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THE JUSTIFICATION OF LANGUAGE HETEROGENEITY

In recent years there has been a move from a concern with a formal approach to language towards a nonformal attitude. The former approach was considered as the only right one at the beginning of the 20th century. However its scientific value was defended also in the 1980s and 1990s of the 20th century.¹ The latter standpoint established its position in the 1970s of the 20th century. In this paper I wish first to present the older and the more modern interpretations of language before the move. Second I shall try and explain that they exemplify an abortive and pernicious attempt to consider language in abstraction from experiential considerations. The abortiveness of the attempt issues from the application of rigorous systems of logic² and mathematics whereas its perniciousness rests on the failure to show appreciation for the diversity of language. The two goals will embrace showing five interrelated things: (i) natural language cannot be captured by formal logic; (ii) there is no one *logic*; (iii) natural language is *logical*; (iv) *logics* of

¹ Cf. Barwise J., *The Situation in Logic*, Center for the Study of Language and Information, 1989, p. 293n., and e.g. Leinfellner-Rupertsberger E. *Cognitivism Between Computation and Pragmatics*, in: "Journal of Pragmatics" no. 17. 1992.

² In what follows "logic" will mean "formal logic" except when the word is in *italics*. In that case, "logic" will pertain to rules functioning in sociocultural phenomena.

natural languages should be understood in experiential and situational terms; (v) the diversity of language (=linguistic pluralism) is a gift and promise not a threat.

Philosophical background

The dispute between formalists and nonformalists has been prevalent in philosophy for a number of years. Formalists, for whom the cause of insolubility of philosophical problems lies in immanent imperfections of language, require of language to be analysed through the prism of formal logic. They say that human language, in contradistinction to formal logic, is notoriously vague and illogical so an "intervention" of an eminently perfect system would aim at bettering human language. This is to be attained by means of the devices of formal logic which possess a decisive advantage over their natural analogues. Thus the due course of action is to build an artificial language whose expressions will be clear-cut, exact and constrained enough to free this language from speculative metaphysics.

All deficiencies of actual languages can be liquidated with the help of the most accurate of sciences, mathematics. Some attempts had already been made by a German mathematician, G. W. Leibniz whose aim was to make language identical to the language of arithmetic. G. Frege by thinking actual languages logically imprecise carried out a differentiation of two levels of actual languages: the logical level which forms the underlying basis of all languages and the grammatical level which is specified syntactically and which differs from language to language.³ Basing his ideas on the same assumption i.e. the illogicality of actual language, B. Russell saw the formal apparatus of logic as an invaluable help in constructing "an artificial logical language"⁴ – a way of overcoming deceptiveness of language. Similarly to Russell, L. Wittgenstein postulated that so as to discover the framework of language one had to turn to logic which itself constituted this framework. If we 'stripped' language of its cover we would be able to reveal the unique, ideal, logical form – "the logic of our language" which would enable us to discover the limits of the meaningful.⁵ An inquiry into logic was an inquiry into everything which was *a priori*, known in advance of people's experiences, their knowledge or beliefs. Wittgenstein's ideas caught on, particularly among the Vienna Circle, a group of philosophers led by M. Schlick. They incorporated the utilization of formal logic as the tool conceived of as "elimination of metaphysics." The elimination of meta-

³ Cf. Bonomi A., *On the Concept of Logical Form in Frege*, in Parret, H. (ed.), *History of Linguistic Thought and Contemporary Linguistics*. Berlin-New York: Walter de Gruyter, 1976, pp. 724-725.

⁴ Russell B., *An Inquiry Into Meaning and Truth*, London: George Allen and Unwin Ltd., 1948, p. 330.

⁵ As Wittgenstein put it in *Notebooks 1914-1916*, edited by G. H. von Wright and G. E. M. Anscombe, The University of Chicago Press, 1979, p. 49e: "The limits of my language mean the limits of my world" or in *Tractatus Logico-Philosophicus*, 7: "Whereof one cannot speak, thereof one must be silent."

physics is to be attained by means of the logical analysis of language⁶ and by the creation of a logically perfect language which would enable the discovery of truth and preclude language violations from appearing. R. Carnap tried, by formalization of language, to create such an ideal language. Since he viewed language as a mathematical calculus it does not seem strange then that he should have turned to mathematics. And it is metamathematics of D. Hilbert that he turned to. Just as Hilbert sought to prove that arithmetic did not contain contradiction but that it contained a complete class of axioms with the aid of which it was possible to prove any arithmetical theorems, Carnap's objective was to substantiate that the ideal language did not contain any sentences expressing metaphysical conjecture but rather that it was well-determined and complete. Another logical empiricist, O. Neurath, proposed to create a Universal Jargon whose precise and unambiguous terms were to fight metaphysical statements which were engendered by equivocal, fuzzy or vague concepts. Furthermore, Neurath suggested compiling the *Index Verborum Prohibitorum*, a collection of metaphysically charged, therefore dangerous, terms. Such terms lead to confusion which can be eradicated by formalizing the universal language.⁷ Nonformalist standpoint, owing to the "methodological revolution in modern linguistics", was soon deemed past history and the fruitfulness and indispensability of applying logical methods to factual languages has become a "well-established" and "unshakeable" fact.⁸

Linguistic background

A common ambience of thought has produced a collaboration of linguistics and philosophy rather than their antagonism to each other. Some disapproval of the philosophy of language, both in positivistic and ordinary language philosophy guises, can be observed in linguisticians of the generative tradition. Nonetheless, both linguistic and positivistic theories were concerned with furtherance of formalism.

