CONTROVERSY ON THE APPLICABILITY LIMITS OF LOGICAL METHODS

JANINA KOTARBINSKA

1. The controversy in question takes the form of a family quarrel. Involved are the representatives of the so-called analytical philosophy: a trend embracing all those who regard language analysis as philosophy's chief task. According to some, the subject of the analysis should be the terms and propositions of philosophy itself; according to others — the propositions and terms of the particular sciences. Still others maintain that both: philosophy and the sciences should be the subject matter of analysis. But these differences are not important from the viewpoint of the essence of the matter. Essential are the differences on standpoints expressed on the character and aim of the analysis. Involved here are two conflicting conceptions: the reconstructionist and the descriptionist, or in different terminology — the formalistic and the linguistic. It may be said that both refer to the pattern of analysis followed by Russell and Carnap, and partly by Woodger. Only, the pattern is positive on the basis of the first conception, and negative on the basis of the second.

Of particular significance to the reconstructionist standpoint is that the linguistic analysis is treated here primarily as a method of language perfection with respect to its logical values. It is hence desired not only to explain but to render precise the meanings of the analysed terms, broadly applying the method of definition. It is also aimed to reduce all statements by means of interpretation into sentences built according to the schemes of formal logic, to reconstruct the reasoning in such a way as to disclose the logical connection between the premises and the conclusion, and finally, to analyse the given theories and construct purely formal systems reflecting the logical structures of the investigated theories.

The descriptionist conception, advanced by Wittgenstein in the last phase of his work, as well as by the so-called Oxford School, grew out of the critique of linguistic analysis so understood. Reconstructionism is mainly charged with attempting to apply the logical method, i.e., definition, logical reconstruction of reasoning, building of formalised systems, etc., where it does not apply: where attempts to use these methods are not only useless but often harmful. The reconstructionist programme is thus counterposed by a rival one in which

the aim of analysis is not the logical improvement of language but investigation of its actual manner of functioning; not logical reconstruction but the most truthful description of its properties.

To put it roughly, we seem to have here a fundamental clash of viewpoints. And the problem of the applicability limits of the logical methods appears to occupy a leading place in the controversy. It would be difficult to define the limits involved in any decisive manner. But the statement may be risked that according to descriptionists these limits should lie in the separation of artificial languages, with their definitely fixed rules of construction, from natural languages, in which, as is known, these are not clearly formulated. Formal logic and mathematics would consequently stand on one side and all disciplines using natural language, at any rate, the whole of philosophy and all empirical sciences stand on the other.

The current literature on the subject indicates that the controversy has been attracting ever more participants and that it has been making itself heard more and more. That alone would seem to justify greater attention to the more important views of the rival tendencies and an examination of the arguments used. Such is the task of the present article.

Let us begin with the anti-reconstruction viewpoint. As the attacking side, this trend is more active. It has assumed greater initiative in the discussion and it gives it direction. The argumentation centers mainly around three themes: concept analysis, reasoning structure and formalized theories. The first has been receiving the most attention. The starting point here is the critique of definition.

2. The reproaches against the definitionists are following,

1) The main argument against definitionism is that it fixes universal criteria of applicability for all cases in which the defined term is used. Whereas in natural language the same term is usually applied according to the different, someway correlated but not equivalent, criteria. The term «game» may serve as an example. We speak, writes Wittgenstein ([1]), about a game of chess, Olympic games, a football game, a game of solitaire, of tic-tac-toe, etc., etc. Are there any common criteria here ?, he asks. May not such a criterion be the character of the play, for instance, or competition, or the fact that it is won by one side and lost by the other ? But chess is not a play; there is no competition in solitaire nor is there any winner or loser. In general,

([1]) L. WITTGENSTEIN, *Philosophical Investigations*, 2nd ed., Oxford, 1958, p. 31 and following

there are no common traits among the activities we call games, distinguishing them from all non-games. The word «game» then has no single but a number of varied criteria of applicability. This role of the term cannot be apprehended by definition.

The above argument is oft repeated by descriptionists [2]. It's not difficult to see that it pertains exclusively to definitions of equivalence type, and even if it were essentially correct, it would at most put to question certain forms of those definitions, such for instance, as the classical definition *per genus proximum et differentiam specificam.* But it would not necessitate abandonment of such a definition as:

$$\pi_x(Qx \equiv P_1x \vee P_2x \vee \ldots \vee P_n x),$$

which renders the defined term «Q» a certain number of alternative criteria.

2) The next objection has a wider range. It emphasizes the discord between the notoriously vague terms of natural language and the applicability criteria imposed by definition. Vague terms are distinguished by the fact that they lack exactly fixed spheres of application. Whereas definitions according to which the application of the defined terms depend on criteria constituting both sufficient and necessary conditions, fix the extensions of these terms within exactly determined limits. But their role is thereby deformed and the language is distorted.

This objection undoubtedly applies to all complete (or equational) definitions, hence also to the above mentioned alternative ones [3]). But it doen'st apply at all to incomplete (partial, conditional) defi-

([2]) For example, M. BLACK's article *Definitions and Presuppositions*, in *Problems of Analysis*, New York, 1954; SCRIVEN, *Definitions, Explanation and Theories*, in *Minnesota Studies in the Philosophy of Science*, vol. II, Minn., 1958.

([3]) Descriptionists don't accept alternative definitions for still other reasons. Some reject them because, contrary to the developmental tendencies of common language, they usually turn «open» into «closed» terms. For they naturally limit the alternative of permissible criteria to such as are known for the defined terms so far used, closing, as it were, any further possibility of actually unavoidable fluctuations in meaning. (L. WITTGENSTEIN, *op.cit.*, p. 32 and following). Others don't accept them because particular shadings of meaning in ordinary language are so close to each other and so interpenetrating that they are like a sort of cloud in which several precise concepts are lost into vagueness. The construction of alternative definitions conformable to the actual use of such expressions presents therefore an unrealisable task. (F. WEISMANN, *Language Strata in Logic and Language*, (A. FLEW (ed.), London, 1953, pp. 12-13).

nitions which fix only partly the extension of the defined terms. These are usually composed of two sentences of the following type:

(1) $\pi_x\,(Px \rightarrow Qx)$

(2) $\pi_x\,(Rx \rightarrow \sim Qx)$

in which Q is the defined term and P and R are exclusive but not exhaustive. Such definitions give Q some sufficient and some necessary conditions, but they provide none which are both at the same time. An ad hoc definition of anemia may serve as an example.

(1) π_x (x has above 4,500,000 red blood corpuscles per 1 mm^3 of blood $\rightarrow$ x does not have anemia),

(2) π_x (x has less than 3,000,000 red corpuscles per 1 mm^3 of blood $\rightarrow$ x does have anemia).

With certain amounts of red corpuscles (above 4,500,000) that definition enables a negative diagnosis. With other amounts (below 3,000,000) it makes possible a positive diagnosis, i.e., stating of anemia. But it fails to provide criteria for all other cases, either positive or negative and leaves the problem completely unresolved.

