In particular, it is necessary to specify the meaning of the word "set."

It is customary to distinguish two meanings of the term "set" — the collective and the distributive sense.

Generally speaking, in the case of a collective set, elements of the set are parts of the set, and, consequently, elements of the elements are also elements of the set (a part of a part of a whole is also a part of this whole). As an example of a collective set, consider the territory of Poland. A formal theory of collective sets is the subject of Stanisław Leśniewski's mereology.

The set of natural numbers is an example of a distributive set. Each element of this set is a natural number. Generally, for distributive sets:

$x$  is an element of the set  $X$

means that

$x$  is an  $X$ .

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<sup>1</sup>In what follows, the term "name" will be used as an abbreviation for the expression "name in a given sense."

Thus a distributive set is described here as the extension of a name  $X$ . Such an understanding of distributive sets is characteristic of the traditional logic. It was employed by the inventor of set theory, Georg Cantor. In set theory, i.e. in the mathematical theory of sets in the distributive sense, the concept of set is a primitive notion. Its meaning is established by a given axiomatic system.

In this article, we will deal with sets in the distributive sense.

The primitive term of axiomatic systems of set theory is  $\in$ . This symbol denotes the relation of membership in a set (being an element of a set). Each set-theoretic axiomatization, " $x \in X$ " is understood in such a way that it is either the case that  $x \in X$ , i.e.  $x$  is an element (member) of  $X$ , or it is not the case that  $x \in X$ , i.e.  $x$  fails to be an element of  $X$ . Membership in a set is not subject to any gradation. It is not the case that something is an element of a set only to a certain degree — more or less. All objects which are elements of a given set are elements of this set to an equal degree. Sets of this kind, where membership is not amenable to gradation, will be called ordinary or classificatory. The latter terminological proposal is motivated by the fact that all and only extensions of classificatory concepts are sets of this sort (Pawłowski 1977: 109).

This gives rise to a question whether extensions of names are always ordinary sets, that is, whether all designata of a name are elements of that name's extension to an equal degree.

Consider the name *juvenile*. Are we inclined to say of each human being that he is, or is not, juvenile? Intuitively, we allow for gradation. With respect to some people, we are more inclined to say that they are juvenile than we are with respect to others. In applying the name *juvenile* to both of these groups, thereby treating all of them as designata of that name, we must admit that the relation of membership in a set is gradable.

Of course, with a specific purpose in mind, we can 'sharpen' (make more precise) the meaning of the name *juvenile*. In such a case we speak of a precisising, or regulatory, definition. In fact, this operation consists in characterizing the extension of a given name as an ordinary set. The name comes to function in the language as a classificatory name semantically associated with the word which it is supposed to sharpen.

In some cases, it is recommended to replace a name " $\mathcal{N}$ " with a classificatory name obtained from " $\mathcal{N}$ " by means of a regulatory definition. This is desirable, for instance, in the case of legislation. The word *juvenile* becomes a classificatory name after specifying the age range. In the case of other languages, regulating the meaning by characterizing the extension as

an ordinary set might be unwelcome: it turns out that in some disciplines, especially in humanities, we use concepts such that any attempt to sharpen their meanings by way of a reduction to classificatory concepts may lead to significant impoverishment of those disciplines (e.g. ceasing to regard certain sentences as true), which would prevent them from playing their cognitive role. Nevertheless, a formally sound and materially adequate specification of extensions is a prerequisite for applying modern-day formal-logic and computer-science tools.

It is a well-known fact that in a number of sciences certain concepts are such that their extensions are not ordinary sets, and their reduction to classificatory concepts is undesirable. This fact constitutes one of the arguments for the claim that formal tools are of limited, if not minor, significance for these sciences. This is not to say that methodologists of humanities renounced any formal description of the structure of non-classificatory concepts. Still, this task is hindered by limiting the concept of set, taken as an extension of a name, to the notion of ordinary set. Namely, the logical structure of non-classificatory concepts is described by means of the same formal tools as in the case of classificatory concepts, that is, tools crucially involving the notion of (ordinary) set. As a result, non-classificatory concepts are reduced to a certain category of classificatory concepts, thereby losing, in fact, their characteristic traits. They are eliminated from the language in favour of expressions whose extensions are ordinary sets. For instance, the use of expressions such as ... *is intelligent* is restricted, and they are replaced with expressions such as ... *is more intelligent than*... Furthermore, the word *intelligent*, if permitted at all, is only allowed as a typological concept, that is a concept which by definition is a classificatory notion (Pawłowski 1977: 118—124).

Methodologists of humanities realize the need for further development of formal theories that could be applied to these disciplines. The issue of a formally sound and materially adequate description of the language of humanities is a precondition for applying to them, on a large scale, modern-day tools provided by computer science, which is nowadays a sort of historical necessity. In this context, Tadeusz Pawłowski wrote:

Personally, I pin my hopes on the popular, new disciplines of mathematical-logical type, which deal with any sets of objects, phenomena, or correlations that cannot be defined in a sharp way (fuzzy set theory, fuzzy logic); these disciplines may be efficiently applied in humanities. (Pawłowski 1977: 6)

The idea of a fuzzy set, which was originally conceived in the context of the theory of scientific information, proved fertile in numerous mathematical



and methodological disciplines (Negoita, Ralescu 1975: 9—11). Theorists of fuzzy sets have not yet addressed the discussions of the methodologists of humanities concerning the structure of non-classificatory concepts. The above conjecture regarding methodological efficiency of the notion of fuzzy set and its theory encourages one to consider this new approach with an eye to its applicability in the methodology of humanities.

We will focus on the issue of whether it is possible to explicate the meaning of the word "set" formally — i.e. in the framework of some formal theory — in such a way as to ensure that extensions of names — all of them or at least those belonging to a certain class — are sets in the newly defined sense (in addition to extensions of classificatory names); also, the specification of these names in extensional terms should not lead to their reduction to classificatory names. This course of action is contrary to the usual one. For one usually proceeds in such a way as to characterize — as adequately as possible — the logical structure of a non-classificatory name by means of the notion of ordinary set. By contrast, we seek to identify a formally specified meaning of the word "set" such that the extension of a non-classificatory name is a set in this formally specified sense.

Of course, even here we may need procedures regulating the meaning of a name whose extension we consider. The point is, however, that the semantic modification of a given name should not be relevant from the viewpoint of a given language. In particular, no non-classificatory name should be reduced — via formal specification — to a classificatory one.

A formal theory of sets which are extensions of the concepts of a language is the basis of the formal logic of this language. It is possible, therefore, to design a system of logic based on the description of a language in terms of fuzzy sets.

In this article, we will characterize the core of the notion of fuzzy set and discuss the limits of its application. The notion is occasionally misconstrued: fuzzy concepts are wrongly identified with vague concepts and with one-dimensional comparative concepts. We will show that, under certain conditions, extensions of one-dimensional comparative concepts are fuzzy sets. Thus the latter might be called one-dimensional comparative sets. Since all names whose extensions are fuzzy sets — without any qualifications — are one-dimensional comparative names, we suggest that this notion of a set, introduced by Lotfi A. Zadeh, should be labelled a one-dimensional fuzzy set. By zeroing in on propositional logic, we will draw attention to the logic of a language whose expressions have as their extensions one-dimensional fuzzy sets.

Next, we will discuss multidimensional (more-than-one-dimensional) comparative concepts. Extensions of one-dimensional comparative concepts can be regarded — given certain limitations — as fuzzy sets. In order to achieve the same goal in the case of multidimensional comparative concepts, we must further generalize the notion of set. Just as classificatory sets are special cases of one-dimensional fuzzy sets, so one-dimensional fuzzy sets should be special cases of sets in the new sense. The proposed method of generalizing the notion of set results in a broader class of formally characterized concepts of set. Such sets will be called 2-dimensional, 3-dimensional, and — generally —  $n$ -dimensional fuzzy sets. It is also possible to generalize the notion to obtain the concept of infinitely multidimensional set. We will show that — given certain qualifications — extensions of  $n$ -dimensional comparative concepts are  $n$ -dimensional fuzzy sets. Like in the case of one-dimensional fuzzy sets, we will set out the logic of a language with multidimensional fuzzy concepts.