F. de Saussure, the father of structuralism, differentiated between *synchronic* and *diachronic* and between *langue* and *parole* thus placing the language system in the speaker's mind as if postulating the existence of mind in an ideal, never changing state. This insistence on *synchronic* approach led to the idea that the true object of linguistics is language studied for itself, i.e. *langue* as opposed to *parole*. *Langue* to Saussure is a formal, abstract and collective system of relations and rules distinguished from *parole* understood as a concrete and individual process of speaking to which *langue's* rules are applied. The fact that *parole* is both subordinate to and separated from *langue* gave rise

⁶ Cf. Carnap's *Überwindung der Metaphysik durch logische Analyse der Sprache*, which appeared in "Erkenntnis", Vol. II, 1932.

⁷ Neurath O., *Universal Jargon and Terminology*, in *Philosophical Papers 1913-1946*, edited and translated by R. S. Cohen and M. Neurath, Dordrecht-Boston: D. Reidel Publishing Company, 1983, p. 213. A. Tarski too was concerned with the relation of formalization to the bewitchment of our thought through language. Cf. his *Introduction to Logic*, New York: Oxford University Press, 1961, p. xviii.

⁸ Stanosz B. and Nowaczyk A., *Logiczne Podstawy Języka*, Warszawa: Ossolineum, 1976, p. 123.

to treating the latter as the only object of linguistic study.⁹ Saussurean ideas deeply influenced the leading exponent of American structuralism, L. Bloomfield, with whom the approach to language study gained a greater rigour which is evident in his handling of meaning. The ideas of the Vienna Circle logicians, concerning the translatability of meaningful statements into physical terms, as well as the "path" of formal logic whose "abstraction from all empirical content" led to physicalism, found in Bloomfield favourable conditions.¹⁰ With spectacular development of formal logic, a number of philosophers and linguists were eager to use this outstanding achievement of human thought to analyse natural language. With time, the belief that formal, mathematical and logical systems are superior to ordinary language grew. There emerged more and more studies in mathematics and formal logic, which constituted a significant background for Transformational Generative (TG) grammar.

Harris' pupil – N. Chomsky – has distinguished himself in bringing ethnic language close to a logicomathematical system. McMahon¹¹ argues that Reichenbach's views on the nature of language, as well as the means (logic) to be employed in analysing it are, in the main, the same as Chomsky's. Dixon views Chomsky's grammar as "a particular type of a logical system"¹², self-contained and independent "of conditions of meaning and use."¹³ The responsibility for the upholding of this idea is partly to be ascribed to Saussurean, Bloomfieldian and Hjelmslevian programmes which served as a promulgation of the idea that language is a supraindividualistic reality, with its own abstract and autonomous of its speakers and of any data existence. Chomsky thinks it conceivable and necessary to utilize the systems of logic and mathematics together with their formation and transformation rules or categories.¹⁴ This renowned academic, while acknowledging that the use of logic can be decidedly profitable to the construction of a formalized linguistic

⁹ Cf. also the figure of L. Hjelmslev for whom formal logic, indispensable in and inevitable to a linguistic theory, serves to reveal what he calls the "immanent" structure of a given language which is removed from social or any other "extralinguistic" factors. Hjelmslev says, just like Saussure, that the language amenable to analysis is to be regarded as a closed system, self-contained and fully describable by means of its own. In this respect he resembles the Vienna School of which he thought as having "undeniable bearings upon the philological study of language." (See L. Hjelmslev *Structural Analysis of Language*, in Katz J. J. (ed.), *The Philosophy of Linguistics*, Oxford University Press, 1985, p. 168).

¹⁰ Bloomfield L., *Language or Ideas*, in Katz J. J. (ed.), *The Philosophy of Linguistics*, p. 21. Cf. also Z. Harris, a Russian-born American structuralist, who was one of the first to incorporate mathematical, rigorous models into language analysis. He fell back upon a quasi-algebraic set of formulas intended to cover virtually all types of grammatical English sentences (just as if language was a type of algebra). A geometric model upon which Harris tried to erect his formal method was originally devised for the description of mathematics, but was later to be brought in on the study of natural languages.

¹¹ Cf. McMahon W. E. *Hans Reichenbach's Philosophy of Grammar*, The Hague: Mouton, 1976. After the review of the book by S. Soames. See "Language", vol. 55. no. 3, 1979. Cf. also Potts T. C. (see "Theoretical Linguistics", 1976, 3: 1-2) who claims that "grafting" logical methods onto transformational grammar apparatus developed "largely under the inspiration of Reichenbach."

¹² Dixon R. M. W. *Linguistic Science and Logic*, The Hague: Mouton and Co., 1963, p. 70.

¹³ Chomsky N., *Studies on Semantics in Generative Grammar*, The Hague-Paris: Mouton, 1976, p. 198. Cf. also his *Syntactic Structures*, The Hague: Mouton & Co.' S – Gravenhage, 1963, pp. 13ff., and 106. This opinion was shared by logical positivists.

¹⁴ Chomsky N., *The Logical Structure of Linguistic Theory*, New York: Plenum Press, 1975, p. 84.

theory, believes that it does not “follow that this theory is in any sense about logic”¹⁵ but rather, as I gather, it consists in providing a far-reaching contribution to the study of the human mind.¹⁶

Since linguistics lacked a means of a formal analysis of language there appeared a need not only for concepts and notations of a formal system of logic but also for an “appropriate” subject matter or object of analysis to which a formal system can be applicable. Here, TG grammarians seized upon, modified and extended Saussure's dichotomy between *langue* and *parole* which has become parallel to the distinction between *competence*, “the speaker's knowledge of his language” and *performance*, “the actual use of language in concrete situations.” Linguistics, perceived essentially as synchronic, is concerned with “an ideal speaker-hearer in a completely homogenous speech community, who knows its language perfectly.”¹⁷ The study of actual speech in social interaction is, needless to say, outside the subject matter of linguistics. It is here that the idea of deep structure grows in importance.

