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ON PRECISION OF EXPRESSION

> We can see an ideal of precision, to which we can
> approximate indefinitely; but we cannot attain that
> ideal. (B. Russell, *Vagueness*).

Both in the case of colloquial language and in the case of special-
ized scientific language we always have to face the essential issue:
what must we do in order not to be misled by an incorrect use
of language? When we refer in general to being misled by some
use of language we have two cases in mind: *primo*, when the
language in question wrongly performs its communicative func-
tion so that the speaker is unable to convey his ideas to the
listener, and, *secundo*, when the language by means of which we
think imposes on us, through its structure and forms fixed by
tradition (in the case of natural languages), incorrect ideas about
reality (cf. the issues of hypostases). The causes of such and similar
difficulties are varied. These difficulties, among other things, sug-
gest the idea that language is not only an instrument, but also
an object of research, an idea which induced twentieth century
philosophers to engage in the study of language in its ontological,
gnosiological, and methodological aspects. The method of se-

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mantic analysis, understood as a method of analysis of meanings of words, is directed precisely against these shortcomings of language. That method is meant to prevent semantic and logical errors that encumber the process of thinking with difficulties and hamper communication both with others and with oneself. Among other causes, these errors are due to the ambiguity and vagueness of words.

I abstain here from the issue of obscurity of statements that formulate some ideas in an incomprehensible way. And it is irrelevant whether the speaker deliberately wants to clothe his ideas in incomprehensible forms (as is done by certain philosophers who manifest their "professional pride" in esoteric thought), or whether he is unable to make correct statements because of his incompetence. In either case we have to do with errors that are subjective in nature and, as such, less interesting.

It is quite different when it comes to statements containing ambiguous and vague words.

Ambiguous words are those which, despite similar sounds or combinations of sounds, have different meanings (homonyms). They are objective linguistic facts that can be explained by the history of the language in question. The danger of confusion of different meanings and the resulting danger of misunderstandings and logical errors in reasonings are reduced by the fact that ambiguous words usually become unequivocal when they appear in the context of a sentence or a group of sentences, since the context determines that meaning which has been actually referred to in the given case. Moreover, the simple operation of pointing out *expressis verbis* how an ambiguous word has been used in a given case, eliminates the danger of misunderstandings. That is why this case, too, may be disregarded in the present analysis.

We shall, on the other hand, engage in the study of vague words. In doing so we shall be interested in the ontological aspect of that issue, i.e., in the problem of the origin of vague words, and in discussing whether their vagueness is subjective or objective by nature. The method of determining the degree of vagueness, and of eliminating vagueness, and of using vague words in a precise manner (in the literature of the subject discussed, respectively, by Max Black in his essay on *Vagueness*, and by T. Ku-

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biński in his paper, *Vague Terms* [in Polish]), is an important issue, but it is secondary to the ontological analysis of the origin and causes of vagueness of words. For as long as that issue is not solved we are unable or hard put to determine how to eliminate or restrict vagueness.

IS VAGUENESS SUBJECTIVE?

In order to answer the question formulated above we must first formulate with precision what is meant in this paper by a "vague word." In my analysis I shall base myself on two papers which I believe to be the most important in the literature of the subject, namely on Bertrand Russell's essay, *Vagueness*, and on an essay by Max Black bearing the same title.

The issue investigated in the literature of the subject (including the two essays mentioned above) is principally, if not exclusively, that of vague *names.* I think that that is an unjustified restriction of the object of study which should cover all words. For if such a name is vague which has a fringe, i.e., divides the universe of discourse into its own extension (the class of its designata) and its complement (the class of objects which are not its designata) in such a way that there are objects which cannot be included in either class, then a similar property is shared by words that are not names. For not only names, i.e., substantives and adjectives, but also verbs, adverbs, and conjunctions are often vague in that sense of the word. Now, if we may face difficulties (as we shall see later, not for subjective reasons) in answering the question: "Is that a river?" when the class of objects that can be designata of the name "river" happens to include such with reference to which it is impossible to say whether they still are rivers or not (for they may be torrents, streams, etc.), then we may likewise encounter difficulties in endeavouring to answer such questions as "Is that object red?," "Does it walk?" (or does it creep, crawl, etc.), "Is that a noble act?," "Has he behaved bravely?," etc. Thus we have to do with vagueness in the sense defined above (i.e., that there are such actions, modes, relations, etc., about which it cannot be said—and that not for subjective reasons— whether given words are adequate to them or not) not only in the case of names having as designata individual objects or classes

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of such objects, but also in the case of other words which say something about objects, their action, or mode of action. As shall be seen later, doubts may also be raised (as they are by Russell) as to the sharpness of meaning of such words as *or*, *not*, etc., which appear as logical constants. Consequently, we shall hereafter speak broadly about vague words, and about vague names in such cases only when for some reason we shall be particularly interested in names.

Before proceeding to define more strictly the vagueness of words and to investigate its origin, we must first give an explicit answer to the question: Of what is vagueness an attribute? Is it an attribute of language expressions, or of the reality referred to in those expressions? This is a significant issue for the study of the subjective, or objective, nature of the vagueness of words.

For a clear demarcation line must be drawn between the *origin* of the vagueness of words and *that of which* vagueness is an attribute. Both questions are somehow connected with the issue of the nature of vagueness, an issue we are interested in, but they are so from different aspects and in different ways.

In his essay, already quoted above, Russell wrote that vagueness is a property of that which represents things (language being an example of such a representation), and not of things as such. "Apart from representation, whether cognitive or mechanical, there can be no such thing as vagueness or precision; things are what they are, and there is an end of it" (p. 85). I am in full agreement with that statement which I consider highly significant for the understanding of the problem under discussion. Things are neither vague nor sharply defined, as they are neither true nor false, etc. Things always are just things. What is vague is our knowledge of things and the linguistic statements which express that knowledge, in the same way that that knowledge and the corresponding linguistic statements are true or false. In the case of vagueness, as in the case of truth, we have to do with certain properties of the *relation* between knowledge (which always is a unity of thought-and-language) and reality, and not with any properties of reality as such.