The discussion of extensions is limited to extensions of nominal expressions. The results, however, can be easily extended to all expressions whose extensions are not sets in the ordinary sense. For example, we can speak of relations whose designata — ordered  $n$ -tuples — are elements of their extensions to different degrees. Such relations could be called one-dimensional fuzzy relations or, generally,  $n$ -dimensional fuzzy relations.<sup>2</sup>

## I. The logical structure of one-dimensional comparative concepts

Given a set of individuals  $\mathcal{J}$ , we can construct various set-theoretic objects. They include subsets of  $\mathcal{J}$ , relations, that is subsets of the Cartesian product of  $\mathcal{J}$  and itself. Each set of such objects, alone or together with

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<sup>2</sup>The extension of a relation  $\mathcal{R}$  is a set of all and only those ordered  $n$ -tuples of objects — arguments of this relation — such that we can truly say about these objects that they stand in the relation  $\mathcal{R}$ . Relations whose designata belong to the extension to different degrees should be distinguished from relations whose arguments are elements of extensions of comparative concepts. The example of the former type of relation is the relation ... *likes* ..., defined on the set of humans. Arguments of this relation belong to a classificatory set (the set of humans), and the ordered pairs  $\langle a, b \rangle$  are elements of the extension of this relation, just as designata of comparative concepts are elements of extensions of these concepts. An example of the second type of relation is the relation ... *is more visible than* ..., defined on the set of coloured objects. Two coloured objects, e.g. one red and one blue, are elements of extensions of comparative names. In the theory of measurement, relations of the first type are replaced with relations of the second type, that is, with classificatory relations, whose arguments may fail to be classificatory concepts (Pfanzagl 1971).

sets of other, already constructed, objects, can serve as a starting-point for further constructions. There is an infinite number of such constructible objects, and they can be ordered in a hierarchy. The best-known hierarchy is the hierarchy of types, discovered by Russell and Whitehead. In fact, all other hierarchies draw on their theory.

We will say that set-theoretical objects are of the same type if and only if they were obtained by applying, in the same way, the same construction methods permitted in a given situation (or they *can* be obtained in this way).

Let  $\mathcal{J}$  be a set of unconstructed objects (individuals), constituting the domain of a discipline whose language we are considering. Let  $\mathcal{R}_{\mathcal{J}}$  denote the family of all sets such that elements of each of them are all and only objects of one type, constructible from the set  $\mathcal{J}$  (the hierarchy is ‘typically’ unambiguous). These are sets of objects which are considered, or could be considered, in a given discipline.<sup>3</sup> We assume that, in a given discipline, the notion of type (in the hierarchy of objects considered in this discipline) is such that one may speak of distinct types of objects provided that these objects are different set-theoretic constructs — for instance, we can say that elements of sets  $\mathcal{U}$  and  $\mathcal{U} \times \mathcal{U}$  (the Cartesian product of  $\mathcal{U}$  and itself) are objects of separate types.

In talking about linguistic expressions, we always bear in mind that they are expressions of one definite language. Besides, we assume that all its expressions have precisely one meaning (although it need not be a classificatory concept). A language which we have in mind does not contain ambiguous expressions. This stipulation allows us, inter alia, to use interchangeably — where it does not lead to misunderstanding — terms “concept” (the meaning of a name) and “name.” Yet we do not presuppose that different expressions (expressions of different shapes) are assigned different meanings, that is to say, we do not assume that the language is devoid of synonymous expressions.

A one-dimensional comparative concept “ $\mathcal{N}$ ” — in the most general terms — is a concept such that — given that its designata are elements of the set  $\mathcal{T}$ , where  $\mathcal{T}$  belongs to the family  $\mathcal{R}_{\mathcal{J}}$  — for each object from  $\mathcal{T}$ , we can tell — perhaps after a minor regulatory procedure — which object

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<sup>3</sup>Strictly speaking, in a hierarchy of objects which are the subject matter of a given discipline, one may distinguish more than one type of individual (Wójcicki 1974: 81—91). The assumption that there are several types of non-constructible objects has no bearing on our discussion. Hence, to simplify matters, we speak of one type.

from  $\mathcal{T}$  is  $\mathcal{N}$  to a greater, lesser, or equal degree.<sup>4</sup>

Note that in the situation in which we allow for gradation of  $\mathcal{N}$ , the notion of not-being  $\mathcal{N}$  is redundant. Not-being  $\mathcal{N}$  is introduced as being  $\mathcal{N}$  to a degree lesser than a certain threshold.

Classificatory concepts are special cases of one-dimensional comparative concepts. Namely, they are concepts for whom gradation of being  $\mathcal{N}$  is limited to two extreme values. In one case we simply assert that something is an  $\mathcal{N}$ , while in the other — that something is not an  $\mathcal{N}$ .

As an example of a one-dimensional comparative concept, consider *tall*. In the ordinary language — i.e. according to the common usage of the word *tall* — we do not divide human beings (in the sense of logical division) into tall and not tall. Rather, it is the case that someone is taller than someone else, or that someone is not taller than someone else, or that someone is as tall as someone else. Two arbitrary persons can be compared with respect to their height.

By "formal structure of a concept" we mean its description in terms of a formal theory, especially logic. Such a description can be provided by specifying the extension of the concept. If two concepts have the same logical structure, that is, if they cannot be distinguished by means of any formal description, then they are mutually substitutable in any contexts without any change in logical properties of those contexts. This is the content of the principle of extensionality. It is the reason why the description of the logical structure should be as complete as possible. The point is that intuitively distinct concepts should possess different logical specifications (different descriptions of logical structures). Otherwise, applying logical tools without restrictions would result in contradictions and paradoxes.

Naturally, one could always give up a language which cannot be logically characterized in favour of a different language, or one could renounce employing formal tools or restrict their application. Dismissing a language, as already mentioned in the introduction, is sometimes impossible, namely, when it can only be replaced by a poorer language which is incapable of fulfilling appropriate cognitive functions. Usually, one would renounce the unrestricted use of formal tools. This solution, however, is inconvenient

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<sup>4</sup>It is assumed that the designata of a concept must be objects of the same type. Zadeh stipulates that the designata of a value of a linguistic variable are elements of a universal set (universe of discourse). If values of a linguistic variable  $X$  are  $n$ -ary relations, whose arguments are elements of universes of discourse  $\mathcal{U}_1, \dots, \mathcal{U}_n$ , then the universe of discourse corresponding to the variable  $X$  is the Cartesian product of sets  $\mathcal{U}_1, \dots, \mathcal{U}_n$ . See Zadeh 1975–1976 (I): 210. This is in accordance with our assumption regarding this case.

if we intend to apply modern-day computer-science apparatus. Thus one should work out formal theories (logic, set theory) whose formal tools enable appropriate specification of the logical structure of a given language.

In Hempel's well-known proposal, the logical structure of a comparative concept is described in terms of two propositional functions of the form  $x\mathcal{W}y$  ( $x$  precedes  $y$  in a relevant respect) and  $x\mathcal{R}y$  ( $x$  is the same as  $y$  in this respect, or — in Hempel's terms —  $x$  'coincides' with  $y$ ).

Given the relations  $\mathcal{W}$  and  $\mathcal{R}$  defined on the set  $\mathcal{T}$  (where  $\mathcal{T}$ , like above, is an element of the family  $\mathcal{R}_{\mathcal{J}}$ , i.e. it is a set of all objects of the same type, constructible from  $\mathcal{J}$ ), we assume that, for any  $x, y, z \in \mathcal{T}$  (Hempel 1952: 59; cf. Pawłowski 1977: 109—110):

1.  $x\mathcal{R}x$  (reflexivity of  $\mathcal{R}$ )
2. if  $x\mathcal{R}y$ , then  $y\mathcal{R}x$  (symmetry of  $\mathcal{R}$ )
3. if  $x\mathcal{R}y$  and  $y\mathcal{R}z$ , then  $x\mathcal{R}z$  (transitivity of  $\mathcal{R}$ )
- so  $\mathcal{R}$  is an equivalence relation —
4. if  $x\mathcal{R}y$ , then it is not the case that  $y\mathcal{W}z$  ( $\mathcal{R}$ -irreflexivity of  $\mathcal{W}$ )
5. if  $x\mathcal{W}y$  and  $y\mathcal{W}z$ , then  $x\mathcal{W}z$  (transitivity of  $\mathcal{W}$ )
6. if it is not the case that  $x\mathcal{R}y$ , then  $x\mathcal{W}y$  or  $y\mathcal{W}z$  ( $\mathcal{R}$ -connectedness of  $\mathcal{W}$ ).