The notion of deep structure is very old. A 16th-century thinker, Sanctius maintains that all languages are universal and logical in their underlying form whereas specific and illogical in their surface forms.¹⁸ It is Sanctius' ideas that made a great impact on the 17th-century scholars, C. Lancelot and A. Arnauld, the authors of *Grammaire générale et raisonnée* (often referred to as the “Port-Royal grammar”). According to the Port-Royal grammarians there is one logic, universal and embracing the whole of mankind. So although the languages that we speak are non-logical there is an underlying logical basis of language for “[m]an is a logical animal and his language must exemplify his logical nature. Since man's nature is common to all men, all languages must share this logical basis.”¹⁹ This is why it is realizable to construct a universal grammatical theory which would correspond to the nature of all human languages. TG grammarians – notably Chomsky – summoned this idea to life and hence prevented it from fossilization. Bierwisch, another generativist, holds that since logical formulae have been shown, for instance by Carnap, to be able to reveal vagueness or meaninglessness of common language expressions, then it follows that the applicability of logic to common languages is well-founded. Both the early Wittgenstein and TG grammarians uphold the idea of “the logic of our language” which in the latter case is represented by the syntactic deep structure.²⁰ It is worth attention that because philosophers and linguists aimed for formalization in language they turned to formal logic. Possibly, as a consequence they both devised the concept of grammatical form and logical form (philosophers) or

¹⁵ Chomsky N., *The Logical Structure of Linguistic Theory*, p. 84.

¹⁶ Cf. Chomsky N., *Language and Mind*, New York: Harcourt Brace, 1972, p. 103.

¹⁷ Chomsky N., *Aspects of the Theory of Syntax*, Cambridge-Massachusetts: The M.I.T. Press, 1965, p. 3.

¹⁸ Cf. Salus H. Peter, *Universal Grammar 1000-1850*, in Parret H. (ed.), *History of Linguistic Thought and Contemporary Linguistics*, pp. 88-89.

¹⁹ Lakoff R., *La Grammaire générale et raisonnée, ou la grammaire de Port-Royal*, in Parret H. (ed.), *History of Linguistic Thought and Contemporary Linguistics*, p. 349.

²⁰ Bierwisch M., *Modern Linguistics. Its Development, Methods and Problems*, The Hague: Mouton, 1971, pp. 95-97. Cf. also Wittgenstein L., *Tractatus Logico-Philosophicus*, 4.003.

underlying/deep structure and superficial/surface structure (linguists). This invention enabled them, *via* formalization, to approach and make explicit abstract and invariable ideal, artificial language (philosophers) and competence [=idealized language] (linguists).²¹ It seems necessary to note that the attempts made to uncover the calculus of natural language, starting with the Vienna Circle scientists, through TG grammarians and ending with Montague grammarians, reposed on formalized, rigorous, objectivist and universalist programmes based on formal logic and mathematics. It is also significant to note that what logical empiricists tried to achieve is very much different from what transformational generativists were after. The former group constructed their ideal, artificial syntactic language not to describe natural language (to which they in fact made no reference) but to overcome its imperfections. The latter does not seek to construct an ideal language but rather to describe an idealization whose base consists in the deep structure of language. On this account, language is no longer illogical, imperfect, deficient, unstructured or unsystematic. Language is bracketed with an ideal speaker's competence which underlies what is accessory, subjective and scientifically unimportant, that is, actual speech: "the linguist idealizes away from the heterogeneous phenomena that directly face him in nature ... [and] concentrates on language."²² It comes as no surprise that the philosophers should ascribe the failure of representing the semantics of a natural language to a deficiency of a natural language. Neither does it seem surprising (due to the conception of competence and of deep structure) that TG grammarians should construe the failure of a formal language to depict the semantics of a natural language as a deficiency of the formal language: "Apparent discrepancies between natural language and formal logic provide no evidence of any defect in natural language: they are rather evidence that our analysis of natural language is deficient, or our formalization of logic is deficient..."²³

²¹ Incidentally, Katz stresses the fact that a philosophical theory about the logical form of propositions is insufficient to make explicit their underlying structure: "The alternative to a philosophical theory about logical form is thus a linguistic theory about logical form." Katz J. J., *Philosophical Relevance of Linguistic Theory*, in Searle J. R. (ed.), *The Philosophy of Language*, London: Oxford University Press, 1971, p. 108.

A more radical version of linguistic universals is representative of another formal theory of language: Montague grammar. R. Montague complains in his *Universal Grammar* that generative grammar is not rigorous enough and proposes an alternative system of grammar. Claiming that the syntax, semantics, and pragmatics of natural languages are branches of mathematics he takes it to be reasonable to approach natural languages by the same means as those used in mathematics. In the very first line of *English As a Formal Language*, he strongly opposes the contention that "an important theoretical difference exists between formal and natural languages." He then proceeds to present a formal language which, in his opinion, could be reasonably regarded as a fragment of ordinary English. Cf. Montague R., *English as a Formal Language*, in Moravcsik J. M. E. (ed.), *Logic and Philosophy for Linguists. A Book of Readings*, The Hague-Paris: Mouton Publishers, 1974, pp. 94-95.

²² Katz J. J., *The Philosophy of Language*, New York-London: Harper & Row, 1966, p. 117.

²³ McCawley J., *Everything that Linguists Have Always Wanted to Know About Logic* (*but were ashamed to ask)*, Chicago: The University of Chicago Press, 1981, pp. xiii-xiv.