But the answer to the questions: *Why* is knowledge, or the corresponding linguistic statement, vague? Is that fact due to

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objective or subjective causes? is a different issue. To answer these questions we must revert to the definition of vagueness.

Let us begin with the problem of names (I follow Kotar-biński in interpreting the term "name" so that to be a name is tantamount to being usable as a predicate complement in all sentences of the type "A is B," with the basic interpretation of the copula *is*). We distinguish between individual and general names, i.e., such as denote a single object only (there is a one-one relation between the name and its designatum) and such as denote many objects (the corresponding relation is one-many). Let us now pose the question: What is a vague name, and what is its relation to the categories of names enumerated above? For that purpose we shall analyse a name which beyond all doubts is classified as vague.

Now, water flows along its bed eroded in the ground. Let us suppose we have to do with the Vistula near Warsaw, with the Thames near London, with the Seine near Paris. We say without hesitation: the Vistula, the Thames, the Seine are rivers. Thus the word "river" is a general name (since the relation involved here is one-many) of such objects as the Vistula, the Thames, the Seine. In very many other cases we also have no difficulty in stating whether or not we have to do with a river, for instance in the case of the Volga, the Danube or the Mississippi. The decisive factor is the length and the width of the channel in which the water flows. But on our globe there are many such objects which are water flowing in a channel, although their number is finite. The lengths, the widths and the depths of their channels vary. Suppose we have arranged all these objects as a sequence according to the indices of the three dimensions of the channels in which the water flows, from the largest to the smallest. Let us now try to provide these objects with names, using such expressions of our language as "river," "stream," "rivulet," "spring," etc. We shall easily see that at both extremes of the sequence we have to do with objects which cause no difficulties in choosing appropriate names for them, but the more closely we approach the midpoint of the sequence the greater our difficulties. We can easily quote cases in which we do not know whether a given object is to be called a river or a stream. And the difficulties are due not to our ignorance but to the blurring, in the limiting cases, of the properties characteristic of the two

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names to be distinguished (in the present case these properties are the dimensions of channels). In such cases we usually say: a small river, or: a large stream. Yet all this does not eliminate the problem, but merely shifts it further away: for how shall we distinguish between a river and a small river, between a stream and a large stream? If between the extension of a name and its complement there is a border area (metaphorically called *penumbra* by Russell) which for objective reasons—lack of clearly defined criteria—cannot be classified as one or the other, then it is no way out of the difficulty to devise a new name for that area or else abstain from giving it any name whatever. In such a case the issue remains where to draw the demarcation line between that specific no-man's land between the fronts of rival names and the areas incontestably covered by the name in question and its negation, respectively. (As has been correctly pointed out by Kubiński, the name-forming functor *not* in this case serves to form not a contradictory, but an opposite name, which reveals the following characteristics: the extensions of both names are disjoint and included in the universe U, and the sum of their extensions is a proper subset of the universe U.) Thus, the issue remains, despite the fact that the *margin* of a vague name may be shifted further and further by the introduction of new distinctions and names. All this has been stressed by Russell. It must be added that the solution most often resorted to in science, i.e., sharpening the definitions of terms by conventions, does *not* settle the issue (although it may be of great importance for practical behaviour), but merely shifts the border of the "fringe." For if we adopt the convention that by a "stream" we mean an object which is a mass of water flowing in a channel that is not wider than five meters, and that analogous objects with wider channels are called "rivers," we merely shift the problem, since it is well known that to determine whether or not something is more than five meters wide involves problems of the "fringe" analogous to the distinction between the river and the stream, although the problems of measurement in this case may prove much subtler.

What has been stated above in the course of an analysis of the name "river" occurs in the analysis of such expressions as "red," "bald," "heap of stones," "noble," "brave," etc., that is, in all cases in which the names concerned serve to determine quali-

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tative differences between objects on the basis of sense data, moral and aesthetic valuation, etc., subject to gradation. The issue reduces itself to the following: when dealing with a series of objects designated by a common name and revealing quantitative differences of certain properties—sequences of colors, attitudes, modes of behavior, etc.,—which are described by common names and which also reveal quantitative differences measurable in some respect on a certain scale, we have to do with a continuum or with distinguishable "quanta" of changes. Only in the latter case could we speak, even theoretically, of a definite point dividing the universe into the extension and the complement of a given name. Unless a method of such quantification is known—and it is not—all endeavours to define precisely the margin of such a name, and thereby to remove its vagueness, are doomed to failure.

This creates a new problem from the point of view of Marxist dialectics which, following the statement by Hegel that quantitative changes at a certain moment bring about a qualitative change, seems to suggest that the Marxists believe in such a "quantification" of all changes. Obviously such an interpretation, which, moreover, is not supported by any empirical proof provided by the specialized disciplines, would be, to say the least, incautious, and besides it is quite unnecessary. Dialectics need not associate its law with any belief in such a "quantification" of changes, or with the conviction that names are perfectly sharply defined. Transition from quantitative into qualitative changes can quite well be interpreted not as an ideal point in an ideal moment of time, but as a segment of a time period of some duration. This applies not only to social revolutions, which have long been interpreted by dialectics as *periods*, but also to other cases of "jumps" in development.

The same can be applied to an object which is changing continuously in some respect and which may alternatively be designated e.g. as "young" and "old." In this case the sequence to which a given general name applies consists not of a class of different objects possessing a common property that can vary in degree, but of different stages of development of one and the same object, stages that differ from one another by degrees of a certain property. The problem is the same as before: Is the sequence continuous, or is it somehow "quanted?" And the answer is the same as before.