3) It may consequently appear that the incomplete defintion is especially adaptable to the introduction and analysis of vague terms. There is even a tendency to identify vague terms with those only partly defined. But such a supposition would not be acceptable to descriptionists. True, it is hard to find among descriptionists any direct statements on partial definitions — this variant seems to be completely ignored here. But they indirectly prejudice the question in the negative. For they deny the terms of natural language not only complete but also partial criteria, constituting only sufficient or only necessary conditions of application. They allege the terms have a constant fluidity of meaning and maintain that that has two sources.

First, as a rule, a term originally used in one meaning-for instance, to refer to objects with traits *abc*-will in the course of time be applied because of other criteria as well; for example, in respect to traits *abd, df, feg,* etc. That is, if *abc* and *defg* constantly accompany each other in the cases met so far. In principle, there is no end to this process. Consequently, neither the criteria in use nor their component elements condition the applicability of the given term in a necessary manner. What links the individual cases of its application are not the traits common to all, nor their similarity in all respects, but a much looser similarity such as is usual with members of one family. Individual A may resemble individual B in some respect W_1; B may be similar to C in respect W_2; C to D with regards to W_3. While there may be no similarity between A and D. The term «game» is used

here as a typical example. As other examples are cited such terms as «number», «language», «sentence», «acid», or the names of various biological species. It is a matter either of the variety of their current meaning functions, or of the changing of these functions in the course of the given language's evolution [4].

Secondly, the terms of natural language often undergo a change in meaning depending on the circumstances of their use, i.e., their «context», both situational and verbal. The criteria which determine their applicability under certain conditions, cannot do so under different circumstances. They hence do not constitute sufficient conditions for the use of these terms. Here is a simple example: The expression «1.4.57» written by an Englishman usually means April 1, 1957 and, when used by an American, January 4, 1957.

4) Furthermore, in connection with the above observation, there is an additional charge (our fourth and last) against definition to the effect that it renders the meaning of terms solely in reference to their form without considering their contextual conditions. This means not to reckon with the fact that in usual speech the significative role of an expression depends not only on its form, not only on its syntactic properties but also on its actual context, on pragmatic circumstances. The very question which the definition has to answer is incorrectly put, according to the viewpoint under consideration. The question is often formulated in a very general form, for instance: «What is knowledge ?», «What is beauty ?» resp. of «What is the meaning of the word knowledge ?», «What means the term beauty ?» While it requires relativization to some definite verbal or situational context. No proper answer is possible to a question thus formulated.

3. The end result of all these critical considerations is known to us. They show that analysis by definition is not a proper method as appplied to natural language. It is a negative result only. The question must now arise: how does it stand with the positive postulates of descriptionism proposed here to replace analysis by definition ? This matter doesn't present itself uniformly. There is only a common starting-point assumption: it is at any rate a matter of a method which would neither distort the actual functions of the analysed expressions, limit artificially the fields of their application, nor eliminate their prevailing ambiguity. But various authors attempt to realise this differently.

(4) L. WITTGENSTEIN, *op.cit.*, pp. 31, 46 and following; M. SCRIVEN, *op.cit.*, pp. 105 and following. See also M. BLACK, *op.cit.*, pp. 24 and following.

The most widespread view is that language analysis requires the empirical method of observing individual cases of use of the given expression and examination of its meaning functions in various situational contexts. The results of this method are not definitions but «rules of use» (this concept plays a particularly important role in descriptionism), resp. rules of actual or correct use. What are these rules of use ? They are not always uniformly characterised, but two of their characteristics are generally emphasized.

What stands out is their descriptive character. They should be purely descriptive statements, empirical generalizations, dealing with the actual mode of use of the analysed expression. A listing of examples of rules of use found in the works of descriptionists on one occasion or another show it to be actually so in some cases. Such is the case, for instance, when in the role of a rule of use appears such a statement as: «People speaking Swahili use the word 'hiranu' in 89 cases out of 100 to designate male siblings»; an expression of the type «I know that p» is generally used in English only to indicate the conviction that p. In ordinary language a sentence of the kind «p and q» is sometimes used in such a way as not to entail a sentence of the kind «q and p» (if it's a statement of time sequence), etc. But it is difficult to resist the impression that the majority of cases concern — insofar as the end result of the analysis goes — statements which don't differ with regard to their methodological characteristics from definitions, that they are not descriptions of prevailing language habits, but declarations of terminological decisions adapted programmatically to these habits — similar to analytical definitions so-called which certainly are not empirical statements. If these observations are correct, then rules of use thus conceived, would be nothing else but definitional postulates of a certain special kind [5].

It must be noted moreover, that in the controversy definition or rule of use, the question of the methodological character of one and the other, their empirical resp. nonempirical status, is of little importance. This is attested at least by the fact that the argumentation developed here pertains not to the methodological character of the statements, but exclusively to their relation to ordinary language, to their agreement or disagreement with prevailing linguistic practice.

([5]) See J. KOTARBINSKA, *Definicja*, in *Studia Logica*, Vol. II, 1955. For the examples referred to above see A. FLEW's article *Philosophy and Language*, (p. 19) and J. O. URMSON, *Some Questions Concerning Validity* (pp. 121 and following) in *Essays in Conceptual Analysis*, A. FLEW (ed.), London, 1956.

We hence relinguish further consideration of the empirical nature of rules of use as an abstruse and for us unimportant question.

But some remarks must be devoted to the contextuality of rules of use, the second of two features usually distinguished by descriptionists as particularly characteristic of these rules. The word «contextual» of course derives from the word «context» and descriptionist terminology embraces by that term (it always requires to be used relatively to some definite expression), the whole combination of circumstances accompanying the use of the given expression which codetermine its semantic role. There is a very rich assortment of these circumstances. Among them, for instance, are the time and place of use, the person uttering the statements, his intentions, his emotional state, the assumptions he latently presupposes, the verbal context of the given expression, etc. According to this view, rules of use are thus distinguished by the fact that, contrary to definitions — which are as a rule a-contextual —, they link the semantic function not only with the form of the expression but also with the contextual conditions of its use.

How they realise this task is not exactly indicated. The rules are formulated variously in practice. But it seems that if we do not fear reconstruction - which is as relentlessly combatted by the descriptionists - it should be possible to range them, at least in most cases, under one common scheme such as:

π_x (if x is an expression of form K and x is used in conditions C, then x has such and such a semantic function (for example: means the same as the phrase W, refers to person O, designates subjects of type P, etc.), or

π_x (if x is an expression of the form K and is used in conditions C, then it is used properly only if it fulfills such and such a semantic function) [6].

Examples of application:

1) $\pi_{x,\,y,\,z}$ (if x is a sentence of the form «This is red» uttered by y, and if y at the same time was pointing to z, then that sentence means the same as «z is red»);

2) $\pi_{x,\,y,\,t}$ (if x is a phrase of the form «today» and y used that phrase on day t, then x means the same as «day t»);

([6]) Of course, the proposed schemes make no claim to full precision. It was rather a question of deviating as little as possible from the examples to be generalized. There is no reference here, for instance, to any given language which has to be presupposed in some manner.