The endorsement of the diversity of language

Both logical positivists and TG grammarians looked upon mathematics as the most rigorous, certain and accurate. Thus it seems astonishing that disproof of such hopes should come from mathematics itself. Leibniz' dream concerning a formalization of total science, which was supposed to lead to the unification of interpretations, was confuted by L. Löwenheim and T. Skolem in the first half of the 20th century. The significance of Löwenheim-Skolem theorem rests on the impossibility of eliminating denumerable interpretations of formalization of all our knowledge.²⁴ Hence even a formalized, rigorous and exact use of language cannot result in one and only one interpretation of reality.²⁵ Another mathematician, K. Gödel, also contributed significantly to the refutation of the creation of *mathesis universalis*. Gödel's *Incompleteness Theorem* implies that a certain set of axioms is not sufficient to prove all true propositions of a given system.²⁶ That is to say there will always be an infinity of truths that cannot be proved or truths which are true yet not deducible within the formalism. Moreover, any attempts directed at overcoming Gödel's discovery by successive enrichment of the existing axioms and the whole system will be fruitless. Such enrichment does not rule out incompleteness since in the new systems are new unsolved propositions whose solving needs to be sought in a further expansion of the system and so on.

The multiplicity of interpretations of a linguistic utterance as well as its "openness" not confined to any one interpretation, exclude the existence of a complete, precise and unique ideal to which one has to conform. The late Wittgenstein rejected his *Tractatus's* theory of language, as it itself, despite its plea for rigidity, emerged as metaphysically distorting and simplistic. Thus while the young Wittgenstein searched for exact definitions, built upon Aristotelian necessary and sufficient conditions, the old Wittgenstein instead of *essence* offered similarities between different language games: "I can think of no better expression to characterize these similarities than "family resemblances".²⁷ They are now like members of a family resembling one another not in one single way but in a variety of ways. Apart from similarities there also exist differences. Members of a family differ in many unpredictable ways. Language is not predictable, either. It is not a calculus which follows exact rules. It certainly has rules, however rule-following in language is not as categorical as in a formal system. Rather "[a] rule stands there like a sign-post."²⁸ A sign-post directs one not because it coerces one to go there but because there is a practice which is forming one's understanding of the function of a sign-post. Rules of language always set up a connection between language and reality thus there is

²⁴ Putnam H., *Models and Reality*, in "The Journal of Symbolic Logic", vol. 45, no. 3, 1980, p. 466.

²⁵ I shall see the multiplicity of interpretations, even if they are different from the intended ones, and the impossibility of fixing a determinate reference for any term or still the impossibility of creating a system that will refer to what one wants it to refer, not as a vice but as a virtue of language.

²⁶ Krajewski S., *Twierdzenie Gödla a Filozofia*, in "Studia Filozoficzne", no. 6-7, 1988, pp. 157-177.

²⁷ Wittgenstein L., *Philosophical Investigations*, Oxford: Basil Blackwell, 1958, para. 67. The idea of "family resemblance" was adopted by cognitive model where language is not conceived as an algorithmic and formal device but rather is a matter-of-degree continuum of symbolic units, each residing in the association of (a) semantic, syntactic and morphophonological structure(s).

²⁸ Wittgenstein L., *Philosophical Investigations*, para. 85.

no existence of language beyond experience: "language is not something that is first given a structure and then fitted on to reality."²⁹ Rules do *not* and should *not* take precedence over language. This experiential attitude to language is consonant in Wittgenstein with his eagerness to acknowledge that there exists an enormous variety of ways in which our speech can be effectively employed. This is because it is people who, by words, mean things. Meaning is not an immanent, underlying, single, physical object. Wittgenstein rejects all approaches which presuppose that meaning is some one thing. On the contrary he emphasizes the plurality of ways in which language may signify. In Wittgenstein's words: "the meaning of a word is its use in the language."³⁰ Most importantly, meaning as use accentuates the social nature of language: "And to imagine a language means to imagine a form of life."³¹ The social dimension of language, it follows, is an indispensable prerequisite for meaning to exist. On page 11e of the *Investigations*, Wittgenstein writes thus: "the *speaking* of language is part of an activity, or of a form of life." *Speaking* is the most fundamental condition of meaning. That being so, this social activity that language is, cannot be a hidden phenomenon which awaits the grammarian/philosopher to uncover it. Rather, language should await appreciating its social heterogeneity. This presupposes the existence of the human language user, prevents language from being a closed, ready, finished system,³² and makes language "whatever we make it in our talking."³³ Language as existing in the private world of its users and in the world of language co-users allows us to discover something truer, discover that that which is considered a mistake may not be a mistake.

Most often we find it exceedingly difficult to adduce an exact definition or an explanation for a term which has long been with us. Mathematicians define what is supposed to be precise and unique differently. What is more, they give *different* precise definitions depending on their purpose. When we define, we skip from one word to another/others. This would have a value if we encountered a word that is understood by itself. As it is not the case any chain of definitions is brought to a standstill. Formal logic belongs to a certain realm of thinking, valuable as it seems, it is but one of many ways of thinking, thus accepting its methods of formalization of language would inevitably lead to *regressus ad infinitum*. The formalist who tries to be more precise becomes in fact less precise. In my view being *a priori* explicit or precise menaces the very heart of language – its inexactness. Inexact concepts are a precondition of exact, ordinary communication.³⁴ In everyday language any irrelevant exactness is superfluous. To the later Wittgenstein being exact does not mean being proper as: "[n]o single ideal of exactness has been laid

²⁹ Wittgenstein L., *Philosophical Grammar*, (after Harris Roy, *Language, Saussure and Wittgenstein. How to Play Games with Words*, New York-London: Routledge, 1990, p. 68).