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We have touched here on the issue of the origin of the vagueness of names. But for the time being we are concerned only with a definition of a vague name and its relation to individual and general names. Such a definition can be formulated on the basis of the examples adduced above. In these examples we always have to do with the relation between a name and the set of objects it denotes, with the proviso that the domain of the name is not well defined (it has a vague "fringe"). Thus the definition in question might be: *a name is vague when it denotes many objects the class of which is not strictly defined.* The same line of reasoning is followed by Black who says: "... vagueness is indicated by the finite area and lack of specification of its boundary" (p. 31). Black criticizes Russell for having confused generality and vagueness of names, which in fact can be found in Russell's paper (*"Per contra*, a representation is *vague* when the relation of the representing system to the represented system is not one-one, but one-many" [p. 89]), but in the same paper Russell correctly distinguishes between vagueness and generality of statements, and Black's definition clearly follows the track of that reasoning ("It follows that every proposition that can be framed in practice has a certain degree of vagueness: that is to say, there is not one definite fact necessary and sufficient for its truth, but a certain region of possible facts, any one of which would make it true. And this region is itself ill-defined: we cannot assign to it a definite boundary. This is the difference between vagueness and generality" [p. 88]).

As far as the applicability of the definition of vagueness to the categories of names distinguished above is concerned, the case is obvious when it comes to general names. General names may, but need not, be vague. It might be said that the generality of a name is a necessary, but not a sufficient, condition of its vagueness. Thus, e.g., the name "planet," in the sense of a planet of our solar system, is general, but not vague as far as its extension is concerned: the class of planets consists of nine objects known to us. But if the generality of a name is combined with the indefiniteness of the boundary of the class of objects which it denotes (for example "river"), then the name is vague.

But the fact that a name is vague is some respect does not imply that it must be vague in some other respect. An example

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is offered by those individual names which denote single concrete objects and as such are not vague as to their extensions (we disregard here the trivial case when the same name is an individual name of many objects, e.g., when many persons have the same first name and the same surname, both of them common in a given country), but at the same time are vague if we consider certain processes (e.g., the life of an individual from his birth to his death), and the same name is used to denote the various stages of that process (in particular, birth and death are processes too, and hence the problem, whether or not the given name is *already* applicable in the former case, and *still* applicable in the latter). Thus the issue of the vagueness of individual names emerges when an individual name is crypto-general, and denotes a sequence of consecutive stages of development of a given object.

The study of verbs and adverbs as grammatical categories would not contribute anything new to the principles of determining whether or not a word is vague, all the more so as in both cases we can easily switch over to the category of substantives (e.g., from "to walk" to "the walking," from "nobly" to "nobility"), and although we shall have to do with apparent names (onomatoids), as always in the case of abstract names, the problem we are interested in can be presented in a manner identical with that expounded above.

Such words as "slowly," "quickly," "much," "little," "some," "few," etc., are vague in the very intention of those who use them, since they have to state something (about certain objects) that either cannot be strictly defined or is not precisely known to us. That is why we are not in a position to proceed beyond such a vague statement which, while dividing the universe of discourse by means of disjoint words, does not divide it exhaustively, so that there remains a certain subset belonging to that universe with reference to which it is not possible to decide whether the use of any of the two words is justified.

An interesting problem is presented by the logical constants, such as *or*, *not*, etc. According to Russell, they too are vague, since their meaning in logic is defined in a manner which implies the truth or falsity of sentences, so that the issue of vagueness is indirectly involved. The word *or* is defined by Russell so that "p or q" is true when p is true, and when q is true, and false if and

only if p is not true and q is not true. That is why Russell is justified in his scepticism about the precision and sharpness of meaning of the logical constants, although such properties of logical constants are usually assumed. "All traditional logic habitually assumes that precise symbols are being employed. It is therefore not applicable to this terrestrial life, but only to an imagined celestial existence. Where, however, this celestial existence would differ from ours, so far as logic is concerned, would be not in the nature of what is known, but only in the accuracy of our knowledge. [...] On this point I agree with Plato. But those who dislike logic will, I fear, find my heaven disappointing." (pp. 88-89)

From this there is but one step to the stand, actually taken by Russell, and also by Black who follows him in that respect, that *all* words are vague. I do not see any necessity to draw so radical and so extreme a conclusion. Of course, it can always be demonstrated that a word is vague in some respect. But in some other respects words do happen to be sharply defined, and there is no need to deny that. It suffices to say that cases of vagueness of words do occur and that they are frequent (anyhow more frequent than is usually believed), and that vagueness is objective in nature.

That issue will be dealt with below. But let us first conclude the analysis of the definition of a vague word. By paraphrasing the definition of a vague name we shall say that a word is vague when it has a "fringe." This occurs directly when a given word states something about certain objects (not necessarily *denotes* those objects, since that is a function of names) in such a manner that the sum of the "extension" and the "complement" of that word (i.e., the cases to which the given word—e.g., "walks," "slowly," etc.—applies, and the cases to which it clearly does not apply) do not exhaust the given universe of discourse. It occurs indirectly when the definition of a given word (for instance, a logical constant) is involved in sentences containing vague words.

But what is the origin of that vagueness, and what is its nature, objective or subjective? I wish to draw attention to the practical aspect of that question. One or another answer to that question will determine the possibilities and methods of our struggle with the vagueness of words, a vagueness which not only hinders the communication process, but also gives rise to specific paradoxes which undermine the logical foundations of human

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thinking. Let us bear in mind that the principle of the excluded middle holds only with reference to well-defined words. And where the validity of the principle of the excluded middle is impaired, we have to face the danger of logical contradiction (were it only on the strength of De Morgan's law). This has been convincingly demonstrated by Black (p. 36), who suggested, as a solution, a different interpretation of the word *not* when it refers to vague words (this idea has been taken up by Kubiński with reference to vague names). Were the issue reducible to a subjective imperfection in handling expressions of a language, the situation would, of course, be different from that characterized by objective factors. And what are the facts?