It is easy to see that the relation  $\mathcal{W}^*$ , defined as follows:

$x\mathcal{W}^*y$  if and only if  $x\mathcal{R}y$  or  $x\mathcal{W}y$ ,

is a partial order, i.e. it is reflexive, transitive, and connected in  $\mathcal{T}$ .

A relation  $\mathcal{R}'$  defined as a relation that holds only between objects such that:

$x\mathcal{W}^*y$  and  $y\mathcal{W}^*x$

has the same extension as the relation  $\mathcal{R}$  and is the maximal congruence in the relational system  $\langle \mathcal{T}, \mathcal{W}^*, \mathcal{R}' \rangle$ .

We will say that  $\mathcal{R}'$  is *linked to*  $\mathcal{W}^*$  (Wójcicki 1974: 200).

It can be shown that the relation  $\mathcal{W}'$ , defined as follows:

$x\mathcal{W}'y$  if and only if  $x\mathcal{W}^*y$  and not  $x\mathcal{R}'y$ ,

is co-extensional with  $\mathcal{W}$ . We will say that  $\mathcal{W}'$  is the relation of  $\mathcal{R}$ -abstraction with respect to  $\mathcal{W}^*$ .

Such a specification of one-dimensional comparative concepts has two disadvantages (absent from the corresponding specification in terms of fuzzy sets). First, it does not differentiate between, on the one hand, the logical structure of one-dimensional comparative concepts and, on the other, the relation of partial order defined on the designata of these concepts. For instance, on this account, the concept *tall* and the relation of being taller have the same structure. Accordingly, the presence of one-dimensional comparative concepts in a language is treated as merely apparent, or is eliminated. It is replaced by a relation, whose extension is an ordinary set. The second deficiency of this account is that it assigns the same relation to concepts such as *hot*, *warm*, *cold*, *icy*, so that they cease to be logically distinguishable by means of the conceptual apparatus offered by Hempel.

Let us note that a description of the logical structure of comparative concepts in terms of a family of (ordinary) sets is free of these drawbacks. We will not elaborate on this idea here — in fact, it is related to the description involving the notion of fuzzy set. Still, the specification of the logical structure of a concept by means of the notion of fuzzy set has an advantage over the description in terms of family of sets: we define set-theoretic operations on fuzzy sets, whereas there are no such operations for families of sets as arguments of these operations. Furthermore, introducing the notion of fuzzy set to the account of the logical structure of concepts enables a natural generalization of meanings of the terms employed in the formal description of classificatory concepts. In the case of the description of a concept in terms of a family of sets, logical characterization of this concept is provided by means of a set of objects of a type different from the type of the designata of this concept, namely, by means of a family of *sets* of objects of the same type as the designata of the concept. By contrast, in the case of the description in terms of fuzzy sets such a specification will appeal to the (fuzzy) set of designata of the concept.

## II. Fuzzy sets

In presenting the notion of fuzzy sets Zadeh points out that extensions of various concepts are vague, and so extensions of these concepts are not sets in the ordinary sense. Like Cantor, in constructing a formal theory of sets, he also draws on the understanding of sets as extensions of names. The idea of the fuzzy set stems from the account of extensions of one-dimensional comparative concepts.

Let us examine Zadeh's method of generalizing the notion of set. The ordinary notion of set (as an extension of a classificatory concept) will be

a special case of the notion of set in the generalised sense, so that the ordinary term "set" will be extensionally subordinate to the term "set" in the generalised sense.<sup>5</sup>

Let  $X$  be a universal set (universe of discourse), and  $\mathcal{P}(X)$  — a family of all subsets of  $X$ , namely:

$$\mathcal{P}(X) = \{A \mid A \subseteq X\}.$$
<sup>6</sup>

The characteristic function of the set  $A$  is the function  $\chi_A$  defined on  $X$  as follows:

$$\chi_A = \begin{cases} 0, & \text{if } x \in A \\ 1, & \text{if it is not the case that } x \in A \end{cases}$$

Thus the characteristic function  $\chi_A$  is a mapping of the set  $X$  onto the set  $\{0,1\}$ , namely:

$$\chi_A: X \rightarrow \{0,1\}.$$
<sup>7</sup>

Note that there is a mutual one-to-one correspondence between a set and its characteristic function. Due to this correspondence, the discussion of properties of sets can be replaced with the discussion of their characteristic functions.

Assume that:

$$Ch(X) = \{ \chi_A \mid A \subseteq X \}.$$

Then it is clear that:

$$Ch(X) = \{ \chi \mid \chi: X \rightarrow \{0,1\} \},$$

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<sup>5</sup>The construction of a fuzzy set presented here draws on (Negoița, Ralescu 1975: 12—14).

<sup>6</sup>The expression " $\{x \mid \alpha(x)\}$ " denotes the set of all and only objects which satisfy the function  $\alpha$ . The expression " $A \subseteq B$ " means that each element of  $A$  is an element of  $B$ .

<sup>7</sup>The expression " $f(x): A \rightarrow B$ " means that the function  $f$  maps the set  $A$  onto the set  $B$ . The expression " $\{a, b, c, \dots\}$ " denotes the set whose only elements are  $a, b, c, \dots$

that is to say, the set  $Ch(X)$  is identical with the set of all mappings of the set  $X$  onto the set  $\{0,1\}$ .

We can now define operations  $\vee, \wedge, \neg$  in the set of characteristic functions  $Ch(X)$ .

$(\chi \vee \chi')(x) = \max[\chi(x), \chi'(x)]$ , that is, the characteristic function  $\chi \vee \chi'$ , which is the product of performing the operation " $\vee$ " on characteristic functions  $\chi$  and  $\chi'$ , assumes — for the argument  $x$  — the greater out of two values,  $\chi(x)$  and  $\chi'(x)$ , i.e.  $(\chi \vee \chi')(x)$  assumes value 1 if and only if at least one of the values  $\chi(x), \chi'(x)$  has 1 as its value.

$(\chi \wedge \chi')(x) = \min[\chi(x), \chi'(x)]$ , that is, the characteristic function  $\chi \wedge \chi'$ , which is the product of performing the operation " $\wedge$ " on characteristic functions  $\chi$  and  $\chi'$ , assumes — for the argument  $x$  — the lesser out of two values,  $\chi(x)$  and  $\chi'(x)$ , i.e.  $(\chi \wedge \chi')(x)$  assumes value 1 if and only if both  $\chi(x)$  and  $\chi'(x)$  have 1 as their value.

$\neg\chi(x) = 1 - \chi(x)$ , i.e. the characteristic function  $\neg\chi(x)$ , which is the product of performing the operation " $\neg$ " on  $\chi$ , assumes — for the argument  $x$  — a value which is equal to the arithmetic result of subtracting  $\chi(x)$  from 1. Thus  $\neg\chi(x)$  assumes value 1 if and only if  $\chi(x)$  has value 0.

It is easy to show that algebras  $(\mathcal{P}(X), \cup, \cap, ')$  and  $(Ch(X), \vee, \wedge, \neg)$  are isomorphic.

Let us construct a homomorphic extension of the algebra  $(Ch(X), \vee, \wedge, \neg)$  in such a way as to replace the set of characteristic functions  $Ch(X)$  with the set of all functions from the set  $X$  to the set  $[0,1]$ .<sup>8</sup> These functions will be called characteristic functions of fuzzy sets. We will distinguish characteristic functions of fuzzy sets from (ordinary) characteristic functions by attaching the symbol " $\sim$ ".

$$\widetilde{Ch}(X) = \{ \tilde{\chi} \mid \tilde{\chi}: X \rightarrow [0,1] \},$$

The homomorphism of both algebras of characteristic functions preserves the operations. In the algebra of characteristic functions of fuzzy sets, these operations are denoted by the same symbols that were used in the algebra of (ordinary) characteristic functions. They are defined as follows:

$$\begin{aligned} (\tilde{\chi} \vee \tilde{\chi}')(x) &= \max[ \tilde{\chi}(x), \tilde{\chi}'(x) ] \\ (\tilde{\chi} \wedge \tilde{\chi}')(x) &= \min[ \tilde{\chi}(x), \tilde{\chi}'(x) ] \\ \neg \tilde{\chi}(x) &= 1 - \tilde{\chi}(x). \end{aligned}$$

<sup>8</sup>" $[0,1]$ " denotes the set of all real numbers  $x$ ,  $0 \leq x \leq 1$ .