³⁰ Wittgenstein L., *Philosophical Investigations*, para. 43.

³¹ *Ibid.*, para. 19.

³² Cf. Tarski A., *Pojęcie Prawdy w Języku Nauk Dedukcyjnych*, Warszawa, 1933, p. 13. Tarski, it appears to me, considers these properties of language its weakness. I deem this "unfinishness" of language its strength.

³³ Kneale W. M. *The Development of Logic*, Oxford, 1962, p. 590.

³⁴ This is where I diverge from a view according to which flexibility – the greatest strength of language – entails its greatest weakness – indeterminacy. To my thinking, the fact that we cannot ever definitively "pin down" what a particular utterance means is not a menace. This is an asset of language.

down; we do not know what we should be supposed to imagine under this head – unless you yourself lay down what is to be so called.”³⁵

What the inexact is likely to bring with itself is variability and need for interpretation. The exact, supposedly likely to call forth unanimity or isomorphism, in reality brings on an unhealthy difference or even conflict: “culture cannot be schematic or created according to one plan ... [M]ankind ... need differentiation as well as many different ways of approaching the world so as to discover the whole richness of this world and to take advantage of enormous potentialities of man ... It is significant that in one of the Syrian documents from the 10th century, the Tower of Babel receives an unlike interpretation from the usual one. It is interpreted not as a punishment but as a necessity and a rescue to humankind.”³⁶ G. Ramiszwili sees the question whether the progress of humanity would be possible without linguistic diversity as senseless. “Babelization” of human community is an advantage. The situation in which we are capable of speaking a different language from our own, “seemingly worse than monolingualism, is far more advantageous to culture in the perspective of its development. For there appears the awareness of informational insufficiency of an individual “self” which occasions a turn towards one another.”³⁷ The world is full of heterogeneity and is susceptible of various interpretations. This is why exactly one true and complete view of reality would exclude the possibility of its adequate cognition. Language divergence makes pluralistic approach possible. Even he who learns a foreign language shakes up the primeval naive model imposed upon him by his own tongue. This enables him to distance himself from the allegedly most adequate and only picture of the world.

To my thinking there is no one truth, no one language, no one interpretation. Neither is there any one *logic*. Young Wittgenstein's hopes to achieve the understanding of “the logic of our language” were frustrated by the discovery of a language as a vast collection of uses each with its own *logic* by the later Wittgenstein. The laws of *logic* have not been given to us once and for all. I mean by this that logic may be subject to alternation or even amendment, as it is logic that is to conform to facts and not vice versa. Facts, situations, realities, circumstances cannot be moulded into the laws of logic as they are in perpetual state of reconstruction and remodelling. Logic is also susceptible of change, which excludes its attempts on “stabilizing” language undertaken by past masters like J. Swift or S. Johnson. Quine said that “[l]ogic is in principle no less open to revision than quantum mechanics or the theory of relativity”³⁸ and Feyerabend would repeatedly stress that: “there is no one “logic” that could be used to give content to the demand that theories, methods, philosophies must be logically adequate.”³⁹ Valid arguments may

³⁵ Wittgenstein L., *Philosophical Investigations*, para. 88. Somewhere else in the *Investigations* Wittgenstein writes that in whenever there is sense there must be order no matter how inexact an utterance is.

³⁶ Ramiszwili W. G., *Język a Kultura czyli o Źródnicowaniu Gatunku*, in W. Osiatyński, *Zrozumieæ Czwiat. Rozmowy z Uczonymi Radzieckimi*, Warszawa: Czytelnik, 1980, pp. 300 and 303, my translation.

³⁷ Mazurkiewicz R., *Semiotyka Wiezy Babel*, in “Znak”, no. 329, 1982, p. 282, my translation.

³⁸ Quine V. W., *Philosophy of Logic*, Englewood Cliffs: Prentice Hall, 1970, p. 100.

³⁹ Feyerabend P., *In Defence of Aristotle: Comments on the Condition of Content Increase*, in Radnitzky G. and Andersson G. (eds.), *Progress and Rationality in Science*, Dordrecht-Holland: D. Reidel Publishing Company, 1978, p. 154.

contradict established rules of inference. However, does this mean that the germane inferences in statistical mechanics or quantum theory are illogical? Far from it. What this amounts to is the call or exigency for a new befitting physics *logic*. *Logic* cannot be invented and imposed on anything, be it science or language.

Why is there a commonplace that science (or facts) must obey the laws of logic? We are offered two ways to deal with the issue. We can either change the facts or change the laws of logic. However, the acceptance of the latter idea would lead us to acquiescing in the revision of the law of contradiction and, as K. Popper teaches us: “[i]t can easily be shown that if one were to accept contradictions then one would have to give up any kind of scientific activity: it would mean a complete breakdown of science.”⁴⁰ Thus we must avoid contradiction in order that our theory should not become hollow. Feyerabend gives a few arguments against Popper’s objection that a contradiction entails every statement. He shows that however difficult it may be to assert $p \wedge \sim p$ directly, there is a theory which, “after a few steps gives us $p \wedge \sim p$.”⁴¹ He backs up his assertions by providing evidence from physics.⁴² Science does contain contradictions and so Popper’s objection should apply to a special system of logic, not science or language. Besides, is contradiction really bad? What if it performs a useful service? Wittgenstein made a point that the discovery of a contradiction in arithmetic now would not show that our arithmetic is improper. Rather, the idea of what we deem as certain is improper and as such is to be qualified.⁴³ In Whitehead’s terms “a clash of doctrines” is far from being catastrophic: “it is an opportunity.” He writes: “In formal logic, a contradiction is a signal of a defeat: but in the evolution of real knowledge it marks the first step in progress towards a victory. This is one great reason for the utmost toleration of variety of opinion.”⁴⁴ Attitudes towards science, facts or language are deeply rooted in the conception of logic. However, the problem arises when we consider the linguistic variation in the world. How can we know that a quality of a given language is shared by other languages? The rescue comes from the notions of logical form, the logic of language(s) and the deep structure of language(s). Deep structure is then identified with logic. This urge towards unity results in the neglect of diversity. Diversity shows variety, variety of opinions, pluralism and the need for alternate thinking. Alternate thinking can reveal that our understanding of facts is inadequate. True, striving after unity does bring to light problems which may uncover our understanding of facts as deficient. Yet, these will often be false facts. The importance of a problem often hinges on the theory. If someone believes that logic is to