Black firmly declares for the objective nature of the vagueness of words, his criterion by which to distinguish objectiveness from subjectiveness being as follows: are the properties of the vagueness of words facts that pertain to human behaviour (i.e., psychological facts) or facts that pertain to the physical world? The solution is correct, although the criterion is wrong, for vagueness is an attribute of words, and not of things. Yet the vagueness of words is not something purely subjective, due to ignorance or error. At the root of vagueness rests the relation between words and the objective reality referred to by those words. And from the properties of words and of reality it follows that words cannot serve as a precise mapping of the full richness of reality to which they refer. The importance of that issue requires a deeper analysis. The problem was treated by Russell both peripherally and inconsistently, as will be shown later. And Black is interested chiefly in the methodological aspect of the struggle against the vagueness of words, and has only just alluded to the ontological issue involved. And the issue is far from trifling.

Criticism of verbalized cognition, that is, standard scientific cognition or cognition in the current sense of the word, broadly interpreted, had been carried out by the various philosophical schools. The motif can be traced from Plato to Bergson. And if we reject the irrationalistic consequences of that criticism, which usually led its authors to an unjustified belief in some non-verbal direct "true cognition," we obtain its rational element, namely the emphasis laid on the imperfection of linguistic means as an instrument serving to map reality.

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Those verbal signs which generalize are a result of the process of abstraction. We are concerned with the meaning of the verbal sign and we always find in it a result of abstraction due to classification, which chooses a certain property as its criterion and rejects all other properties as unimportant from a given point of view. That is why verbal signs, like other products of logic, are static, rigid, and non-flexible. I mean to say that a verbal sign immobilizes in its meaning the picture of reality to which it refers, even if it refers to motion and change; for even to these phenomena it refers in a classifying sense, i.e., brings out their common properties and generalizes them in the form of certain categories. I further mean that a verbal sign maps reality through its meaning by imparting to that mapping a rigid, non-elastic frame which by means of classification separates given things, their properties, behaviour, etc., from the surrounding world as a whole. The more precise a given term, and the more rigorous from the logical point of view, the more sharply outlined and striking are those properties of the verbal signs.

And reality is changing and moving in every fragment and aspect which interests us, connected by an infinite number of links and mutual relationships with other fragments and aspects of the objective world. If we disregard that changeability, those links and interrelationships, we obtain, so to say, a cross-section, an anatomical preparation of reality. And what else can we obtain if we squeeze changing reality into a Procrustes' bed of categories which disregard that changeability, and endeavour to map a fragment of reality, linked with the rest by all-embracing interrelationships, by means of verbal signs with rigid boundaries, the less flexible the more they are "sharp." If we look from that angle, at the relation between verbal signs and reality, a relation that consists in the mapping or "reflection" of that reality by language categories, we see clearly that language is not adjusted to the object it has to map, so that the relation of reflection of reality by language is not one-one. This fact must be kept in mind when we analyse facts of the language. Of course, this is not meant to lead to the metaphysics of "true cognition," supposed to be non-verbal and non-intellectual. No logical bridge spans the gap between empirical linguistic facts and metaphysical speculations.

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But we may learn something here with reference to the vagueness of words, and to the origin of that vagueness.

Verbal signs are vague not because they are imperfect (which might suggest that there exist technical means with which to eliminate that imperfection), but because there is a relation of "maladjustment" between a rigid classification in some respect of real phenomena and those real phenomena themselves, which by their changeability and transitions from one state to another defy all rigid classification. Of course, if reality defies the classification imposed by a given verbal sign, this phenomenon takes place on the fringe of the area covered by classification and can be restricted by making the verbal sign in question "sharper." The limit of "maladjustment" can be shifted (in the sense that by making a verbal sign "sharper" we reduce its fringe), but cannot be eliminated. The reason has been shown above: what is changeable and linked with other fragments of reality cannot be fully mapped by means of categories which grasp as motionless that which is changing, and squeeze into rigid classifications that which overflows all artificial boundaries by the richness of shades, gradations, and transitions to other phenomena with which it is linked.

Is that an essential defect of language, a defect which bars us from acquiring knowledge of reality, as is claimed by the irrationalistic propounders of "true cognition?" Not in the least. All measurement made by means of an instrument is burdened with an error. But it suffices to know the limits of that error to be able to evaluate its consequences in our reasoning. There is a definite, though incomplete, analogy between this and language. It suffices to know the nature of error in the mapping of reality by verbal signs, in order to be able to render that error to a certain extent innocuous by means of other signs of that language. Anyhow, the limits of the error can be shifted, the error can be reduced to the point where idealization, i.e., the consciously false assumption that there is no error at all, is permissible and justified not only in practice but in theory as well.

The "maladjustment" of verbal signs to reality is thus objective in nature. This fact does not prevent us from acquiring knowledge of reality by means of a language consisting precisely of such

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"maladjusted" signs. The point is only to know the nature and the scope of that "maladjustment."

Both Russell and Black agree in principle with such a standpoint, although in Russell's case we have an interesting duality of views. On the one hand, he is firm in stating that every verbal sign is vague and that a logic which used signs perfectly free from vagueness would be suitable for the study of some Platonic celestial entities (that is, ideal entities, characterized by changelessness), and not of terrestrial entities (this implies recognition of the fact that verbal signs are "maladjusted" to changeable reality). On the other hand, however (due to the metaphysical assumptions of logical atomism), he does not reject the idea of a perfect, ideal language in which the vagueness of words would disappear. This would happen if that language were built on the basis of one-one relations between verbal signs and (atomic) facts of reality. Apart from all other objections, the prospect of such a language is really disastrous, and will be discussed later. The issue, however, takes us directly to that of an ideal language as a means to end the struggle with the vagueness of language expressions.