3) $\pi_{x,y,z}$ (if x is a sentence of the form «I know that there exist oviparous mammals» stated at time t by y, then x is used properly only under the condition that it expresses y's belief at time t that oviparous mammals exist);

4) π (if x is an expression of the form «saw» and is used in a sentence of the type « Every A is B» in the place of A, then x means a certain carpenter's tool).

According to this interpretation, these would be metalinguistic sentences characterizing the semantic function not of all expressions of some given form, but only those which also fulfill certain given conditions. If it is assumed that we are concerned here with sentences of the definition type, then we would have to regard them as special variants of partial definition. They would differ from other partial definitions by the fact that they are formulated in metalanguage and that the criteria of application they provide are limited not because they enable determination if only some objects do or do not fall under the defined term, but because they refer to only some tokens of the defined term, namely, those used in some definite situational contexts. It seems that this variant of partial definition has not yet been distinguished, although it is perhaps useful in defining indexical expressions. It should be added that in rules of use pertaining to expressions whose semantic role doesn't depend on the circumstances of use (according to descriptionists such phrases are found very rarely in natural language) the contextual condition may be omitted. On the other hand, if there is such a dependence, but it is one that cannot be accurately grasped, then the rules of use assume the form of statistical statements of the type: «In certain circumstances the use of an expression of such a form is correct only when it fulfills such and such a function», or similar ones.

The rules of use conception dealt with above, is mainly represented by the Oxford School. There is also current another conception connected in the first place with a branch of the Wittgenstein trend, according to which the explanation of the meaning of an expression requires reference to particular cases of its application. If we desire to explain to someone, maintains Wittgenstein, the meaning of the word «blue», it is necessary to show him an object coloured blue and say. «This and similar things are blue», or «This and things like it are called 'blue'». Analogically, to explain what a game is, it is necessary to describe as accurately as possible examples of various kinds of games and to add: «This and similar things are called 'games'». To explain what a proposition is it is necessary to give several

examples of propositions and comment. 'This and similar things are called propositions'», etc.[7] This is not an auxiliary method. It is not its task to provide data for constructing some more definite criteria which no longer refer to individual cases. Here examples are self-sufficient. They function as patterns which enable orientation in the practice of using the explained expressions when it has to be determined whether they are applicable or not to some given cases. Giving suitably chosen model examples indicates a sort of actual application of the expressions in question in different contextual conditions, thereby pointing out how to use them in similar conditions in the same manner as heretofore. One advantage of the examplification method is supposed to lie precisely in the fact that it doesn't deform the meaning of the expressions under analysis and in particular, that it does not set artificial limits to its application, nor does it eliminate the manifold shadings of meaning inseparably connected with the vocabulary of ordinary language.

4. So much for the descriptionists. As can be seen, dominant in the foregoing considerations is the basic desire to retain accord with ordinary language, with fixed linguistic habits. But the contextuality requirement of the rules of use and the demand that they be examplifying serve only a subordinate role; they indicate the means of assuring or enabling the realization of that principal desire. Two questions hence arise: if the recommended means are essentially effective and whether the goal desired to attain with their aid deserves to be considered as the principal one.

We limit ourselves for the present to the first question (being of a more general character we deal with the second one in the concluding section of the present article). The contextuality postulate for rules of use raises no serious reservations from the above mentioned point of view. The contextuality and ambiguity of natural language are too well known to leave any room for doubt that equiform expressions are in general used in various meanings, depending on the circumstances of their use — extra- or intralinguistic context. Nor is here any doubt that if the rules of use are to be in accordance with prevailing custom, they must consider this dependence in one way or another.

(7) WITTGENSTEIN, *op.cit.*, pp. 35, 52 and following, etc. Very characteristic is the short sentence «One cannot guess how a word functions. One has to look at its use and learn from that» (p. 109).

But a doubt does arise if the examplifying method — as recommended by the descriptionists — doesn't lead, even with the best model examples, to the «distortion» of the prevailing semantic function. It certainly does not change that function in the direction of greater precision. But doesn't it change it in the reverse direction ? Is it not a fact that it contributes not only to retaining the existing ambiguity and vagueness, but to the emergence of new ambiguities and to the expansion of the prevailing zones of indefiniteness, the fields of cases in which it's impossible to determine whether or not they belong to the area of application of explained expressions ? Each of these matters has two aspects — from the point of view of the remitter or the person who explains, and that of the receiver. The speaker's declaration, i.e., a statement of the type «This and similar things are called '*N*'». to the extent that it pertains to accurately chosen model examples, doesn't actually deviate from the current use of the expressions appearing there in the place of «*N*». But this is an incomplete statement. As indicated elsewhere (8), it only states that expression «*N*» applies to such and such shown objects, e.g. to objects P_1, P_2... P_n, and all objects similar to P_1 or P_2 or... P_n. But it fails altogether to indicate the point of view or degree of similarity involved; it hence doesn't show how to recognize the cases where the expression «*N*» is applicable. The speaker hence informs only partially of the criteria of applicability of «*N*». The listener must supply himself with the rest, using the partial information as a basis permitting — as is clear — not just one but a number of possible solutions. It's evident that in these conditions the surmises of different perons usually vary and the expression, «*N*» consequently begins to be used in shadings of meaning not hitherto applied. It is furthermore clear that the lack of common, clearly established model examples must contribute also to the emergence of new ambiguities. Likeness, to which the examplifying method pertains, is indeed no transitive relation. (This is not difficult to realize if it is considered that it's determined by purely subjective criteria.) The range of objects similar in some definite respect to the model P_n, for instance, doesn't necessarily have to correspond to the range of objects similar in the same respect to P_2, even if the latter is similar in the same respect to P_n (9). For all

(8) J. KOTARBINSKA, *On Ostensive Definitions*, «*Philosophy of Science*», vol. 27, no. 1, 1960.

(9) In each of these cases it is of course a matter of similarity sufficient to recognize it as a criterion of applicability of the term «*N*». (See note 8 above).

these reasons, the examplification method leads to certain changes in the prevailing mode of using analysed expressions and it is consequently subjected — as it seems — to the same charge as the method of definition so criticized by descriptionists. Can it be that descriptionists didn't take into account the consequences induced by the explanation of meaning solely by the method of example ? This seems hardly probable. It rather appears that by opposing the deformation of natural language, the descriptionists are only against making it unambiguous and sharpening its expressions. But they are very tolerant toward changes in the opposite direction evidently because they regard such changes as being in accord with the developmental tendencies of natural language. If that interpretation is correct, then the paradoxical character of this viewpoint would be very pronounced.