The algebra  $(\mathcal{P}(X), \cup, \cap, ')$  is isomorphic to the algebra  $(Ch(X), \vee, \wedge, \neg)$ , so we can say that a set (in the ordinary sense) is a characteristic function. Similarly, we can say that a fuzzy set is a function from the set  $X$  to the set  $[0,1]$ , i.e. an element of the set  $\widetilde{Ch}(X)$ . The algebra of fuzzy sets, therefore, is a homomorphic extension of the algebra of (ordinary) sets.

Let  $(X)$  be the set of all fuzzy sets which can be constructed from the elements of the universal set  $X$ . To distinguish fuzzy sets from (ordinary) sets, we will use the symbol " $\sim$ ". Where a symbol of a fuzzy set is an index of a symbol of a characteristic function of a fuzzy set, the sign " $\sim$ " will be used only once, over a symbol of a characteristic function, not the fuzzy set.

Based on these terminological decisions:

$$\widetilde{P}(X) = \{ \widetilde{A} | \widetilde{\chi}_A : X \rightarrow [0,1] \}.$$

The set  $\widetilde{A}$  is a subset of  $\widetilde{B}$  (symbolically,  $\widetilde{A} \subseteq \widetilde{B}$ ) if and only if  $\forall x[ \widetilde{\chi}_A(x) \leq \widetilde{\chi}_B(x) ]$ .

Two fuzzy sets  $\widetilde{A}$  and  $\widetilde{B}$  are identical if  $\forall x[ \widetilde{\chi}_A(x) = \widetilde{\chi}_B(x) ]$ , i.e.:

$$\widetilde{A} = \widetilde{B} \text{ if and only if } \widetilde{\chi}_A = \widetilde{\chi}_B.$$

It is easy to see that  $\widetilde{A} = \widetilde{B}$  if and only if  $\widetilde{A} \subseteq \widetilde{B}$  and  $\widetilde{B} \subseteq \widetilde{A}$ .

In what follows, if the context unequivocally determines which sense is relevant, we will use the word "set" instead of the term "fuzzy set."

Operations on fuzzy sets will be denoted by the same symbols as in the case of operations on ordinary sets.

A set  $\widetilde{C}$  is a union of  $\widetilde{A}$  and  $\widetilde{B}$  if and only if:

$$\widetilde{\chi}_C(x) = \max[ \widetilde{\chi}_A(x), \widetilde{\chi}_B(x) ]$$

That is to say:

$$\widetilde{C} = \widetilde{A} \cup \widetilde{B} \text{ if and only if } \widetilde{\chi}_C = \widetilde{\chi}_A \vee \widetilde{\chi}_B.$$

A set  $\widetilde{C}$  is an intersection of  $\widetilde{A}$  and  $\widetilde{B}$  if and only if:

$$\widetilde{\chi}_C(x) = \min[ \widetilde{\chi}_A(x), \widetilde{\chi}_B(x) ]$$

That is to say:

$$\tilde{C} = \tilde{A} \cap \tilde{B} \text{ if and only if } \tilde{\chi}_C = \tilde{\chi}_A \wedge \tilde{\chi}_B.$$

A set  $\tilde{B}$  is a complement of  $\tilde{A}$  if and only if:

$$\tilde{\chi}_B(x) = 1 - \tilde{\chi}_A(x).$$

That is to say:

$$\tilde{B} = \tilde{A}' \text{ if and only if } \tilde{\chi}_B = \neg \tilde{\chi}_A$$

Notice that there is a function which assumes value 1 alone and a function that always assumes value 0, namely, for each  $x$ :  $\tilde{\chi}_x(x) = 1$ ;  $\tilde{\chi}_\emptyset(x) = 0$ .

We will show that the algebra  $(\widetilde{Ch}(X), \vee, \wedge, \neg)$  is quasi-Boolean (De Morgan algebra). From this it will follow that the algebra of fuzzy sets  $(\tilde{P}(X), \cup, \cap, ')$  — which is isomorphic to the former — is also quasi-Boolean.

An abstract algebra  $(A, \cup, \cap)$  is called *lattice* if for all  $a, b, c \in A$ , the following conditions are met:

1.  $a \cup b = b \cup a$                        $a \cap b = b \cap a$
2.  $a \cup (b \cap c) = (a \cup b) \cap c$      $a \cap (b \cup c) = (a \cap b) \cup c$
3.  $(a \cap b) \cup b = b$                        $a \cap (a \cup b) = a$ .

A lattice is called *distributive* just in case it satisfies the additional conditions:

4.  $a \cap (b \cup c) = (a \cap b) \cup (a \cap c)$      $a \cup (b \cap c) = (a \cup b) \cap (a \cup c)$ .

An abstract algebra  $(A, \cup, \cap)$  is quasi-Boolean when  $(A, \cup, \cap)$  is a distributive lattice with an individual element  $V$  and a unary operation  $'$  defined on  $A$ , and the following conditions are met:

5.  $a = a''$
6.  $(a \cup b)' = a' \cap b'$

The algebra of characteristic functions of fuzzy sets fulfils all requirements 1—6. We will show this fact only in the last three points.

ad 4. (distributivity)

$$\begin{aligned} [(\tilde{x}_1 \wedge (\tilde{x}_2 \vee \tilde{x}_3))(x) &= \min[\tilde{x}_1(x), (\tilde{x}_2 \vee \tilde{x}_3)(x)] = \min[\tilde{x}_1(x), \max(\tilde{x}_2(x), \tilde{x}_3(x))]. \text{ Thus} \\ \min[\tilde{x}_1(x), (\tilde{x}_2 \vee \tilde{x}_3)(x)] &= \text{either } \min[\tilde{x}_1(x), (\tilde{x}_2(x))] \text{ or } \min[\tilde{x}_1(x), (\tilde{x}_3(x))]. \text{ Hence } \min[ \\ \tilde{x}_1(x), (\tilde{x}_2 \vee \tilde{x}_3)(x)] &= \max[\min(\tilde{x}_1(x), (\tilde{x}_2(x))), \min(\tilde{x}_1(x), (\tilde{x}_3(x)))] . \text{ So eventually, for} \\ \text{each } x, [(\tilde{x}_1 \wedge (\tilde{x}_2 \vee \tilde{x}_3))(x) &= (\tilde{x}_1 \wedge \tilde{x}_2) \vee (\tilde{x}_1 \wedge \tilde{x}_3). \end{aligned}$$

$$\text{ad 5. } \neg \tilde{x}(x) = 1 - (1 - \tilde{x}(x)) = \tilde{x}(x).$$

$$\begin{aligned} \text{ad 6. } \neg(\tilde{x}_1 \vee \tilde{x}_2) &= 1 - (\tilde{x}_1 \vee \tilde{x}_2)(x) = 1 - \max[(\tilde{x}_1(x), \tilde{x}_2(x))] = \min[1 - \tilde{x}_1(x), 1 - \tilde{x}_2(x)] = \\ \min[\neg \tilde{x}_1(x), \neg \tilde{x}_2(x)] &= \neg \tilde{x}_1(x) \wedge \neg \tilde{x}_2(x). \end{aligned}$$

Note that the following expressions are not laws of the algebra  $\widetilde{Ch}(X), \vee, \wedge, \neg$ :

$$\neg(\tilde{\chi} \wedge \neg \tilde{\chi}) = V; \neg \tilde{\chi} \vee \tilde{\chi} = V$$

$$\text{When } \tilde{\chi}(a) = \frac{1}{2}, \text{ then } \neg \tilde{\chi}(a) = \frac{1}{2}, \text{ so: } [\neg(\tilde{\chi} \wedge \neg \tilde{\chi})](a) = \frac{1}{2} \text{ and } (\neg \tilde{\chi} \vee \tilde{\chi})(a) = \frac{1}{2}.$$

### III. Extensions of one-dimensional comparative concepts as fuzzy sets

Identifying the extension of a concept consists in defining the set of designata (referents) of this concept. As we said, extensions of one-dimensional comparative concepts are not sets in the ordinary sense. In the case of one-dimensional comparative concepts designata can be compared with each other with respect to the degrees of membership in the set. In the case of fuzzy sets, we can assign to each object a value from the interval  $[0,1]$  with which the object is an element of a given set. A one-dimensional concept  $\mathcal{N}$  of the logical structure  $(\mathcal{T}, \mathcal{W}, \mathcal{R})$  can be logically characterized by means of a fuzzy set if and only if the relational system  $(\mathcal{T}, \mathcal{W}^*)$  can be embedded in the system  $([0,1], \leq)$ .