⁴⁰ Popper R. K., *Conjectures and Refutations. The Growth of Scientific Knowledge*, London: Routledge and Kegan Paul, 1963, p. 317.

⁴¹ Feyerabend P., *In Defence of Aristotle: Comments on the Condition of Content Increase*, p. 157.

⁴² Compare a different piece of evidence from Shakespeare who “believed what he knew to be a lie”: “When my love swears that she is made of truth/I do believe her, though I know she lies.” Too, W. Blake’s best poetry is awash with contradictions, effectiveness of which lies in the contradiction itself.

⁴³ Cf. Wittgenstein L., *Remarks on the Foundations of Mathematics*, (After Munévar Gonzalo, *Allowing Contradictions in Science*, in “Metaphilosophy”, vol. 13, no. 1, 1982, p. 78).

⁴⁴ Whitehead N. A., *Science and the Modern World*, published by The New American Library, 1925, p. 185. Fleck goes even further than Whitehead so as to express his dissatisfaction at the irrelevance of formal logic for scientific advance. Cf. Fleck L., *Genesis and Development of a Scientific Fact*, (ed. by T. J. Trenn and R. K. Merton) The University of Chicago Press, 1979, pp. 53-55.

mirror facts they seek to substantiate their belief. Someone else may believe that facts are to reflect logic. Here we have two theories and two sets of different problems. In the first case, scientists will concentrate on describing logic simultaneously neglecting facts (so much the worse for them) while in the other case scientists will concentrate on describing facts simultaneously neglecting logic (so much the worse for it). My theory is still different. I do not wish to deny the authority of logic. All I wish to deny is the application of formal symbolism to the study of facts, specifically language. The failure to acknowledge this squares well with the failure to acknowledge linguistic pluralism or language heterogeneity. Diversity, in any form, is a fact and there is nothing whatever one can do to change it. In actuality, it would not be a good idea if one did. If we do not recognize it we will fail to recognize another person and their, perhaps truer, interpretation of experience. On this account, may we thence opt for not only the primacy of practice over logic, but also, and more importantly for practice to be in a position to overrule logic.

In linguistic science, language perception has traditionally been dominated by logic. Numerous allegations of "illogicality" of language have been made by both ordinary people and professional linguists. Consider, for instance the claim made by linguists: "While [natural language] is sometimes regular, logical and precise, it is as often irregular, non-logical, and imprecise"⁴⁵ or "[l]a grammaire ennemie de la logique, la logique ennemie de la grammaire!"⁴⁶

Epithets employed to describe language range from *inelegant*, *improper*, *imperfect* to *bad*, *wrong* and *imprecise*. A number of verbs used to characterise language are the following: *reform*, *regulate*, *refine*, *ascertain*, *fix*, *purify*, *stabilize* or *control*. When talking about "the logic of language" people frequently use the above adjectives and verbs on a par with the notion of illogicality. Very often they are treated synonymously and lead to an immensely negative picture of language. My claim is that the basis of this picture has been founded on logic which itself has become not only a source of normative rules but also a norm enforcing ideal. This situation is visible in a narrower perspective. I have in mind the standard dialect of English as a model for all other English dialects. Standard English is frequently thought to be *the* English language, so using it is *good* and using other dialects is *bad*. Standard English is equated with "logic", "correctness" and "clarity". Still a shift in attitude has been noticed: "There is no linguistic evidence whatsoever for suggesting that one dialect is more "expressive" or "logical" than any other, or for postulating that there are any "primitive", "inadequate" or "debased" English dialects."⁴⁷ The reasons for accepting one dialect as better than another are socio-culturally grounded. Trudgill has pointed out that our perception of people who enjoy a greater prestige and status encompasses their other features, like the language they use, which accordingly tends to be more favourably assessed than, say, the language of blue-collar workers. B. Bernstein developed a theory whose centre rested on the dichotomy between "elaborated code" and "restricted code". What is of importance for the present argument is that the latter is less adequate than the former to deal with certain concepts and modes of thinking. Thus a child who can only use restricted code is cogni-

⁴⁵ McArthur T., (ed.), *The Oxford Companion to the English Language*, O.U.P., 1992, p. 226.

⁴⁶ This is the title of a paper by a French linguist F. Brunot.