5. We now turn from a discussion of concepts to an analysis of reasoning. According to the descriptionist conception, the division of views on these matters presents itself more or less as follows. Taking-off from the assumption that in actual practice rational thinking generally proceeds in an enthymematic, simplified fashion, the reconstructionist regards the task of analysis to be the reduction of reasoning to very precise forms which make it possible, at least in some cases, to comprise them under the laws of formal logic. The analysis of reasoning is hence identified with its logical reconstruction, which consists of complementing the body of initial premises by means of missing links (surmised but latent premises) on the one hand, and on the other, reducing on the basis of the corresponding definitions all the component elements of reasoning, premises and conclusions to the sentential schemes of formal logic (e.g., sentences of the type «A exists» to those of the type «E_x (x is A)», etc.).

Descriptionists of course are the opponents on principle of this conception of analysis. They combat reconstructionism as a method of distorting natural languages and first of all reject the possibility of applying the laws and schemes of logic on the basis of that language. The principal problem around which the discussion revolves can be reduced to the question if the laws of formal logic can be appplied to reasoning expressed in the terms of ordinary language. Or, to put the matter differently, if reasoning carried out beyond the realm of logic and mathematics can represent particular cases of logical schemes of reasoning.

As for descriptionism — the main train of its argumentation aiming to justify a negative answer to the above question, can be summed up more or less as follows.

Making use in reasoning practice of the laws of formal logic requires as a rule substitution for the variable symbols appearing in these laws. Now the rule of substitution, like all other logical rules, is purely formal, i.e., it pertains exclusively to the external properties of expressions without reference to their meaning. The substitution is therefore justified of every expression of the same form for a variable which appears several times in some formula — if only it belongs to the range of expressions substitutable for the given variable. This is possible without exposing one's self to error only on the following assumptions: that the rules of the language are strictly fixed, particularly those relating to the division of its expressions into syntactic categories; that these categories accurately correspond to those of the variables appearing in the logical formulae; and that all expressions of that language are used in a completely univocal manner without regard to the verbal or situational context. Natural language doesn't fulfill any of these conditions. As a result, sentences substituted for logical formulae are not always true and the reasoning in accordance with these formulae does not always lead from truth to truth. For instance, the sentence «Tomorrow is Sunday» doesn't follow from the sentences «If today is Saturday then tomorrow is Sunday» and «Today is Saturday» — if the last sentences were written, let's say, on March 7, 1964 and the first one on Sunday March 8, 1964. Hence one taken of the sentence «Tomorow is Sunday» is true and the other is false. Similarly, the sentences «Tom is 160 cm tall» and «It's not true that Tom is 160 cm tall» may both be true of the word Tom if used as the name of different persons ([10]).

There is still another difficulty connected with the substitution operation. While substitutions are made for the variables, the constants remain unchanged. The logical constants, or their verbal correlates, appearing in formulae, in which the substitutions are made hence appear also in the substitutes of these formluae, of course in unchanged meanings. Thus, in the case when these substitutions are common language sentences this condition cannot be fulfilled for the simple reason that there are no terms in common language which have the same meaning as logical constants. It first of all has no truth functional connectives. The connectives by means of which are read the constants of the sentential calculus are therefore not the true translations of the latter. The sign of implication, for instance, is read by means of the connective «if...then». But with the usual sense of this connective the truth of a condi-

([10]) P. F. STRAWSON, *Introduction to Logical Theory*, London, 1952, ch's 1-3.

tional sentence depends not only on the logical values of its members, but also on its meaning. In that sense, not all sentences of the type «if q, then if p then q», «if not p, then if p, then q», «if not p, then not q», etc., are regarded as true although the formulae «$q \rightarrow (p \rightarrow q)$», «$\sim p \rightarrow (p \rightarrow q)$», «$\sim p \rightarrow (p \rightarrow \sim q)$» belong to the tautologies of the sentential calculus. Or to take another example: the verbal correlate of the conjunction-sign is «and». But as descriptionists maintain, common language in general uses this conjunction to indicate the time-sequence between events. The truth of the sentence «p and q» not only fails then to imply the truth of the corresponding sentence of the type «q and p». On the contrary, it implies the falsity of such a sentence. For examples: from the truth of the sentence «John had an operation and got well» follows the falsity of the sentence «John got well and has an operation». Nor is it any better with the logical constants of the calculus of predicates. The connective «is» is timeless here, whereas it is generally used in everyday language as an abbreviation of the phrase «is now». A conjunction is understood in the calculus of predicates as the equivalent of inter-sentence conjunctions. Whereas such equivalence occurs very rarely in every day speech. The sentence «Tom and William came» is not at all equivalent to «Tom came and William came». For the first suggests simultaneity, while the second speaks of time-sequence. It is similar with the other constants of formal logic: they determine other conditions of truth for sentences formed with their help than do connectives in colloquial use. Logical constants have furthermore univocally and strictly fixed meanings, contrary to the connectives of ordinary language which are used imprecisely and ambiguously ([11]).

The laws of formal logic may for all these reasons be applied only to languages in which, as Ryle puts it, military discipline and regimentation prevail, or only to artificial languages especially constructed in that manner. They cannot be applied to natural languages, which do not lend themselves to the rigidity of logic. Such languages require informal logic adaptable to their «civilian» customs, looser and much more diversified. It at any rate differs from logic by the fact that it is not comprised in a deductive system and that it investigates the inferential connections between sentences depending not only to their form but also on their meaning. With additional explanations, the rules of such logic are simply the rules of use dealt with

([11]) *Ibidem*, pp. 78-90 and following. See also G. Ryle, *Dilemmas*, Cambridge, 1954, ch. VIII.

above. By providing information on the semantic functions of one expression or another they at the same time acquaint — according to the given standpoint — with the truth conditions of certain sentences containing the given expression, i.e., with the inferential connections between these and certain other sentences. Hence the dual role of rules of use: as rules explaining the meaning of expressions on the one hand, and as rules of reasoning, on the other ([12]).

How shall the above-summarised arguments be assessed ? Let us examine each one separately.

As for the first argument, it undermines the standpoint of the reconstructionists only with the assumption that the applicability of the laws of logic to ordinary language is meant to be rigorous here. In this meaning, the possibility of executing purely formal substitutions within that language — with a guarantee of infallibity — is a necessary applicability condition. But it is clear that in defending the applicability of the laws of formal logic to the sphere of reasoning outside the field of logic and mathematics, the reconstructionists understand the matter differently. They don't in any way assume the formal character of the mentioned transformations. According to their opinion, the validity of the substitution is determined here not only by the syntactic properties of the expressions involved, but also by their significative properties: sentence «*S*» is thus a proper substitution for the logical law L only under the condition that where equiform variables appear in law L, then there appear in sentence *S* not only equiform but also synonymous expressions ([13]). If so, then both sides agree that in the purely formal sense of substitution, the area of applicability of the laws of formal logic is naturally limited to the sphere of formal languages. Differences appear however in the practical conclusions inferred from this fact. Descriptionists desire to replace formal by informal logic, or to deformalize the laws and formulae of logic. Reconstructionists are content with deformalizing the rules of inference which consequently leads to the deformalization of the concept of applicability of the laws of formal logic to ordinary language. It seems that relinquishing the formal character of the rules

([12]) P. F. STRAWSON, *Introduction...*, ch. VIII and others; G. RYLE, *Dilemmas*, *op.cit.*, ch. VIII.