The issue of embedding one system in another is a well-known problem — for instance, in the theory of measurement.

If the cardinality of  $\mathcal{W}$  is greater than that of  $[0,1]$ , then it is impossible to embed  $(\mathcal{T}, \mathcal{W}^*)$  in  $([0,1], \leq)$ .<sup>9</sup> Thus a logical specification of one-dimensional comparative concepts by means of fuzzy sets is not always possible. In the case of one-dimensional comparative concepts which can be characterized by means of fuzzy sets, we are in a position to declare that we

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<sup>9</sup>Zadeh (1965) is aware of the possibility of using a different set instead of the interval  $[0,1]$ .

have provided a description of their logical structure. To simplify matters, we can say that extensions of such concepts are fuzzy sets.

A logical characterization of one-dimensional comparative concepts by means of fuzzy sets does not result in the reduction of these concepts to classificatory concepts. It also allows room for a different analysis of concepts which are intuitively different despite the fact that they share the description of logical structure of the type proposed by Hempel — e.g. *tepid*, *warm*, *hot*. Lukewarm, warm, and hot objects will be elements of corresponding fuzzy sets (by means of which we will specify the concepts *tepid*, *warm*, *hot*) to different degrees.

This example makes it clear that the specification of the words *tepid*, *warm*, *hot* in terms of fuzzy sets can be correctly carried out by means of methods of the theory of measurement. One could even say that, in the light of such an account, the theory of measurement becomes the method of a correct implementation of logical specification. Thus the theory of measurement proves to be an integral part of metamathematics, broadly understood (Wójcicki 1974: 10).

In the family of fuzzy sets, we define operations " $\subseteq$ " and "=", which are generalizations of corresponding relations in the class of classificatory sets. Consequently, it is possible to describe relations holding between extensions of one-dimensional comparative concepts (given that these concepts are specified by means of fuzzy sets). Of course, the terminology used for such a description can also be generalized in a natural way.

We will say that a logical characterization of a language is adequate only if all concepts of that language which intuitively have distinct extensions receive different logical specifications.

Suppose that a given language can be adequately characterized by means of fuzzy sets. Then the logic of this language can be formalized. Here, we will limit ourselves to propositional logic.

Clearly, we must admit to more than one truth-value. For instance, truth-values of sentences that assert membership of objects in a set should vary depending on the degree of membership of the objects in the set. There is sufficient reason to assume that it is convenient to equate the set of truth-values with the set  $[0,1]$ , i.e. the set whose elements serve to mark the degrees of membership of an object in an extension of name. Of course, it leaves open the issue of distinguished truth-values.

A connective is truth-functional if the truth-value of the compound sentence constructed by means of this connective is determined by the truth-values of sentence-arguments of this connective. Among the definable truth-

functional connectives, only those are of concern here which are extensions of ordinary connectives of two-valued logic, namely, negation, disjunction, conjunction (of course we are also interested in implication, yet we assume its definability in terms of the above connectives). To define these connectives, it is enough to associate them with calculations in the algebra of characteristic functions of fuzzy sets. We calculate truth-values of sentences — depending on the truth-values of sentence-arguments — in the same way as we calculate degrees of membership in fuzzy sets.

In the ordinary way of speaking, we do not assess the truth-value of sentences by pointing to a number from the interval  $[0,1]$ . Such an assessment is carried out by means of a certain vocabulary, dependent on a given language. But notice that in the case of a language composed of one-dimensional comparative concepts, the expressions describing truth-values of sentences of that language are also one-dimensional comparative concepts. Thus membership of any sentences of that language in the set of sentences with a specific truth-value denoted in this language (or, more precisely, in its metalanguage) is mutually comparable. Suppose that  $\mathfrak{J}$  is a word denoting a truth-value. For any two sentences, we can tell whether they belong to the set of sentences with the truth-value  $\mathfrak{J}$  to an equal degree or to different degrees.

In any case, however, the set of expressions used to describe truth-values should contain two expressions — *true*, *false* (or their equivalents). Such a set can be extended, for instance, by adding expressions such as: *very true*, *fairly true*, *not very true*, *not false* (as for fuzzy logic, cf. Zadeh 1975—1976, esp. part II, section 3). We will not go into details of this broad issue. Let us notice, however, that if we regard 1 alone as the distinguished value, then the algebra of truth-values ( $[0,1]$ ,  $1$ ,  $\vee$ ,  $\wedge$ ,  $\neg$ ) will be quasi-Boolean. This means, in particular, that expressions such as  $\alpha \vee \neg \alpha$ ,  $\neg (\alpha \wedge \neg \alpha)$  will not be tautologies. Which, in fact, is in accordance with intuitions. Consider the word *tall*. The sentences *John is tall* and *John is not tall* are not logically contradictory. After all, it is not the case that one of them must be true and the other false. The sentence *John is taller John is not tall* is true if one of the disjuncts is true, yet none of these sentences have to be true. The sentence *John is tall and John is not tall* is false when one of the conjuncts is false, but none of these sentences have to be false.

#### IV. Multidimensional comparative concepts

Under certain conditions, fuzzy sets can be employed in an extensional specification of one-dimensional comparative concepts. Languages composed

of such concepts can be adequately described in terms of the theory of fuzzy sets. It is easy to see, however, that fuzzy sets are not sufficient for a satisfactory description of languages which contain comparative concepts of more than one dimension. They are not suited for a satisfactory description in the same sense in which they were suited for a description of one-dimensional comparative concepts. In particular, an extensional description of multidimensional comparative concepts leads to their reduction to one-dimensional comparative concepts. A question arises, therefore, whether it is possible to generalize the notion of a fuzzy set so as to make extensions of multidimensional comparative concepts fuzzy (perhaps under conditions analogous to the requirements accepted in the case of one-dimensional comparative concepts).

Loosely speaking, an  $n$ -dimensional comparative concept is a concept such that all its designata are simultaneously designata of  $n$  different one-dimensional comparative concepts. For example, shirt size is a two-dimensional comparative concept. It consists of the collar size and the chest size.

The above definition of  $n$ -dimensional comparative concept reveals a crucial difference between, on the one hand, the division into classificatory and comparative concepts, and, on the other, the division into one-dimensional and multidimensional comparative concepts. Classificatory concepts are one-dimensional comparative concepts, but no  $n$ -dimensional comparative concept is an  $(n+1)$ -dimensional comparative concept.

$n$ -dimensional comparative concepts (according to Hempel) have the following logical structure, involving a system of pairs of relations:

$$(\mathcal{W}_i, \mathcal{R}_j),$$

where  $i = 1, 2, \dots, n$ .

For each pair, we have the same requirements as those imposed on relations  $\mathcal{W}$  and  $\mathcal{R}$  with regard to specification of one-dimensional comparative concepts. Also, the field of each relation  $\mathcal{W}_i$  is a set  $\mathcal{T}$ , i.e. a set from the family  $\mathcal{R}_{\mathcal{J}}$  such that the designata of a given concept are elements of that set.

In the case of one-dimensional comparative concepts, we have proposed a generalization of the notion of set by adding values to the set of values of the characteristic function of an (ordinary) classificatory set. Thus a classificatory set is a fuzzy set whose characteristic function accepts only 0 and 1 as values. However, if we were to invoke fuzzy sets in order to specify

extensions of multidimensional comparative concepts, we would not be able to offer a solution according to which a set in a more general sense is also a fuzzy set. It follows from the above-discussed fact that a classificatory concept is a one-dimensional comparative concept, but an  $n$ -dimensional comparative concept ( $n > 1$ ) is not a one-dimensional comparative concept but a *class* of one-dimensional comparative concepts. Thus when we talk about a further generalization of the notion of set and say that a fuzzy (and classificatory) set is a special case of such a set, then we speak of a generalization in a different sense than in the case of a generalization of the notion of classificatory set to the notion of fuzzy set. It will be a kind of generalization analogous to the generality of the notion of  $n$ -dimensional ( $n > 1$ ) comparative *concept* with respect to the notion of one-dimensional comparative concept.

The phrase " $n$ -dimensional fuzzy set" will refer to the following construction.