THE "PERFECT LANGUAGE" AND THE LIMITS OF VAGUENESS

Thus we come back to the linguistic troubles referred to at the beginning. Complaints of errors in thinking and communication due to language, and the comprehension of the role of language in the process of thinking, are as old as philosophy itself. They can be found in the *Upanishads* and in Chinese philosophy, and develop into a powerful trend in ancient Greek philosophy. And in modern times explicit statements on that subject are to be found in the works of Descartes and Berkeley, Bacon and Leibniz, to mention only a few. Yet the idea of a perfect language, expected to overcome all the shortcomings of language and the errors resulting therefrom, is closely connected with logic. Its peak coincides therefore with the development of contemporary logic in its mathematical form. Here too one could go back to the Stoics and refer to Raymundus Lullus and above all to Leibniz as the forerunners, but the fully developed and theoretically founded idea of an ideal language is a product of the period when logic came to face the task of overcoming the antinomies dis-

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covered at the root of the foundations of mathematics and logic, and when it became clear that the scientific use of language requires a restriction of some of its uses and that language ought to be not only an instrument but also an *object* of cognition and research. What symbolic logic then achieved in its struggle with the obscurity, imprecision, and vagueness of every-day language was so important that it could give rise to euphoria: even if the level of a perfect language has not been reached, we are on its track. The symbolic language of logic is that language, or at least the path leading to a perfect language—such was the conviction common among logicians in the early twentieth century.

It is not to be wondered then that Bertrand Russell, who together with A. N. Whitehead in *Principia Mathematica* created in the beginnings of our century the most developed language of this type, was inclined to consider it perfect, or at least nearing perfection. Russell also wrote in *Principia Mathematica* that it was a language which had syntax, but no vocabulary. It tended to become a language which upon investigation of the vocabulary involved would be a logically perfect language. As has been rightly stated by Warnock, Russell was convinced that the calculus he had invented reproduced, so to say, the skeleton of everyday language, and language consists of that skeleton clad with the flesh of words.

Since Russell's views on that matter reflected opinions and beliefs then very popular among logicians, they deserve a brief study of their evolution.

As is now almost universally recognized in the literature of the subject, Russell's views of the perfect language were closely connected with the metaphysics of logical atomism. The conviction that the universe consists of simple atomic facts was accompanied by the conviction that their logical counterparts are atomic propositions and that, if it were possible to establish a one-one relation between the two, language would be perfect and would eliminate all vagueness, all lack of precision, and the danger of hypostases. That is why it is very interesting to watch how that line of reasoning led Russell to the study of the vagueness of words. When beginning a series of lectures on logical atomism in 1918, Russell at the very outset (cf. *Logic and Knowledge*, pp. 179-180) raised the issue of vagueness. He stated that it was

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an interesting thing that the data with which philosophizing begins are vague. In his opinion, sound philosophizing consisted mainly of the transition from obvious, vague, and ambiguous things with reference to which we have a feeling of certainty, to something precise, clear, and definite, which—as is shown by reflection and analysis— is involved in those vague things with which we start; it constitutes, so to say, the real truth of which that vague thing is a sort of shadow. We find here not only the idea of a perfect language hidden somewhere behind the surface of the vagueness of words, but also the metaphysical, clearly Platonic hinterland (which Russell did not deny) of beliefs on which that idea is based.[1] But just a little later, he reverted to the problem of vagueness and wrote that should he have more time and should he know more, he would willingly devote a full lecture to the problem of vagueness. Russell put his intention into effect three years later in his lecture on *Vagueness*, already referred to above. There the picture was different, though by no means unequivocal. On the one hand, Russell came to the conclusion that the vagueness of words is not only a common phenomenon, but also that it cannot be eliminated and that, consequently, a logic that presupposes ideally sharp definitions of its symbols is applicable only to Platonic celestial entities. On the other hand, however, he did not abandon his idea of a language the signs of which would bear a one-one relation to facts, and which would thus avoid the inconvenience due to the vagueness of words.

Wittgenstein's *Tractatus Logico-Philosophicus*, which continued Russell's ideas, made its appearance shortly after. Russell wrote the Introduction to that work, which gave him an opportunity again to formulate his opinion on the ideal language. "In order to understand Mr. Wittgenstein's book," he says, "it is necessary to realize what is the problem with which he is concerned." And that focal problem is: "In the part of his theory which deals with Symbolism he is concerned with the conditions

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[1] Russell's Platonism was connected whit his concept of mathematics, above all with the concept of such categories of set theory as the class. And his doctrine of logical atomism was based on a clearly metaphysical assumption that the universe consists of some atomic facts which correlate with atomic propositions, to discover which is the purpose of philosophical analysis.