⁴⁷ Trudgill P., *Accent, Dialect and the School*, Rome-London: Butler and Tanner Ltd., 1975, p. 26.

tively deprived. As maintained by Bernstein, such a child is likely to come from a working class and since working-class children use nonstandard English, the thesis concerning nonstandard-language deficiency gains a revival of interest.⁴⁸ K. Bereiter has also revived the notions that nonstandard dialects are illogical and children using them culturally disadvantaged. His position that “the language of culturally deprived children ... is not merely an underdeveloped version of standard English, but is basically non-logical mode of expressive behaviour”⁴⁹ might make one think that since there is no logic displayed in the speech of Negro working-class children then their behaviour is wrong. William Labov has demonstrated however that no matter how vernacular dialects may be detached from their standard counterpart they are coherent, logical means of communication and that Negro children do have a capacity for conceptual thinking.⁵⁰ Labov has established that the negligence of a favourable social setting for adult-child interaction alongside the inability of researchers to enter into an alternate thinking mode rendered them unable to fathom the *logic* of nonstandard English. In other words, thinking in the categories of standard English dialect led to Bereiter or Bernstein judging other dialects according to the standards of their own dialect. Aristotle also had his own, culturally and socially conditioned standards, the fact which was noticed by Sayce and Peirce: “had Aristotle been a Mexican, his system of logic would have assumed a wholly different form.”⁵¹ This same idea was expressed more broadly by Durkheim who asserted that the fact of cultural variation in the rules of logic “proves that they depend upon factors that are historical and consequently social.”⁵² Taking into consideration a somewhat narrower outlook, a parallel conclusion has been drawn by Von Domarus who claims that the reasoning of schizophrenic patients, although not related to Aristotelian logic,⁵³ conforms to a different *logic*.⁵⁴ Thus “error” or fallacious inference does not mean that a logical process has been violated. The fact that people change their views and their whole reasoning shows that they use different premises at different times. Often they are unintended or “invalid” premises which may become replaced with “valid” premises. Hence logic is not something “eternal” but something that, similarly to lan-

⁴⁸ Cf. Trudgill P., *Sociolinguistics: An Introduction*, Harmondsworth: Penguin, 1983, pp. 51-53.

⁴⁹ Bereiter Carl *et al.*, *An Academically Oriented Pre-School For Culturally Deprived Children*, in F. M. Hechinger (ed.), *Pre-School Education Today*, Doubleday, 1966, p. 113. After Labov, pp. 183-184, see below.

⁵⁰ Cf. Labov W., *The Logic of Nonstandard English*, in P. P. Giglioli (ed.), *Language and Social Context*, Penguin Education, 1972.

⁵¹ Peirce S. Ch., *Collected Papers of Charles Sanders Peirce, vol. II, Elements of Logic*, edited by Ch. Hartshorne and P. Weiss, Cambridge-Mass.: The Belknap Press of Harvard University Press, 1960, p. 37.

⁵² Cf. Merton R. K., *Social Theory and Social Structure*, Illinois: The Free Press, 1957, p. 473.

⁵³ Dixon (*op. cit.*, p. 106) writes: “Aristotle’s logic ... was only a very restricted case of ordinary language and so his grammar only threw light upon the type of language he used in doing logic. His pragmatic logic led to extremely normative ideas concerning language. His logical grammar gave rise to the idea that “correct” language was that which was used in doing logic.” We discard Aristotelian logic and claim of Saussure who wanted that the first step towards language analysis would be an application of Aristotelian logic. Our disregard for this logic consists in our concern for the individual and not the universal.

⁵⁴ Henle M. *On the Relation Between Logic and Thinking*, in “Psychological Review” 69, no. 4, 1962, p. 368.

guage, springs from everyday life and so its adequate description should include socio-cultural perspective.

What was important to Bereiter in judging Negro children was their grammar and vocabulary in abstraction from the world they were surrounded by. However, speaking about language should entail taking account of the world. Thus there should not be any clear boundary line between what is linguistic and extra-linguistic or as modern linguists say between "dictionary knowledge" and "encyclopedic knowledge." There exists a clear-cut boundary between these concepts in logical positivists' and in TG grammarians' approaches. In truth there is no sharp dividing line such that certain characteristics on one side are linguistically relevant and all those on the other linguistically irrelevant. That being so, the putative difference between the linguistic and the non-linguistic is illusory and leads to construing language as a self-contained system that can be described in detachment from other cognitive domains, wholly imbedded in patterns of knowledge and belief. In the 1970s an apositivistic theory, a global theory of language,⁵⁵ emerged whose leading exponents were once followers of Chomsky. The first of them – R. Langacker – named his approach *cognitive linguistics*. As early as in 1978, Langacker repudiates the autonomy of syntax, together with a level of logical representation. The autonomy of linguistics, which supported the universal assumptions of generativism is rejected in favour of language-specific structure, incorporating layers of conventional imagery. Consequently, there is no deep structure. On this account linguistics is not a formal science akin to logic as language is not a well-defined, autonomous of cognitive concerns, algorithmically computable set. Rather it is a "usage-based" model of language structure.⁵⁶ It follows that there could not even be a mention given in cognitive linguistics about the ideal(ized) logical form of language save either its exclusion or inadequacy: "Formal logic is held to be inadequate for the description of semantic structure, which is subjective in nature and incorporates conventional "imagery" – defined as alternate ways of constructing or mentally portraying a conceived situation."⁵⁷ The alternate ways of picturing a given situation are compatible in cognitive grammar with a Whorfian or relativistic conception of language. There are language-specific elements which differ from language to language unpredictably so bridging a gulf between formal/artificial languages and ordinary language by means of constructing a single theory of/for all languages or building an ideal language of/for all languages or even of/for one language is senseless. Logic to Whorf varied with each tongue,⁵⁸ which excludes the possibility of finding a common ground of knowledge, but opens up a promising perspective of find-

⁵⁵ Cf. Kardela H., *Gramatyka Kognitywna Jako Globalna Teoria Języka*, in I. Nowakowska-Kempna (ed.), *Język a Kultura, T. 8: Podstawy Metodologiczne Semantyki Współczesnej*, Wrocław: Wiedza o Kulturze, 1992.