Let  ${}^n\chi$  be an arbitrary function from the set  $X$  to the set  $[0,1]^n$ .<sup>10</sup> That is:

$${}^n\chi: X \rightarrow [0,1]^n.$$

Let  $Ch_n(X)$  be the set of all functions  ${}^n\chi$ , that is:

$$Ch_n = \{{}^n\chi \mid {}^n\chi: X \rightarrow [0,1]^n\}.$$

For  $n = 1$ ,  $Ch_n(X) = (\widetilde{Ch}X)$ , that is to say, the set  $Ch_1(X)$  is identical to the set of characteristic functions of fuzzy sets.

Any function  ${}^n\chi \in Ch_n$  can be presented as an  $n$ -tuple of functions:

$${}^n\chi = \langle \widetilde{Ch}^1, \widetilde{Ch}^2, \dots, \widetilde{Ch}^n \rangle,$$

where  $\widetilde{Ch}^1 \in \widetilde{Ch}(X)$ .

Consider the algebra  $(\widetilde{Ch}_n(X), \vee, \wedge, \neg)$  in which the operations  $\vee, \wedge, \neg$  are defined as follows:

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<sup>10</sup>  $A^n$  is an  $n$ -times Cartesian product of the set  $A$  and itself, that is, it is a set of all ordered  $n$ -tuples of elements of  $A$ .

$${}^n\chi_A \vee {}^n\chi_B = \langle \tilde{\chi}_A^1 \vee \tilde{\chi}_B^1, \dots, \tilde{\chi}_A^n \vee \tilde{\chi}_B^n \rangle,$$

$$\text{where } (\tilde{\chi}_A^i \vee \tilde{\chi}_B^i)(x) = \max[\tilde{\chi}_A^i(x), \tilde{\chi}_B^i(x)];$$

$${}^n\chi_A \wedge {}^n\chi_B = \langle \tilde{\chi}_A^1 \wedge \tilde{\chi}_B^1, \dots, \tilde{\chi}_A^n \wedge \tilde{\chi}_B^n \rangle,$$

$$\text{where } (\tilde{\chi}_A^i \wedge \tilde{\chi}_B^i)(x) = \min[\tilde{\chi}_A^i(x), \tilde{\chi}_B^i(x)];$$

$$\sim {}^n\chi_A = \langle \sim \tilde{\chi}_A^1, \dots, \sim \tilde{\chi}_A^n \rangle,$$

$$\text{where } (\sim \tilde{\chi}_A^i)(x) = 1 - \tilde{\chi}_A^i(x).$$

The algebra  $\widetilde{Ch}_n(X), \vee, \wedge, \neg$  is a homomorphic extension of the algebra  $\widetilde{Ch}(X), \vee, \wedge, \neg$ ). It is quasi-Boolean.

The algebra of  $n$ -dimensional fuzzy sets is the algebra of sets isomorphic to the algebra of functions  $Ch_n(X)$ , called characteristic functions of  $n$ -dimensional fuzzy sets. An  $n$ -dimensional fuzzy set is an isomorphic image of an  $n$ -dimensional characteristic function.

Are extensions of  $n$ -dimensional comparative concepts  $n$ -dimensional fuzzy sets?

If an extension of an  $n$ -dimensional comparative concept, of a logical structure defined by the system  $(\mathcal{T}_1, \dots, \mathcal{W}_n)$ , is to be treated as an  $n$ -dimensional fuzzy set, it is necessary, and sufficient, that each relational system  $(\mathcal{T}, \mathcal{W}_i)$ ,  $1 \leq i \leq n$ , could be embedded in the system  $([0,1], \leq)$ .

It is clear, therefore, that — like in the case of one-dimensional comparative concepts — such an embedment is impossible if, for some  $i$ , cardinality of  $\mathcal{W}_i$  exceeds cardinality of  $[0,1]$ . Thus, in theory, not every  $n$ -dimensional comparative concept can be extensionally characterized by means of an  $n$ -dimensional fuzzy set. Concepts which can be specified in this way can be labelled  $n$ -dimensional fuzzy concepts.

The problem of logic for a language whose concepts are  $n$ -dimensional comparative concepts can be solved analogously to the problem of logic for a language composed of one-dimensional comparative concepts. As the set of truth-values, we should take the set  $[0,1]^n$ . Phrases used to assess



truth-values of sentences should be  $n$ -dimensional comparative concepts as well. The point is that sentences which assert membership of objects in a given set should differ in truth-value when those objects belong to that set to different degrees.

The above discussion indicates prospects and limitations of the idea of a fuzzy set. In particular, it shows that this notion is in need of further generalization. In this regard, it would be interesting to compare fuzzy sets in a broad sense with the special theory of sets developed by Polish computer scientists. It is worth considering the advantages and disadvantages of both accounts with an eye on the methodological problems associated with concepts in the humanities.

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**Jan Woleński**

## **PROBLEMS OF SEMIOTICS AND LOGIC OF NORMS**

Originally published as "Problemy semiotyki i logiki norm," *Studia Semiotyczne* 18 (1993), 141–149. Translated by Maja Wolsan.

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### **1. Introduction**

Norms play an important role in many areas of life. Therefore, it is not surprising that they are the subject of various studies, including semiotic research. A broad range of semiotic problems have appeared in relation to normative statements. Normative statements bring to mind questions belonging to each of the classical fields of semiotics: syntax, semantics, and pragmatics.

Normative statements can be analysed from the syntactic perspective and compared to other types of statements. Syntactic considerations may include, for example, the problem of reducibility of any normative statement to a distinct and relatively simple syntactic type. There is, for instance, the idea that all norms can be reduced to commands. It is supported by many arguments: political, sociological, psychological, historical, etc. The imperative conception of norms leads to the conclusion that all types of norms can be reduced to imperative sentences. The grammatical argument supporting the thesis that such a reduction is possible (although I do not claim that it actually proves what it is supposed to prove) is as follows: in grammar, we distinguish declarative, interrogative, and imperative sentences, but we do not distinguish normative sentences as a separate grammatical category. If grammatical intuition is correct, normative statements would best be perceived as complex imperative statements, and this is an indirect argument supporting the thesis that norms can be reduced to commands.

And here is another example of a syntactic problem related to normative statements. Many logical theories of questions have been formulated, e.g. the one where questions are hidden commands and interrogative sentences are disguised imperative sentences (Åquist 1984). It is an example of a syntactic reduction from questions to imperative sentences, i.e. from one grammatical category to a completely different one. It is clear that such a reduction would require defining the syntactic structure of the expressions belonging to each of these categories.

If we take semantics as the study of meaning of expressions, without any further comments on the concept of meaning, i.e. without a clear distinction between referential and intensional semantics, the range of semantic problems concerning normative statements is very broad and is related, for instance, to the problems of the interpretation of norms, which is one of the fundamental aspects of jurisprudence. What is normative meaning? Can it be reduced to the descriptive meaning, and if not — why? These are two fundamental semantic problems discussed in relation to normative statements. Once we realise what the role of referential semantics is, further questions will appear. Can normative statements be either true or false? If they are neither true nor false, do they have any truth values, and if they do — what values exactly?

The pragmatic problems related to normative statements originate from the fact that normative statements are formulated by someone and addressed to someone. It is disputable whether all norms have been established by someone, but it is certain that all norms exist for someone. It becomes clear when we realise that norms are supposed to influence human behaviour, so they have an inherent pragmatic function. Views on the genesis of norms depend on some general philosophical assumptions. Legal positivists believe that all norms, or at least legal norms, always have a concrete real legislator; we can pass over the complicated theory of sources of law formulated in the spirit of legal positivism by Hans Kelsen. The proponents of the theological concepts of natural law also claim that all norms, not only the legal ones, have been created by man or God, whereas the representatives of the secular school of natural law follow the well-known *dictum* by Montesquieu that both natural and social laws are "the necessary relationships which derive from the nature of things". According to this doctrine, natural laws are not established but discovered. Let us, however, repeat that all philosophers interested in norms agree that norms are supposed to shape human behaviour and, therefore, their pragmatic function results from their very nature. We could even say that the pragmatics of normative statements appears as something more natural than, for instance, the pragmatics of declarative

sentences.