([13]) This is clearly indicated by QUINE, for instance, (see his *Method of Logic*, New York, 1950, pp. XI, XII, and 43) who is regarded by descriptionists as a typical representative of the opposing camp. Moreover, almost all school texts of logic thus present the question, which is attested by their warnings against the errors of equivocation and of *quaternio terminorum*.

of inference is at any rate less painful than giving up the use in ordinary reasoning practice of the criteria of correctness provided by formal logic, particularly since the projected informal logic and the role it has to fulfill are too unclear even in very essential points.

Proceeding to the second argument — which as will be recalled pertains to the incongruence between the meanings of logical constants and the colloquial expressions corresponding to them — it must be stated in advance that it is not an easy question to cope with. The problem discussed here has been considered many times. It assumed the greatest sharpness in connection with the so-called paradox of implication which has attracted the attention of logicians from ancient times. The discussion centres primarily around the connective «*if...then*», the paradoxical character of which is however treated as a particular, glaring example of a very general situation. Within the framework of the reconstructionist trend may be roughly distinguished the following three main orientations:

a) Characteristic for the first is the fact that the divergence between the understanding of connectives in formal logic and in their common use is connected here — despite the common view — not with the conditions of truth of the sentences formed with the help of the connectives in question, but with the conditions of the proper (or correct) use of these sentences. The distinction between the truth of sentences and their proper use is essential here. The truth of a sentence depends on what it asserts; its proper use depends on what it expresses. Or to put it more accurately: sentence *S* is correct when, and only when, the state of affairs affirmed by it really exists; sentence *S* is used properly when, and only when, the person uttering it is in the same psychic state as is expressed by that sentence according to the linguistic custom. Thus, according to the viewpoint in question, the conditions of truth of a sentence are independent of whether the connectives appearing in it are understood in the logical sense or in their ordinary meaning. But the conditions of proper use are varied: sentences used properly with the logical meaning of the connectives appearing in them, may be used improperly when the connectives are taken in their usual meaning, since their expressive function may be different then. But this kind of difference does not hamper the application of the rules of formal logic, outside its own domain ([14]).

([14]) This conception is developed by A. AJDUKIEWICZ in his article, *The Conditional Sentence and Material Implication, Studia Logica*, vol. IV, 1956. QUINE puts the matter more or less similarly. It's worth noting that the Ox-

b) The attack on the second viewpoint is aimed in a different direction. Without questioning the assumption that on the basis of the ordinary meaning of connectives, the conditions of truth of sentences deviate from those required when they are taken in their logical sense, the attempt here is to show that the divergence is not wide enough to determine the unsuitability of formal logic in usual reasoning practice. For certain essentials they hold in common are pointed out here: even though sentences which are true when their connectives are understood in their logical sense don't always remain true when these connectives are taken in their ordinary meaning, still, sentences which are true on the basis of their ordinary meaning don't cease being true if their connectives are understood in the logical sense. It is owing to this commonness that — in line with the considered conception — the infallibility of a considerable number of logical inference schemes doesn't depend on whether their connectives are understood in the logical or ordinary sense. Among these, for instance are schemes of sentential calculus which contain the connectives of this calculus in the premises, i.e., scheme of the type

$$\frac{p \rightarrow q \quad p}{q} \qquad \frac{p \rightarrow q \quad \sim q}{\sim p} \qquad \frac{p \rightarrow q \quad q \rightarrow r \quad p}{r}$$

These schemes remain infallible it instead of the sign «→» understood here in the logical sense, the connective «if...then» is used in the colloquial meaning, since from a sentence of type «if p, then q» follows the sentence of type «$p \rightarrow q$» (though not vice versa). We then obtain derivative schemes which are in fact used in ordinary reasoning practice without their applicability arousing any reservations. Logical schemes have also their application here in a wider sense, corresponding to those derivative schemes; but so have the laws of formal logic on which the schemes are based. With this conception (and parenthetically, it seems to be the most circumspect) we moreover make use in reasoning practice not of all the forms of inference provided by formal logic, but of those which correspond to the habits

ford School too attaches great importance to the distinction between the condition of truth and the conditions of the proper use of sentences (see for example, STRAWSON, *Introduction...*, pp. 18, 82 and following, 175-179 and following).

of common speech and hence satisfy certain non-formal conditions — beyond formal ones. This is not an exceptional situation. The same occurs in constructing definitions or making classifications — when not only the conditions of formal correctness are considered, but also non-formal conditions apart from ones assuring suitability from the viewpoint of one or another purpose. The conditions of formal correctness are necessary in both cases, but they are not sufficient ([15]).

c) The last orientation is represented by those who, while supporting the descriptionists in the points in which the first or the second orientations deviate from it (see pp. 17 (a) and 18 (b)), prefer to accomodate formal logic to the needs of ordinary language rather than give up its application there. Resulting from these tendencies are non-classical systems of sentential calculus introducing strict implication besides the sign of material implication as a significative correlate of the connective «if...then» in the ordinary sense. According to specialists, the system S 5, the most comprehensive of Lewis's systems, suffices to formalize all kinds of deductions indispensable in practice as well as all indispensable logical theses, and retain at the same time connectives with meanings approximating those of some connectives of colloquial speech ([16]).

None of the three conceptions is free from such or other objections, none of them does fully solve the problem involved. But each seems better than those proposed by the descriptionists if only because the projected informal logic is still so indefinite that it would be difficult to decide whether it shows the proper direction, or goes astray.

6. We now turn briefly to the controversy between descriptionists and reconstructionists on the question of the analysis of theories (namely, those formulated in terms of natural language, primarily philosophical theories). The discussion around this theme bring us back to familiar motives. According to their opponents, the reconstructionists in this case too regard the assurance of maximum preci-

([15]) Z. Czerwinski, *O paradoksie implikacji* (Implication Paradoxes), *Studia Logica*, vol. VII, 1958, pp. 270-1. See also H. Reichenbach, *Elements of Symbolic Logic*, New York, 1947, par. 7 and others. B. F. Strawson also calls attention to such a connection between the logical and colloquial meanings of connectives (for instance, *Introduction...*, p. 86.

([16]) L. Borkowski, *Uwagi o okresie warunkowym oraz implikacji materialnej i scislej* (Notes on the Conditional Sentence and Material and Strict Implication), coll. «Rozprawy logiczne» («Logical Studies») in honour of Kazimierz Ajdukewicz, Warsaw, 1964.

seness as the chief task of analysis of a given theory and, as they consider at the same time that the possibility of realizing this task with the means provided by natural language is extremely limited, they reduce the analysis to methods of building formalized systems which find their interpretation in the respective theories and at least approximately reflect their logical structure. Such a system is regarded as the logical reconstruction of the analysed theory. Its purpose is to clarify the logical interrelations within the given theory, while making its concepts more accurate and improving the preciseness of its inferences. It can be easily surmised that from the point of view of descriptionists this conception of analysis combines the defects of reconstructing logical concepts with those encumbering the reconstruction of logical reasoning. One of the chief objections to that concept of analysis is that, conducted in the reconstructionist style, it deforms the conceptual aparatus of the analysed theory, violates natural language and leads to results discordant with prevailing «linguistic reality».