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which would have to be fulfilled by a logically perfect language."
(p. 7) The principal condition to be satisfied by that language
consists of the already known requirement of a one-one relation
between the words of that language and simple facts. "A logically
perfect language has rules of syntax which prevent nonsense, and
has single symbols which always have a definite and unique
meaning." (p. 8) The fact deserves attention that Russell interprets
Wittgenstein's ideas of a perfect language in the spirit of a scep-
ticism which we already know from his essay on *Vagueness*: a
perfect language is not something that is actually given or acces-
sible, but is only an ideal model for which we strive, without
ever being able to attain it fully. "Mr. Wittgenstein is concerned
with the conditions for a logically perfect language—not that any
language is logically perfect, or that we believe ourselves capable,
here and now, of constructing one logically perfect, but that the
whole function of language is to have meaning, and it only fulfils
this function in proportion as it approaches the ideal language
which we postulate." (p. 8)

Russell's ideas were transplanted to continental Europe
through Wittgenstein, in the paradoxically exaggerated form
which he had given them in his *Tractatus Logico-Philosophicus*.
They caused euphoria in the school of nascent logical positivism,
and were occasionally transformed into a veritable mythology of
symbolic language. Since the language of symbolic logic was
believed to be a perfect language, or at least was supposed to
lead to perfection, some people initiated a real worship of logical
symbols in the conviction that any triviality clad in a symbolic
form, became a nearly perfect statement. That characteristic ma-
nifestation of shamanism on a sophisticated cultural level passed
away in the West rather quickly and now belongs to the past.

It is interesting in this connection to watch the further de-
velopment of ideas of the two principal protagonists of the idea
of a perfect language, namely Russell and Wittgenstein.

The latter soon abandoned the ideas expounded in his *Trac-
tatus* and, as far as the analysis of language and the evaluation
of formalized languages is concerned, adopted a quite opposite
position, as can be seen from his *Philosophical Investigations*
which matured already in the twenties. In one place there (p. 12)
he is quite self-critical when saying that it is interesting to compare

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the large number of linguistic tools and the ways of using them, as well as the large number of types of words and sentences, with what the logicians (including himself) have said about the structure of language. Later Wittgenstein not only abandoned the worship of the formalized language as the perfect language, but even initiated the shifting of analysis into the sphere of natural languages which he came to consider the proper object of research of linguistic philosophy. That trend, which referred to the common-sense tradition of Moore's philosophy, came to be dominant in the Oxford school. This led to a controversy with Russell, a controversy which recently flared up quite openly in a passionate discussion of E. Gellner's book that was a violent attack upon linguistic philosophy in the Oxford style. Although Russell abandoned the position he occupied at the time of writing *Principia Mathematica*, as far as the issue of a perfect language is concerned, and has many times sharply criticized logical positivists for their conventionalism and for analysing language in separation from extra-linguistic facts, i.e., as a purely "linguistic" issue (cf. *An Inquiry into Meaning and Truth*, and also his essay *Logical Positivism* of 1950), he nevertheless does not follow Wittgenstein and does not renounce a formalized language as a model. His attitude on that issue is inconsistent and vacillating: on some occasions he emphasizes the common vagueness of words and thereby shifts the ideal of a perfect language into "celestial" spheres; but on other occasions, he comes back to the idea of such a language as a model and then comes to think again about eliminating the vagueness of words by defining one-one relations between them and facts.

But it is not essential what the authors whose works are discussed here think about their own ideas. Whatever such people as Russell and Wittgenstein think about their own conceptions, we may and ought to form some opinion on the issues of the vagueness of words and of a perfect language.

First of all, one comment which is peripheral to the concept of a perfect language, but important with reference to the ideas of Russell and Wittgenstein. As has been mentioned above, so-called logical atomism, with which their views of a perfect language were connected, had its metaphysical hinterland. This consisted in the conviction that the universe is formed of some simple

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atomic facts, and that there is a one-one relation between atomic propositions and atomic facts. This specific theory of reflection, in a radical form expressed by Wittgenstein, assumes that the said relation consists in a structure that is common both to linguistic and to extra-linguistic facts. The perfect language was expected to have the property that the comprehension of its structure led to the comprehension of (extra-linguistic) reality. But in order to know whether a given language is really perfect, in the sense that its structure corresponds to that of (extra-linguistic) reality, we have first to know the structure of that reality. Thus, contrary to the assumption made, a perfect language cannot serve as an instrument of a philosophical analysis of (extra-linguistic) reality. The requirement that we should first build a perfect language and then use it as a tool in investigating the ontological structure of (extra-linguistic) reality includes a vicious circle.

This argument (repeated after Irving M. Copi) is, however, incidental to the principal issue, since the belief in the existence of a perfect language need not be associated with a program of metaphysical investigations of the structure of (extra-linguistic) reality. Much more important is the criticism of that idea, to be found in British authors such as Strawson, Urmson, Warnock, and others.

Their criticism goes in two directions: 1) the belief that the language used in *Principia Mathematica* is perfect is refuted by the fact that other rival formalized languages have been built since, which too may pretend to the role of the perfect language dreamt of by Russell; 2) the perfect language was supposed to function better than a natural language, and yet natural languages cannot be translated into a formalized language of the type used in *Principia Mathematica.*

The first argument requires no comment. Let us briefly discuss the second.

If, following Russell and Carnap, we assume that to describe a language we need syntactic rules and a vocabulary, it can easily be demonstrated that the calculus built on that basis will cover only part of what is usually taken to belong to everyday language. The logician is interested only in declarative sentences, and orders, questions, demands, etc., cannot be translated into the language of that calculus. But that is not all. The observance of

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syntactic rules, which among other things determine which place in a sentence may be occupied by words belonging to specified semantic categories, does not safeguard us against absurdities of the type: "Monday is rectangular," and yet a perfect language ought by definition to safeguard us against absurdities. Finally, transformation rules pertaining to sentences (such rules being part of syntax) do not guarantee that transformations will be correct if we abstract from the context, i.e., if we do not know from another source that reference is made to the same object in the same time segment.

But these objections might be waived (as is explained, e.g., by Warnock) by assuming that logical calculus discloses the structure not of language in general, but of the language of science, from which everything that is not a declarative sentence may be eliminated; that that calculus is a perfect language in the sense of an ideal construction; and that this is an abstract and simplified way of presenting certain essential aspects of language.