In fact, in order to see the pragmatic problems related to normative statements, we do not have to refer to the philosophical foundations of moral and legal doctrines. For instance, lawyers have established the principle *clara non sunt interpretanda*. It means that clearly formulated legal provisions do not require interpretation. However, there appears a whole tangle of problems of — let us generally say — a semiotic nature. Is clarity an inherent characteristic of language? Or is it a relative feature, depending on the interpreters, their knowledge, etc.? Much indicates that *claritas* of a legal text is indeed something relative. And if so, then the assessment of clarity is definitely pragmatic in nature. Generally speaking, the lion's share of the problems related to legal interpretation concern pragmatic factors in the understanding of legal texts. For instance, if someone says that the role of legal interpretation is to decode the intentions of the legislator, it is nothing more than the examination of pragmatic relations, the relations between the creator of a norm and the norm itself. On the other hand, if we were to define legal interpretation not as decoding the intentions of the actual legislator but of someone who would be the legislator today, we would in fact be proposing that the interpreter creates a pragmatic relationship herself. In claiming that the meaning of legal provisions is stable (static theories of interpretation of law), we would at the same time determine the pragmatic aspect of their interpretation, and we would do the same, although in a different way, if we allowed for the changeability of their meaning depending on the social situation (dynamic theories of interpretation of law).

The very brief review of the semiotic problems related to normative statements presented above shows how multidimensional and varied they are. This means that semiotics of normative statements is a broad research field. However, it can also be looked at from more concrete points of view, one of which is the logical one. The role of logic is to build the theory of inferences based on the concept of logical consequence. The belief that this can be done within the framework of logical syntax belongs to the past. This belief emerged under the influence of Hilbert's formalism and was accepted without reservations by the philosophers of the Vienna Circle, and finally collapsed in the mid-1930s under the influence of the works by Gödel and Tarski, which marked the beginning of the semantic period in the development of logic. With time, it became perfectly clear that logical semantics is the fundamental branch of logic, and that every logical theory should be characterised not only syntactically but also semantically. The reason for this is that each logical theory faces the problem of completeness,

i.e. the question of the relation between the set of theorems provable in the given theory (theorems in the syntactic sense) and the set of theorems which are true under a certain interpretation (theorems in the semantic sense). The problem of completeness can sometimes be solved by a purely syntactic method, for instance in propositional calculus and in some weak first-order theories. However, in the first-order predicate calculus the completeness theorem must be proved by using semantic methods. This digression shows that the role of semantics in logic is irreplaceable by syntax.

Normative statements are elements of various inferences. This implies the problem of logic of these statements and, *a fortiori*, their semantics. Further comments in the present article, both historical and systematic, shall focus on the relation between logic and semantics in the field of normative statements. In particular, I would like to discuss a conception of logic of normative statements popular among lawyers but present among philosophers as well. Generally speaking, it says that norms are a very special grammatical category (it is sometimes considered to be syntactic or even semantic) and as such require separate semantics and logic. In particular, it is said that norms are neither true nor false and therefore require a new logical and semantic background. I shall try to prove that this concept is incorrect. Although it may be historically justified (i.e. it can be explained in sociological terms why it emerged), it is based on a fundamental confusion between norms and normative statements. Unfortunately, this conception acted as a catalyst for many promising semiotic dissertations towards the search for specific logic and semantics of norms. Therefore, it seems reasonable to discuss this matter once again.<sup>1</sup>

## 2. Historical perspective

We can identify two currents which are important for the present state of studies in logic and semantics of norms. Although the main conclusion of this work will be a postulate to distinguish norms from normative statements, for reporting and critical aims I shall adopt the terminology which treats norms as statements, which means that they have their logic and semantics.

I shall start by mentioning the philosophico-logical current. Until recently, it was believed that the current had originated in modern times, in the

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<sup>1</sup>In this article, I refer to Opalek and Woleński 1988 and Woleński 1981. Naturally, at the same time I refer to a large number of works by other authors, but the negative position on the logic of norms and specific legal logic has been outlined in the two works cited above.

works of Höfler, Mally, and the logicians of the interwar period interested in norms (Jørgensen, Dubisław, Hofstadter, McKinsey), and that some past philosophers had barely noticed some problems of the logic of norms. The latter were to include: Hume, who was supposedly the first to notice that in order to reach a normative conclusion we need at least one norm among the premises; Kant, who formulated the general principle of dualism of being and obligation; and Poincaré, who repeated the abovementioned view of Hume on the condition of deducibility of norms from a certain set of premises (on the subject of logic and semiotics of norms, cf. Weinberger 1958, Ziemba 1983).

However, quite recently Knuutilla (1981) proved that elements of deontic logic were known to scholastics, for instance William Ockham, Robert Holcot, and Roger Rossetus. They knew such relations as, for example:  $\neg O\neg p \leftrightarrow Pp$ ,  $\neg P\neg p \leftrightarrow Op$ , and  $Op \leftrightarrow F\neg p$  ( $O$  — obligation,  $P$  — permission,  $F$  — forbidden). Nonetheless, it is certain that in the past the logic and semantics of norms were practiced to a much lesser extent than the logic of assertive sentences. Perhaps the reason for this was that logicians and philosophers were usually not interested in legal matters, and ethics was practiced mainly from the normative perspective, which did not encourage the development of metaethics. One significant work in this context is the well-known book by Ossowska (1947). This excellent work does not include many comments on the logic and semantics of norms, which shows that philosophers of that time had not yet become fully aware of these issues.

In the 1950s and later, rapid development of logic and semantics of norms took place thanks to the pioneering works of von Wright. This led to the emergence of deontic logic as an independent branch of modern formal logic (the present state of deontic logic is discussed in Åquist 1984). We should stress that the first works by von Wright were clearly syntactic in nature, but later deontic logic took a decidedly semantic form. This direction of studies can be referred to as the formal direction in the philosophico-logical current.

The criticism of applying formal logical methods to the natural language as a whole or to its sublanguages (e.g. to the said normative discourse) resulted in the development of the semantics of norms practiced from the point of view of the descriptionist philosophy of everyday language (late Wittgenstein, philosophy of everyday language, etc.). The semiotic analysis consists in examining concrete uses of language, in our case within the normative discourse, or even more broadly, practical discourse. Norms are defined in this case as a type of practical statement, and an interesting type

of thought in the direction of studies discussed herein, which can be called the informal orientation in the philosophical logic current, is the comparison of norms with other types of practical statements, e.g. judgements, wishes, or advice. Probably the most important achievement of the informal orientation is Austin's theory of speech acts, and in particular his theory of performatives.

The other current in the semiotic studies on norms is the legal current. Before the 20<sup>th</sup> century, it was significantly more developed than philosophical logic. Law manifests itself through language, and therefore lawyers have always faced semiotic problems. Throughout the centuries, they developed many methods for interpretation of legal texts, including the canons of linguistic and logical interpretation. Generally speaking, interpreting of law is identifying the sense of legal provisions. Legal tradition has it that interpretation takes place only when a legal text gives raise to some doubts, which is related to the *clara non sunt interpretanda* principle mentioned before. Sometimes, in order to solve a problem of interpretation, it is enough to apply a comparative language study. But sometimes it requires using arguments of a certain type, often called arguments of legal logic. They include: *argumentum ad simile* (an argument from analogy), *argumentum a contrario* (argument from the contrary), *argumentum a maiori ad minus* (argument from greater to lesser), and *argumentum a minori ad maius* (argument from lesser to greater). Lawyers have tried to develop a general theory of admissibility and validity of these arguments, which proved to be very difficult, as these arguments include both logical and non-logical content. For example, in criminal law an analogy used to the detriment of the defendant is prohibited, which means that even if an analogy is admissible in substantial terms, in some cases it may be excluded by the law itself.

Analyses of legal arguments have conclusively shown that they are not, in their entirety, based on the patterns of formal logic. Let us discuss it with the example of *argumentum a maiori ad minus*. According to this pattern, if more is allowed, then less is allowed as well. In some cases, this argument can be justified by using logic. Let us assume, in line with deontic logic, that obligation is a kind of permission. This results from the general rule: if something ought to be, then it is also permissible. Any objections against perceiving commands as a type of permission stem from defining permission as indifference. There is the following law in deontic logic: if it ought to be that *A* and *B*, then it ought to be that *A*. We can assume that two actions are 'more' and one action is 'less'. This interpretation leads to a special case of *argumentum a maiori ad minus* in relation to obligations.