⁵⁶ Cf. Langacker R., *A Usage Based Model*, in B. Rudzka-Ostyn (ed.), *Topics in Cognitive Linguistics*, Amsterdam-Philadelphia: John Benjamins Publishing Company, 1988.

⁵⁷ Langacker R., *An Overview of Cognitive Grammar*, in B. Rudzka-Ostyn, pp. 5-6.

⁵⁸ Whorf L. B., *Languages and Logic in Language, Thought, and Reality. Selected Writings of Benjamin Lee Whorf*, edited by J. B. Carroll, Cambridge-Massachusetts: The M.I.T. Press, 1973, pp. 233-245. Whorf says that logical formula depend on the choice of language. For example there are tribes with the conception of time and space different from Euclidean geometry and Aristotelian logic to which the European languages relate. This view is shared by L. Fleck in *Genesis and Development of a Scientific Fact*, p. 174: "[Primitive races] have a different logic which is no more valid for the whole of mankind than ours is."

ing grounds for mutual understanding and tolerance. Another ex-generativist – G. Lakoff – says that in the mid-1970s it became clear to him that clinging to formal commitments, the generative and the "Fregean", was wide of the mark.⁵⁹ A crisis of the generative commitment occurred to him when he discovered basic-level and prototype-based categorization. His second commitment, that such fictitious abstractions like logical form were necessary in linguistics, was abandoned as it was inconsistent with the cognitive commitment. This time, it was the discovery of "revelations" concerning conceptual metaphor. According to the later Lakoff "autonomists" cannot ever reach any satisfactory results in language study because the autonomy of linguistics necessitates using formal grammars which necessitate using the mathematical properties of those grammars which necessitate autonomy by reason of their inability to deal with "nonfinitary phenomena."⁶⁰ Lakoff names his theory *experientialism* which is, just as Langacker's model, based on cognitive principles. The formulation of one of such principles is as follows: "Categories of mind are not simply reflections of categories that supposedly exist objectively in the world, independent of all beings. Nor is human reason merely an attempt to match the logical relations among externally existing categories of objects. Both categories of mind and human reason depend on experiential aspects of human psychology – perception, imagining, motor movements, bodily experiences, social and emotional experience, desires, intentions, expectations, goals, plans, and the capacity to construct cognitive idealized models and to understand one thing in terms of another."⁶¹ Understanding and experiencing of one thing in terms of another is the essence of metaphor which is pervasive not only in our language but also in our thinking and acting.⁶² Metaphor is basic to language and therefore is not going outside language, as the Wiener Kreis positivists and TG grammarians would have it, but is going inside it. Metaphors contain mutability and flexibility which call for the necessity of multifarious interpretations without which speech and adequate science of that speech could not exist. In the name of fighting equivocation and vagueness, which breed a multitude of interpretations, the positivists of the Wiener Kreis would discard metaphor whereas hermeneutics, as represented by P. Ricoeur, would perceive metaphor as an advantage of language constituting its malleability. Here logical empiricists and TG grammarians come very close to each other. While the former want to rid language of "harmful" vagueness, inexactness, indeterminateness, equivocation, irregularity, ambiguity, and the like the latter want to get rid of what is ill-defined, incorrect, indefinite, deviant or degenerate. Perhaps it is metaphor that embodies the ideal of the unacceptable. An individual use of language enables malleability of interpretations which may simply force one to see an idea afresh or to re-structure his reality *via* a recategorization of his language.

⁵⁹ Cf. Lakoff G., *The Invariance Hypothesis. Is Abstract Reason Based on Image-Schemas?*, in "Cognitive Linguistics", no. 1(1-1), 1990.

⁶⁰ The model had to fit the desired formalism: formalism required autonomy just as autonomy required formalism. In a nutshell, logical empiricists and structuralists were forced to turn to the abstract field of logic.

⁶¹ Lakoff G., *Categories and Cognitive Models*, after B. Lewandowska-Tomaszczyk, *Language Universals, Linguistic Theory, and Philosophy*, in D. Kastovsky and A. Szwedek (eds.), *Linguistics Across Historical and Geographical Boundaries*, vol. 1, Berlin-New York: Mouton de Gruyter, 1986, p. 81.

⁶² Cf. Lakoff G. and Johnson M., *Metaphors We Live By*, University of Chicago Press, 1980.

The structure of mathematical logic, with the assumption of its independent of semantic considerations and objectively existing finite set of timeless, logical truths was thrown over human reason and language. Obviously, the proper course of action was to treat them as also belonging to the study of logic. Frege treated language as if it were entirely independent of human imagination and social experience, logical positivists tried to tie language down to independent, universal reality in a univocal fashion. The structuralists investigated synchronous system not language. TG grammarians, just like Carnap before them, made an attempt to realize an objectivist and universalist programme based on formal logic and on the assumption that grammar is autonomous from the rest of cognitive subject matter. Yet the natural world is not as stable as the universe of mathematics, thus it should come as no surprise that formalism failed in confrontation with human languages. All facets of language, linguistic and extralinguistic must be taken account of. We and language, function not outside of reality but as part of reality, inside it. Thus any "outside", perfect knowledge is impossible. "What *is* possible is ... knowledge from a particular point of view, knowledge which includes the awareness that it is from a particular point of view, and knowledge which grants that other points of view can be legitimate."⁶³ To use Putnam's expression, "the God's-Eye Point of View", the unique and homogeneous way of carving up reality is not attainable. This programme cannot be maintained as each language has its own ontology which carves up reality in its own special way. Thus the objective and universal ontology of logic is not germane to the subjective, contingent realm of language.

⁶³ Lakoff G., *Women, Fire, and Dangerous Things. What Categories Reveal about the Mind*, Chicago-London: The University of Chicago Press, 1987, p. 261.