But even by adopting that argument we do not settle the important issue of vague words, with which we are principally concerned in this paper. The perfect language was expected in the first place to remove that defect of language. Can it carry out that task and, if so, to what extent?

As we have seen, all the endeavours to eliminate completely the vagueness of words, including the determination of meaning by convention, are unsuccessful. There remains only one suggestion more, which must be analyzed. It consists in a construction which, by introducing a one-one relation between the word and the fact, would completely remove the issue of vagueness, since it would eliminate the possibility of its development as a relation holding between one word and an indetermined number of facts. That is a radical recommendation, which unfortunately amounts to throwing the baby out with the bath water. The vagueness of words in fact disappears, but at the cost of cancelling the possibility of abstract thinking. Such a prospect justifies our previous description of Russell's idea as disastrous. We know that every word generalizes, that the process of abstraction is a process of generalization. If every word by definition is to become individual, and if we thereby renounce the possibility of generalizing, we have to work two miracles at the same time: the miracle of

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forgetting the system of abstract thinking, as shaped by the history of the human race, and the miracle of remembering an infinite number of words (not to speak of producing them) that would correspond to an infinite number of things and phenomena. *Nota bene*, that extravagant idea has nothing to do with the idea of a formalized language as a skeleton of a perfect language, for a formalized language is based on the opposite principle of rising to the highest levels of abstraction.

Thus it may be said that if the solution indicated by Russell is the only way of eliminating the vagueness of words, then that vagueness cannot be eliminated. Personally, I would go even further and claim that an ideal delineation of meanings of words is not only impossible to attain and thus resembles the notorious squaring of the circle, but also that it would be undesirable.

To explain this standpoint let us resort to an analogy. The philosophers who in some form or another realize the role of the subjective factor in cognition have for centuries been troubled by the problem of absolutely objective cognition. That was why Kant, a realist for all his recognition of an objective existence of the world, developed a subjective and idealistic conception of phenomenalism, a conception which reduces the picture of the world to a subjective construction of the cognizing subject, and trasforms the world of the *noumena* into a postulate based on unjustified faith. In our time Karl Mannheim, guided by similar considerations, passed from the recognition of a social conditioning of human cognition to an extreme relativism which denies any possibility of objective knowledge in the sphere of social phenomena, and trasforms the objective existence of those phenomena into the specific Kantian *Ding an sich.* In both cases the role of the subjective factor in cognition was rightly taken into account; but in both, too, false and extremely sceptical conclusions concerning the possibility of objective cognition were drawn from that observation. We are unable to eliminate the influence of the subjective factor upon cognition where that factor is connected with the objective conditions of cognition: the apparatus of perception will, of course, remain our human apparatus, and our consciousness will not, in any miraculous way, free itself from its own social conditions in which it has been shaped. The limitations of the apparatus of perception result in specific limitations

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of human cognition: certain things we are unable to perceive at all, although we could perceive them with a different apparatus; and other things are always perceived in a specific way, although with a different apparatus we could perceive them in a different way. And yet, do we not overcome these limitations, do we not learn to perceive things that under normal conditions are inaccessible to our senses, do we not correct the errors committed by our senses and eliminate some of the limitations that are imposed on them? It is the same with the social conditioning of our consciousness and with other forms of influence of the subjective factor upon our cognition. Practice shows that our cognition is objective, although its objectivity is certainly not absolute and manifests itself in an infinite progress of our knowledge. That indubitable progress of human knowledge of the world proves that we can achieve objective cognition without trying to solve the problem of the squaring of the circle, i.e., without endeavouring to achieve ideal objectivity of cognition, realizable in a single act of cognition, and to eliminate all the limitations of our cognition, limitations which because of their nature do not succumb to our will and cannot be eliminated. The ideal of an absolutely objective and absolutely complete cognition, that is, cognition that would satisfy the criterion of absolute truth, presupposes extra-human or superhuman cognition. At one time Joseph Dietzgen, a German worker who came to formulate the basic ideas of Marx's philosophy on his own, independently from Marx, referred the advocates of such angelic cognition (it was a discussion with neo-Kantians) to the world of angels, and requested them not to interfere with us in this vale of tears. And he was right.

Mutatis mutandis, the same can be said with reference to language as a means of thought and of human communication. It is handicapped with a number of imperfections, including the vagueness of words, due to causes discussed above. Shall we then try to solve the squaring of the circle, i.e., endeavour to eliminate absolutely that shortcoming which cannot be eliminated in an absolute way and try to build a "perfect" language, which cannot be built? Experience teaches us that that is not necessary, that by improving the language, as much as is necessary under given conditions, we attain our cognitive objectives without undertaking

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tasks which cannot be carried out. The history of the problem shows us that the idea of a perfect language, born in the atmosphere of euphoria due to the vertiginous successes of symbolic logic and the construction of formalized languages, miscarried. We are unable to build a language consisting of words absolutely sharply defined, but on the other hand we need not do that. We are in a position to add as much precision to the meanings of words as we need in a given case, and to handle vague words with precision. Consequently, we have at our disposal all that is necessary for improving our language and our cognition, and so we may leave the "perfect" language to the angels, following the pertinent advice of Joseph Dietzgen.

First of all we must see clearly that the squaring of the circle, which preoccupies so many people to this day, is just a hindrance, in addition to being unnecessary. The limits of precision of our statements depend above all on the task set before cognition. Measurements made by means of an electronic microscope for the needs of everyday life would not only be unnecessary, but would hamper us in our usual activities. Consequently, no one has ever come up with such a crazy idea. The same holds for language expressions. Since the idea of establishing a one-one correspondence between words and facts has proved a failure, words must be vague. Often, too, they are ambiguous in the sense of being homonymous. But there are also other factors which lead them away from ideal unequivocality. Language not only serves the purpose of conveying information, but also has an emotional function which manifests itself in the way a word is spoken out, etc. Thus the ambiguity and the vagueness of a word are multiplied in the actual use of that word. In a sense this is advantageous, for the more elastic a word the greater its possibilities of expression. On this issue there is a radical divergence of views between the logician and the linguist.