We should notice, however, that even in this case there is a non-logical

factor — an assumption that two actions are 'more' and one is 'less'. In most cases, this non-logical factor is much more significant, and in fact *argumentum a maiori ad minus* and other legal arguments are enthymemes due to some unstated non-logical assumptions. Lawyers, however, insist on proving the thesis that despite all this, legal logic encodes some universal important rules of legal thinking. This is the genesis of legal logic as logic in general, i.e. a discipline establishing general rules, but at the same time as a special type of logic, different from 'regular' logic. The belief that such a special legal logic exists is an important result of the legal current in the semiotics of norms — a result which, in my opinion, has had a disastrous effect on the development of semiotic studies on norms. It undoubtedly stemmed from some real problems with legal interpretation. However, one of the factors was probably also the centuries-long separation of jurisprudence from logic and philosophy. We should remember that since the beginnings of the existence of universities, faculties of law were completely separate entities, and therefore lawyers had no contact with professional philosophy or logic. Even today, lectures on philosophy and logic for lawyers are often held by lawyers instead of philosophers and professional logicians. This is a manifestation of the said separation, another manifestation being this special legal logic.

The above does not necessarily mean that there have been no strictly logical elements in legal logic. On the contrary, lawyers have formulated many subtle rules with a very distinct formal logic content. For instance, there is a well-known rule: that which is otherwise not permitted, necessity permits. It corresponds to one of the axioms of modern deontic logic: tautologies are permitted. The principle of presumption of innocence may be perceived in the first place as a moral postulate, but it has a distinct logical sense because, in fact, it establishes that negative propositions (I have not done what I am accused of) are not subject to proof. Indeed, legal systems which do not respect this principle (e.g. Stalinist law) may be considered not only unethical but also illogical. Therefore, the thesis on the existence of special legal logic does not stem from the nature of things, as lawyers have formulated many 'regular' logical principles, but rather from historical and sociological factors.

Let us add that the long-time separation of law and logic seems to have been mostly overcome by now.

### **3. Jørgensen's Dilemma and Hume's/Poincaré's Guillotine**



In 1938, the Danish logician and philosopher Jørgen Jørgensen formulated a dilemma which is a very useful tool for the analysis of problems of the logic of norms (Jørgensen 1938). The dilemma is composed of the following sentences:

- (1) Only sentences which are capable of being true or false can function as premises in an inference which can be classified as logically correct.
- (2) Norms are not capable of being true or false.
- (3) Norms cannot occur in logically correct inferences.
- (4) There exist logically correct inferences the premises of which are norms.

An example of an inference referred to in (4) can be as follows: promises should be kept, you promised to do *A*, so you should keep this promise. Certainly, we intuitively perceive this inference as logically correct. It has a normative conclusion and there is a norm among its premises, therefore it falls under Jørgensen's Dilemma.

However, it falls under the dilemma only with the very strong assumption formulated in (2): norms are neither true nor false. This assumption has often been questioned by philosophers who accept cognitivism, i.e. the idea that norms have a cognitive meaning and consequently have regular truth values, i.e. are true or false. There are various types of cognitivism. For instance utilitarians believe norms to be statements about benefits. Others, e.g. pragmatists, perceive norms as hidden predictions and evaluate them in terms of effectiveness. The utilitarian and pragmatic cognitivisms are naturalistic views. But we could also extend Moore's anti-naturalism to the sphere of norms and say that obligation is an intuitively perceived elementary quality; norms are statements about understood obligation. Finally, we could say that, from a cognitivist point of view, norms are statements about some ideal obligation. Cognitivism solves Jørgensen's Dilemma by rejecting statement (2). Then the only remaining problem is the choice of the right type of logic to formalise normative inferences.

The view which accepts (2), on the other hand, is usually referred to as non-cognitivism. According to this belief, norms are neither true nor false. An extreme manifestation of non-cognitivism (a sort of anti-cognitivism) is emotivism in the Vienna Circle style, equalling norms and judgements to exclamations. Thus norms and judgements would only have an acclamatory function. This view was soon deemed too simplistic and clearly inconsistent with the function of norms (and judgements) in language. However, moderate non-cognitivism (e.g. that of Stevenson) faced the problem of meaning of

normative statements and judgements, which are meaningful in the semantic sense but are neither true nor false. Regardless of the proposed solution in this respect, emotivism (both extreme and moderate) faces the problem shown by Jørgensen's Dilemma.

I have already mentioned Hume's observation, later repeated by Poincaré, that in order for an inference to have a normative conclusion there must be at least one norm among its premises. Common opinion has it that Hume's/Poincaré's Law reveals a basic gap between existence and obligation (the 'is-ought' problem). This thesis is also known as Hume's/Poincaré's Guillotine, as it defines the fundamental condition of admissibility of normative inferences. It is often understood in the following way: norms would have 'good' logic if they were inferable from declarative sentences, or even better — 'pure' declarative sentences, i.e. sentences without the use of "ought to" or its equivalents. I believe that this issue should be discussed in some more detail.

Let us point out once again that grammarians distinguish declarative, interrogative, and imperative sentences. Therefore, grammar does not know the category of obligational sentences. Naturally, this proves nothing, as the absence of a grammatical distinction does not mean that no logical problem exists in this respect. For example, grammarians do not differentiate much between proper names and common names, while in logic this distinction is absolutely fundamental. Nevertheless, for a grammarian, obligational sentences are just a type of declarative sentences. This fact is certainly a motive for cognitivists, who can say in addition that preceding an obligational sentence with phrases such as *it is true that* or *it is not true that* does not in fact lead to syntactic or semantic nonsense. Thus, Jørgensen's Dilemma should not state that norms cannot be inferred from declarative sentences, at least without some additional comment, for example: we should differentiate between absolute and relative interpretation of sentences with "ought to" (meaning sentences in the grammatical sense). For instance:

(5) It ought to be that *p*.

might mean that *p* is an obligation on the grounds of a given system of norms. Here we have an obligational sentence in the relative sense (systemically relativised in accordance with Wróblewski's terminology), which is a declarative sentence with respect to a given system of norms, e.g. a legal system, but is not a norm. Naturally, a systemically relativised obligational sentence is a declarative sentence in the grammatical sense and is true or

false depending on the circumstances. We should distinguish obligatory sentences in the relative sense from norms in the strict sense and obligatory sentences in the absolute sense, which are not declarative sentences in the grammatical sense and are neither true nor false. Only after this comment, does Jørgensen's Dilemma — now involving declarative sentences — convey the right meaning.

But let us return to Hume's/Poincaré's Guillotine. It is interesting that it is applicable to obligatory sentences in both the absolute and the relative sense. That it applies to obligatory sentences in the absolute sense is not at all surprising. If it is a language category *sui generis*, sentence-like statements with "ought to" in the absolute sense are not logical consequences of declarative sentences in the grammatical sense. In this version, Hume's/Poincaré's Law is practically equivalent to Jørgensen's Dilemma. Let us assume that obligatory sentences in the relative sense are a type of modal sentences. In the area of modal sentences (in the broad sense) there are instances of logical consequence between assertoric sentences, i.e. sentences with "is", and declarative sentences with modal verbs. For example, the sentence  $p$  is a logical consequence of:

(6) It is necessary that  $p$

while the sentence:

(7) It is possible that  $p$

is a logical consequence of  $p$ , assuming that  $p$  is an assertoric sentence. On the other hand, the sentence:

(8)  $x$  believes that  $p$

is not at all a logical consequence of  $p$ , and  $p$  is not a consequence of (8).

The formulas (6)–(8) are sentences in the logical sense, just as (5). The fact that there is no logical consequence between  $p$  and (8), in either direction, does not imply that epistemic logic for belief sentences is impossible. Consequently, the Hume's/Poincaré's Guillotine for sentences like (5) in their relative version does not imply that logic is impossible for such sentences. By the way, it is an interesting historical problem how Hume's, Kant's, and Poincaré's views have been interpreted in the context of the distinction between absolute and relative obligatory statements. It seems that Hume

was an emotivist and therefore formulated his observations regarding (5) in accordance with the absolute interpretation. Poincaré, on the other hand, seems to have been a cognitivist, and so his version of the Guillotine referred to obligatory sentences in the relative sense; the same seems to apply to Kant. An important conclusion of the above is that a cognitivist may accept the dualism of being and obligation in one of its interpretations.

Naturally, the problem with the logic and semantics of norms concerns both obligatory sentences in the relative sense and obligatory sentences in the absolute sense. However, in the latter case it becomes severe, or even dramatic. Those who deny norms the capability of being true or false and at the same time want to justify normative inferences, are forced to see norms as a separate semantic category and thus construct a relevant logic and semantics of norms. It may be said in their defence that if we admit the existence of norms in the absolute sense, then they really seem to lay beyond true and false, as norms do not state anything — they 'normalize'.

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