The rival conception advanced by descriptionists identifies analysis of theory with an analysis of the meanings of the terms with which the theory operates, providing the terms — as we know — with rules of use adapted to the habits of ordinary language ([17]) (hence the concept of rules of use comes to the fore again and with it the postulate of their conformity with the ordinary manner of understanding the terms being analysed).

Going into the above argumentation is not likely to add anything new to that has been considered so far. There is therefore no need devoting any further attention to them.

7. We now pass to the central question, namely: the demand that the results of the analysis be in agreement with every day lingual practice. The role of this postulate in descriptionist conceptions was pointed out several times (see for instance pp. 4, 7, 9). We indicate first of all that the demand thus formulated (in brief, the demand for agreement) may be the expression of highly varied tendencies depending on whether the agreement in question is understood in the broader or narrower sense, more or less rigorously. It would thus be necessary to establish which of these is involved in the considered case. In order to do this it would be good to have for

([17]) P. F. Strawson, *Construction and Analysis, op.cit.*, p. 102; and his *Analyse, science et metaphysique,* in *La Philosophie analytique,* Paris, 1962, p. 110; J. O. Urmson, *L'histoire de l'analyse,* pp. 15-16.

comparison some orientation data, i.e., some concrete examples of the most typical attitudes manifested in the controversies over the demand for agreement. The standpoint of John Stuart Mill may serve as a starting point, representative of the moderate tendency. It is worth quoting Mill at some length.

Reflecting on the conditions which ought to satisfy philosophical language (parenthetically, this is the same starting point problem as posed by descriptionists), John Stuart Mill wrote: «In order that we may possess a language perfectly suitable for the investigation and expression of general truths, there are two principal ... requisites. The first is that every general name should have a meaning steadily fixed, and precisely determined...» (Ch. IV, p. 212, par. 1) «It should however be a complete misunderstanding of the proper office of a logician in dealing with terms already in use, if we were to think that because a name has not at present an ascertained connotation, it is competent to anyone to give it such a connotation at his own choice. The meaning of a term actually in use is not an arbitrary quantity to be fixed, but an unknown quantity to be sought». And he follows this directly with: «In the first place, it is obviously desirable to avail ourselves, so far as possible, of the associations already connected with the name; not enjoining the employment of it in a manner which conflicts with all previous habits... A philosopher should have little chance of having his example followed, if he were to give such a meaning to his terms as should require us to call North American Indians a civilized people or the higher classes in France or England savages, Were there no other reason, the extreme difficulty of effecting so complete a revolution in speech would be more than a sufficient one... The fixed and precise connotation which it receives, should not be in deviation from, but in agreement (as far as it goes) with, the vague and fluctuating connotation which the term already had», (pp. 216-217) ([18]).

It is now clear why we regard Mill's position as moderate. While strongly emphasizing the necessity of adapting the projected use of expressions to their usual meaning, he at the same time advances the above «first condition» which imposes definite restrictions on the demand for agreement. Thus Mill is not opposed to all deviations from prevailing meanings, but only to arbitrary, capricious divergences not dictated by regard for precision. The evil he combats is the

([18]) John Stuart MILL, *System of Logic, Ratiocinative and Inductive*, 6th ed., London, 1854, Vol. II, Ch. IV, par. 1 and 3 (pp. 212, 216-217).

conventional attitude to language such as is to be met in the post-Millsian period in the works of McKay or Petrazycki ([19]), for instance. Referring to the purely conventional character of linguistic expressions, McKay defends the view that to arbitrary symbols may be attached arbitrarily chosen meanings. Petrazycki goes even further. He maintains that a term must be regarded «as a new and independent linguistic unit, as a conventional sign for the scientific concept created by us and only for it; but if some previous terminological habit should be connected with it, then it should be put aside and not meddle» regardless whether it's a term which is about to be introduced or one already in use.

Where then shall we place the descriptionist position ? For it is clear that it belongs on the side of Mill in his controversy with the conventionalist doctrine. But we know that descriptionists are primarily anti-reconstructionists, and the situation would have to be represented entirely differently in the framework of that controversy. And this is not only because Mill's polemics are directed exclusively against conventionalism, while the latter doesn't have to, and doesn't go hand in hand with reconstructionism. A much more important reason is that the Mills programme of language analysis doesn't differ in its essential points from that of the reconstructionists, particularly in the form it assumes in Carnap's works. To be convinced that this is so it suffices to recollect that Carnap, like Mill, sees the main task of analysis (he uses here the term 'explication') to render greater precision to explained expressions. He even defines explication as substituting less precise terms (explicandum) by more precise ones (explicatum). And just like Mill, Carnap wants them to be in agreement with prevailing terminology: with the stipulation that explicatum should in that manner be similar to explicandum, that it might be used in the majority of cases where the pre-scientific explicandum was used hitherto ([20]). The reconstructionists position seems precisely to be characterised by the linking of the two postulates: language precision and respect for habitual use within the limits determined by the needs of precision. Let us add for the sake of greater clarity, that a distinguishing feature of descriptionism is that

([19]) In McKay's *The Logic of Language* (published in the USA in the 1940's and in Petrazycki's *Wstep do teorii praw i moralnosci* (Introduction to the Theory of Law and Morality), (Warsaw, 1930, pp. 109-110).

([20]) R. Carnap, *Logical Foundations of Probability*, 2nd edition, London, 1957, p. 7.

it combats the first postulate from the viewpoint of the second, that in the name of agreement with common language — understood of course much more rigourously than by Carnap and Mill — descriptionists oppose all measures to make more precise prevailing meanings, seeing in the desire for precision the chief danger of denaturalising the existing lingual habits. The requirement of agreement with colloquial speech therefore assumes with descriptionism an exceptionally radical form. It hence leads to the quest of a method of analysis which, contrary to that of the reconstructionists, would not deform the specific character of natural language and would enable to fully retain the indeterminacy of the significative role of its expressions, the vagueness of its extensions and the lack of uniformity of its criteria for application. When the descriptionist demands that the rules of use agree with colloquial speech, he is primarily interested in the above mentioned conditions. This is undoubtedly the most essential point in its programme, on which it plays the greatest stress.

The descriptionists' main intent is perhaps clear enough. What a far cry form the Socratic tradition, from the Cartesian watchword of making ideas clear and lucid, from the attitude shaped by the classical school of logic and which is today widespread among the generality of rational thinkers. What could have inclined the descriptionists to such a revolutionary view ? Why the aversion to precision ? Whence the drive to cultivate even those properties of natural language which theoretical inquiry reckons not as virtues, but among its shortcomings and defects ? In a word why the desire to retain in full the obscurity proper to this language ? How can that be justified ? Let us turn to the arguments cited by the descriptionists themselves.