But what about the precision of statements, what about the struggle against the vagueness of words, which after all in certain cases may give rise to serious errors? Language has a number of means with which to counteract that. They vary from the simplest and the most often used, such as situation and context which in most cases help to avoid misunderstandings that might arise as a result of ambiguity; to definitions which practically enable us to

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shift the "fringe" of vagueness in the direction of the limit which is the ideal precision of a word; or, if this is necessary in science, to idealizations which consciously introduce the fiction of ideal precision in the same way as in geometry we use fictions of an ideal straight line, an ideal point, and ideal geometrical figures.

Practically, the precision of words knows no boundary, although we never attain the limit of ideal precision. And that is the most important point, provided that we fully realize that the limits of precision needed are a function of the practical or theoretical task which we set ourselves. It is only in such a context that we can solve the problem of the formalized languages, used in mathematics, and in some cases in logic, and in particular the problem of their claim to the status of a perfect language.

After all that has been said above we may without much ado abandon the term "perfect language," since it is just a myth. On the other hand, it is true that there are more and less precise languages, consisting of more and less vague words, and languages which in that sense are more or less perfect. As far as the formalized languages met in the sphere of logic are concerned, I am most inclined to share the opinion that they are constructions which, owing to abstraction and generalization, reflect in a simplified way (thanks to which they are in a position to acquire exceptional precision in that respect) certain important relations occurring in languages. Thus they reflect a certain reality, but as a reflection they are simplified on account of their abstractedness. This creates the possibility of imparting exceptional precision to words belonging to those languages and, thereby, a convenient position for the study of relations between those words, relations presented in a simplified way. This procedure is necessary for certain research purposes; and for this reason, the development of formalized languages and studies in this field, must be considered great scientific achievements. But that is necessary, and consequently useful, only for *certain* research purposes. If we go outside these limits we may encounter serious dangers. First of all, the danger of blurring the fact (which Russell many times criticized in logical positivists) that the study of language is not autonomous and may not be treated in abstraction from extra-linguistic facts (which was suggested by the restriction of studies to investigations of the syntax of formalized languages), Further,

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the danger of impoverishment of the functions of language, if they be confined to those simplified relations which occur in the formalized languages.

Practical conclusions from the above are as follows:

We ought not to exaggerate in the search for appearances of precision interpreted as a symbolic form of statements, when such a precision is not necessary for the purpose of research. This is so because no outward form of a statement will eliminate the vagueness of words where such a vagueness is their objective property, and also because a triviality clad in the form of symbolic notation (which still occasionally occurs, although the peak period of that ridiculous mannerism belongs to the past) does not cease to be a triviality. At the most, it may impress the uninitiated, on the principle of the superstition that incomprehensible things must hide some inscrutable wisdom. In saying this I do not mean to deny that in certain cases symbolic notation is necessary and useful. For some selected groups of people it may have a communicative value, since it makes certain analyses more comprehensible to them. Symbolic notation may also have heuristic importance, since sometimes the very form of a statement written down in symbols stimulates the mind of the researcher, which does not happen in the case of the usual script or improperly chosen notation. Finally, symbolic notation may also facilitate solution of certain problems. Hence the conclusion that, without attaching any undue, absolute importance to symbolic notation, we ought to learn to choose the suitable language to the needs of a given research problem.

We may strive for precision of statements and of terms used, insofar as that is dictated by our needs in a given case. But we should bear in mind that sharpening the tools is never a task in itself. Exaggeration in toying with "adding precision" to the terms we use may prove no less deplorable than a carefree use of vague terms and obscure statements. For the habit of adding precision to statements just for the fun of it threatens a complete sterility of thought. There is no end to such "adding precision" to terms, and he who does not know when to stop, is doomed to Sisyphus' labour. And that is why we must warn against a wrong use of the otherwise extremely useful and respectable method of semantic analysis. For the Utopian requirement of an *absolute* precision

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of statements and terms, and the feasible and justified requirement of their *optimum* precision, adjusted to the needs of the various disciplines and research problems, are two quite different things.

BIBLIOGRAPHY

MAX BLACK, *Vagueness* (in *Language and Philosophy*), Cornell University Press, 1949.

IRVING M. COPI, *Artificial Languages, Language, Thought and Culture*, The University of Michigan Press, 1958.

ERNEST GELLNER, *Words and Things*, London 1959.

T. KUBINSKI, "Nazwy nieostre" [Vague Names], *Studia Logica*, Vol. VII.

B. RUSSELL, A. N. WHITEHEAD, *Principia Mathematica*, Vol. I, "Introduction," Cambridge 1925.

B. RUSSELL, "Vagueness," *Australasian Journal of Psychology and Philosophy*, 1923.

B. RUSSELL, *The Philosophy of Logical Atomism*; *Logical Atomism*; *Logical Positivism* (in *Logic and Knowledge*; *Essays 1901-1950*), London 1956.

B. RUSSELL, *An Inquiry into Meaning and Truth*, London 1940.

B. RUSSELL, *The Analysis of Mind*, London 1921.

P. F. STRAWSON, *An Introduction to Logical Theory*, Methuen, London 1952.

J. O. URMSON, *Philosophical Analysis*, Oxford 1956.

G. J. WARNOCK, *English Philosophy since 1900*, Oxford University Press, 1958.

L. WITTGENSTEIN, *Tractatus Logico-Philosophicus*, London 1933.

L. WITTGENSTEIN, *Philosophical Investigations*, Oxford 1953.