It is first of all maintained that a programme making natural language precise is unattainable. Even if some terms should be made more exact by means of special measures, they will retain this exactness only as long as they are not used anew. From the moment they return to normal circulation, they become subject to the same processes as before they were made more exact. And this will with inevitable necessity lead again to the constant fluctuation of meanings and shifting of the fields of applicability now in one, now in another direction ([21]). If that is how it is, conclude the descriptionists, the matter is not worth the effort. It is simply a waste of time and energy. It may be wiser to recognize from the outset that it is not possible

([21]) The mechanism of these processes are considered above pp. 6, 7.

to overstep the limits of precision determined by the usual manner of functioning of natural language and not to undertake tasks doomed to failure in advance ([22]).

In the course of its development, runs the second argument, language after all adapts itself to the tasks it has to serve and it does not require any correction. For language does not develop by accident. Its direction of development is delineated by the human needs it has to serve, and it is this which causes the operation here of a kind of natural selection: useful concepts remain; those which fail this test go out of use. As a result, precise concepts exist where they are necessary, and imprecise ones where precision is not needed. It is highly improbable, says Warnock, for language to contain much more or much less than its purposes required. It has endured «the severest of all tests of efficiency» — the test of constant use. It is also highly improbable that the terminology changed by us (it's undoubtedly a question here of terminology made precise) could be much better than that which arose as a result of the natural evolution of language. These considerations are clinched by the conclusion that it is useless to try to make precise prevailing terminology. Moreover, this conclusion applies not only to ordinary terms. In discussing this question, Scriven clearly underlines that it concerns also, and even in particular, crucial terms of «theoretical and observational sciences ([23])».

The third argument is more far-going. It undertakes to show that making already used terms precise not only fails to bring any advantage but as a rule leads to harmful consequences. There are advanced several reasons: a) Making precise requires the elimination of all shadings of meaning involved in the given term, except some single distinguishing one. This hence occurs at the cost of relinquishing some of its functions and consequently of reducing its

([22]) M. SCRIVEN, *op.cit.*, p. 109. At this point it is difficult to refrain from noting that it would be equally justifiable to refer to this as an argument to cease weeding; for the weeds will anyway grow again; or to refrain from watering plants because the soil will anyway get dry again. Furthermore, the programme of rendering scientific language more precise has already brought important results, though only partially and gradually.

([23]) G. WARNOCK, *English Philosophy Since 1900*, p. 150; J. L. AUSTIN, *Presidential Address to the Aristotelian Society*, Proceedings 1956/57, p. 11; J. M. URMSON, *L'histoire de l'analyse*, in *«Philosophie analytique»*, Paris, 1962, p. 16; M. SCRIVEN, *op.cit.*, pp. 106-7; L. WITTGENSTEIN, *op.cit.*, pp. 32, 42 and following. (The first two sources are cited from E. GELLNER, *Words and Things*, London, 1959, p. 54.

hitherto prevailing utility. Such is the case, for instance, with logical connectives when their role is limited only to those assigned them by formal logic ([24]), b) In general ambiguity is necessary so that language may fulfill all its tasks. The stock of words in a vocabulary is necessarily limited. If despite that, language disposes of a vast wealth of resources making possible even the most subtle differentiations and distinctions, if it fulfills such numerous and varied functions — all this is made possible only by the fact that its component expressions are indefinite and ambiguous, that they fulfill not some single role but many varied ones, which change with langual and non-lingual contexts. Making it precise impoverishes a language by limiting the range of tasks it can serve. The price it must pay is therefore very high: there is a loss in the language's utility as a medium for expressing and transmitting ideas and in general as a means of communication ([25]). c) Only imprecise terms lend themselves to the adequate reflection of the real world in all its complexity and the indefiniteness of phenomena occurring in it, with its fluid forms and vague border lines, whereas terms deprived of this features are at most suitable for discussion of the idealistic world of timeless and spaceless Platonian phantasies. If we wished to use such terms, we would find ourselves — according to Wittgenstein's picturesque comparison — in the situation of a man who desires to walk on ideally slippery ice where there is no friction, hence in a certain sense, in ideal conditions; and because of that, he is unable to walk at all. But since we want to walk, so we must go back to rough ground, where there is friction, says Wittgenstein. Of course ordinary language which owes its utility precisely to the fact that it is far from ideal precision, constitutes such ground.

Rendering more precise terms which play an important role in philosophy results in additional difficulties. For the philosophical problems — as Wittgenstein has it — grow out of reflection over things known from everyday practice, from ordinary thinking, and they are hence formulated in ordinary terms. Refining these terms would distort their prevailing sense and so change the problems formulated by their means. As a result, solutions are sought not for the problems constituting the starting point of the discussion, and replies are derived which do not properly answer the questions put.

([24]) M. SCRIVEN, *op.cit.*, pp. 110-111; L. WITTGENSTEIN, *op.cit.*, pp. 46, 47 and others; P. F. STRAWSON, *Analyse, science, metaphysique*, pp. 106, 112.

([25]) L. WITTGENSTEIN, *op.cit.*, p. 46; M. BLACK, *op.cit.*, p. 28.

Here is the source, adds Wittgenstein, of the specific difficulties which make themselves so felt in the field of philosophy: no end of unnecessary complications, paradoxes, misunderstandings, false problems, numerous never — ending sterile debates. There is only one effective therapy: to restore the current content, their common and ordinary use to the terms involved. Philosophy may in no way interfere with the actual use of language. What it needs are not superterms, but words of the same kind as «table», «lamp», or «door». The solution of philosophical problems, or their elimination, if they are pseudo-problems, consequently require not making precise but «deprecising» the terms used. Those err who think that ordinary terminology doesn't suffice here because it lacks precision ([26]).

Such, more or less, would be the arguments advanced by the descriptionists in support of their principal postulates. It is not our intention here to go into a detailed critical analysis of these arguments. Nor does it seem to be useful. Even a cursory examination justifies the assumption that they are not convincing. We hence limit ourselves to the most important questions.

The most pregnant role is undoubtedly played here by the arguments appealing to positive or negative utilitarian appraisals. As we saw, these arguments question the *usefulness* of attempts to make precise prevailing terminology. They aim to show the *uselessness* or even the *harmfullness* of precised terms, and they emphasize the process of perpetuation of *useful* concepts reached as a result of language evolution and the exit from circulation of *useless* concepts. These appraisals are made relative to the tasks language has to accomplish. It is not made clear however which tasks are involved here, although there are many such essentially differing tasks (it may suffice to mention the informative, expressive, and impressive functions of language etc., which are distinguished by descriptionists themselves). Is any proof necessary that what is useful from the viewpoint of some tasks may be useless in relation to others ? And in particular, is it necessary to persuade anyone that the conditions on which depends the usefullness of concepts from the viewpoint of theoretical aims — hence, among others, conditions relating to the degree of precision — by no means correspond to those which determine the

([26]) L. WITTGENSTEIN, *op.cit.*, pp. 44, 46, 48, 49, 51 and following; M. SCRIVEN, *op.cit.*, p. 167; G. J. WARNOCK, *Metaphysics in Logic*, in *Essays in Conceptual Analysis*; A. FLEW (ed.), London, 1956, pp. 92-3; P. F. STRAWSON, *Construction and Analysis*, in *The Revolution in Philosophy*, London, 1957, p. 103. See also reference note 28.

usefullness of concepts in ordinary practice ? It is perhaps clear furthermore that the changes to which language is subject in the course of its evolution adapt it at most to the requirements of ordinary practice, and that may at most refer to the decline in the use values of concepts, side by side with an increase in their degree of precision from the viewpoint of these requirements. But these matters are too well known to devote any more time and space to them here ([27]).

The second and last question pertains to the concept of precision. It requires no penetrating analysis to see that this concept is used in the considered arguments in at least two different ways. It would, for instance, be difficult to understand the argumentation aiming to show the harmfullness of precision (see arguments c and d on p. 25) without supposing it to be a matter of absolute precision, excluding all ambiguity, all vagueness. But with these arguments they actually combat the use of precision in a much looser sense, i.e., in which precision is understood as a gradual concept and when one may refer to making terms precise not only in the case of absolute precision, but also when there is some reduction only in the degree of indefiniteness in their field of application or only partly in their variety of meaning. Hence again unjustified reasoning and the still greater weakening of the value of the arguments considered here.

We incidentally consider that the lack of uniformity in the descriptionists conception of precision seems to have exerted no small influence on the shaping of their basic ideas. Let us return for a moment to the origin of this trend. There is an established opinion (and that is how we approached the matter in the opening of the article) that descriptionism originated from the protest against reconstructionism. But more accurate investigation justifies the assumption that the protest was initially directed only agains the most extreme variants of reconstructionism, namely, against the one represented Wittgenstein and Russell in the period of «*Tractatus...*» which rather deserved the title constructionism than reconstructionism. From here came the exhortation to sever philosophy from ordinary language and to replace it with an «ideal» language constructed on the model of formalized languages. This language was to have exactly

([27]) L. PETRAZYCKI, *op.cit.*, p. 96 and following; J. KOTARBINSKA, *Definicja, Studia Logica*, vol. II, 1955; PRZELECKI, *Prawa a definicje* (Law and Definition), in the collected work of J. PELC, M. PRZELECKI, K. SZANIAWSKI, *Prawa nauki* (The Law of Science), Warsaw, 1957; T. PAWLOWSKI, *Z logiki pojec przyrodoznawstwa* (The Logic of the Concepts of Natural Science), *Studia Filozoficzne*, Nr. 1, 1957.

fixed, precise rules of syntax with each of its expressions very strictly and univocally defined and its structure was to be an adequate reflection of reality ([28]). Descriptionism thus originated from the critique of that programme, from the opposition to the slogan of precision (we add: perfect) which that programme was meant to realize. And perhaps because of the ambiguity of the conception of precision, the fight originally conducted on narrower grounds (it may be called paradoxically «the battle of Wittgenstein versus Wittgenstein, or the fight of the later against the earlier Wittgenstein») shifted imperceptively to a broader area, becoming transformed into a battle against all attempts at preciseness — though the evil involved could have been remedied without resorting to such drastic means.

One way or another, it is at any rate clear that regarding the matter on its merits, the descriptionists may be considered right only when they combat the abuses committed by their opponents. But they must be opposed when they go beyond the fight against the abuses and start committing abuses themselves. If both sides: descriptionists and reconstructionists were to abandon extremism and oversimplification, they would certainly meet on the same ground, namely, the ground of reconstructionism in the style of Mill and Carnap. They would then resolve by mutual compromise the conflict between the need of precision and the necessity of retaining prevailing meanings so people may understand each other. The descriptionists would then have to subject to fundamental revision their critique of the recon-

([28]) It will be easier to grasp the origin of descriptionism if it be recollected that considerable role was played here by the fear of every kind of hyspostasia, by decided hostility to everything smacking of idealistic metaphysics in the Platonist spirit. The «superterms» which, as Wittgenstein maintains, would result from he process of rendering precise, are primarily terms so sharpened that no concrete object fulfills the conditions of its applicability, as well as certain abstract terms introduced to make the considerations more exact. For example: an «ideal gas», a «perfectly isolated system», «proposition», «lingual expression» (understood as abstract), «denotation», «meaning», etc. The same motive is to be found in Ryle, who was scared by the idealistic theories of language of Meinong and Husserl, much the same, moreover, as by certain conceptions of contemporary logic. (See G. Ryle, *The Theory of Meaning in British Philosophy in the Mid-Century*, C. A. Mace (ed.), London, 1957, pp. 249-51, 255-257). It should be added incidentally that one of the reasons Wittgenstein and Ryle turn away from definition is that it is meant to define meaning, and meaning is an idealistic, abstract object whose existence cannot be accepted. The misunderstanding here is as plain as day.

structionists conception of analysis, particularly their criticism of the methods of definition which has its source almost solely in their decided rejection of the postulate of precision in favour of the postulate of agreement with ordinary language.

The program delineated by the reconstructionists (we add: the moderate ones) seems to be the most reasonable. But it must not be forgotten that this program too does not exclude deviations or abuses. Having naturally the character of a framework, it follows for various ways of realization in each particular case. It doesn't always choose the proper way, particularly when it comes to the analysis of theory. It is correctly pointed out, for instance, that reconstructionist analysis often departs so far from the theory under investigation that it is difficult to recognize it as an analysis of the theory in question ([29]). Correctly stigmatised as contrary to purpose is the application of formalization and mathematical language where it is at most possible to contribute to an appearance of precision — stressing at the same time just as correctly that an appearance of precision is precisely the greatest crime against precision ([30]). But descriptionists have heavier crimes on their conscience, inasmuch at least as they flow from the program itself, and not from defects of its realization. It is difficult not to express complete reserve towards a viewpoint to which is foreign concern for the logical culture, which desires to halt efforts to make concepts and reasoning more precise, which opposes the fight against haziness, and in this respect allies itself with irrationalist currents. It is difficult too to have any doubt as to which: reconstructionism or descriptionism, is closer to the developmental tendencies of science, as to the requirements of common sense.

University of Warsaw Janina KOTARBINSKA.

([29]) Instructive in this respect is J. GIEDYMIN's treatment of the Carnapian analysis of the structure of empirical sciences (lecture on the *Theoretical Meaning of So-called Terms and Observational Sentences* delivered on April 24, 1964).

([30]) S. OSSOWSKI, *O osobliwosciach nauk spolecznych* (The Peculiarities of Social Science), Warsaw, 1962, p. 254. See also in the same source (PP. 251-6) concrete examples of such behavior drawn from the social sciences.