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AN EXAMINATION OF LOGICAL POSITIVISM

By

JULIUS RUDOLPH WEINBERG, Ph.D.

Cornell University

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PART III

THE ELIMINATION OF METAPHYSICS AND THE POSITIVISTIC THEORY OF KNOWLEDGE

In the preceding sections I presented the first part of the programme of the Viennese Circle, the establishment of the foundations of science by logical methods. Now I turn to the elimination of metaphysics. By the logical analysis of significant discourse, metaphysics will be shown to be meaningless.

The principles on which this elimination depends are the same as those used for the logical foundation of science, namely (1) the sense of a proposition is the method of its verification, i.e. the possible fact on which its verification depends (2) the sense of propositions containing defined signs depends on the sense of propositions in which the signs occur by means of which the aforementioned signs are defined, (3) the truth of non-elementary propositions depends on the truth-value of the elementary propositions from which they are derived, (4) true elementary propositions exist, and therefore the atomic facts which render them true exist.

The determination that a given series of signs alleged to express a proposition is significant depends on the reduction of the group of signs to elementary propositions by tautological transformations, definitions, and other methods of logical syntax.

If a propositional sign can be dealt with in this fashion it is significant. Otherwise it is not. It is easy to see, therefore, how metaphysics is to be eliminated from significant discourse. No way of determining the method of verifying

metaphysical assertions can be given either by syntactical rules or by an empirically possible test. This is the thesis of Logical Positivism.

In this part we shall observe the attempted demonstration of the thesis in the treatment of specific examples of metaphysical propositions. I shall present one of Carnap's examples and then one which I have selected by way of contrast.

The principles which are used to demonstrate that metaphysics is nonsense lead to two rather catastrophic consequences so far as Positivism is concerned. First these very principles contain " metaphysical " assertions, i.e. assertions which cannot be verified by the methods of Positivistic logic. Second the principles render much of science nonsensical by implying a solipsism of language.

These difficulties lead to a first revision of the principles to eliminate the metaphysical assumptions and to avoid the solipsism. This is what I have called the Theory of Knowledge of Positivism. It is really Rudolf Carnap's system of the *Logischer Aufbau der Welt*. I shall present and criticize this system in the third chapter of this part.

Chapter VI

ELIMINATION OF METAPHYSICS

In this chapter I shall follow the accounts of Carnap, Schlick, Frank, and other members of the Circle, together with the doctrines of Wittgenstein which I considered in previous chapters.

The first question that confronts us is: What is metaphysics? If metaphysical assertions are to be eliminated from significant discourse by means of logical analysis, it is important to know the distinguishing characteristics of metaphysical assertions. It is easy enough to recognize what Positivists regard as a metaphysical statement. For example, " one substance cannot be produced by another substance," [1] " To be is to be perceived," [2] " The ' I think ' must be able to accompany all of my representations," [3] " Actuality is the unity become immediate, of essence with existence, or of inward with outward," [4] are all metaphysical assertions. It is more difficult to determine what they have in common.

According to the Logical Positivists all assertions of metaphysical character are non-empirical. In other words no empirical method of determining the truth of metaphysical assertions is given. This is, I believe, a true characterization of metaphysics. Unfortunately it is also a characteristic of many of the doctrines of Logical Positivism.

A metaphysical statement, then, is a non-empirical proposition with existential import. The Positivists hold that such statements are pseudopropositions. The principal

[1] Spinoza, B., *Ethica*, Prop. vi, part i.
[2] Berkeley, G., *Principles of Human Knowledge*, i, 2.
[3] Kant, Immanuel, *Kritik der reinen Vernunft*.
[4] Hegel, G. W. F., *Encyclopaedie I Theil*, 142.

ground of this contention is that neither logical demonstration nor any method of experiment can reveal the facts enunciated in such statements. Beyond the methods of apodeictic reasoning and experimentation there is no third method of ascertaining meaning and truth.

Metaphysicians would hardly be inclined to question the ascription of non-empirical character to their assertions. The sources of the alleged metaphysical truths are, therefore, non-empirical criteria of meaning. It is impossible to enumerate all of these criteria here but some of the better known may be mentioned.

Some metaphysical systems are constructed by a combination of intuitive and deductive methods. Such are the great rationalistic systems of modern philosophy, those of Descartes, Spinoza, and Leibniz. Certain concepts are presented as luminously clear and distinct, therefore absolutely simple, and hence as providing a point of departure for the deduction of the general features of reality.

Other systems are possible schematic structures into which experience may be fitted. The claims made for such theories are: (1) that they consistently account for all varieties of experience, (2) that, while the theory itself is not *a priori* necessary, some theoretical presupposition of experience must be posited, and (3) the theory in question is probably true.

Still other methods of metaphysical construction could be listed here, but these are sufficient to bring out my contention. Whatever method is used, metaphysics is unquestionably a body of assertions which do not admit of empirical verification. The meanings of such assertions are, therefore, not determined by a method of verification which is empirical or experimental in character.

In a system of metaphysical assertions which are deduced from a set of axioms, two characteristics may be noted. In the first place the axioms must not be postulated arbitrarily or simply believed. They must rather be

evidently certain truths. The truth of a metaphysical axiom must, that is, be seen from the mere examination of the axiom. The definitions must contain no concepts save those whose meanings are clear whenever they are presented. In the second place truths deduced from such axioms coincide with necessities of logic, and falsehood becomes self-contradiction. Whatever is called "possible" or "contingent" must accordingly be the result of doubt or the privation of ignorance. This is the character of mathematical systems, the axioms of which are considered to be *a priori* certain. *A fortiori* it is the character of deductive metaphysical systems. This shows that empirical or experimental determinations of truth and meaning are excluded from such systems as certainly as they are from mathematical systems.

In a system of metaphysical assertions which are not deduced but constructed in some other way, it is equally evident that an empirical test of meaning and truth is out of the question. Two possibilities arise: (1) the assertions made by a philosopher are determined empirically in respect of truth and meaning. In this case the assertions are simply true or false and coincide with branches of the natural sciences, (2) the assertions are not empirically determined as to truth and meaning, but are, nevertheless, existential in import. In this case a method of verification, i.e. a criterion of significance, is used which is not empirical. No metaphysical assertion, therefore, is empirically determined in respect of meaning and truth.

It is the non-empirical character of metaphysics which is the principal target for the attacks of Logical Positivism. Significant assertions are limited to the empirically verifiable; metaphysics is non-empirical and, therefore, nonsense.

The anti-metaphysical part of the Positivist programme consists of two steps: first the demonstration that all propositions are reducible to the elementary propositions which are immediately verifiable in experience; second the demonstration that errors in logical syntax are

responsible for metaphysics. Although I have given the essentials of the first step in the first chapter, I shall repeat them in a slightly different form to recall the principal ideas which are essential for the present purpose.

According to Carnap [1] and other Positivists, logical analysis of meanings, while it consists in relating propositions to the empirical world, is not an empirical activity and its accomplishment does not require the presence of any empirical data. Logical analysis of meaning is conducted within the sphere of language and consists of (1) the reduction of complex meanings to simple ones by means of definitions, tautological transformations, equations, and other rules for manipulating symbols, (2) the presentation of the forms of propositions in order to reveal the essential, internal properties of the symbols in so far as the *rules* of symbolism have not already made this clear, and (3) demonstrative elucidations.

The principle on which this procedure depends is: The meaning of a proposition is the method of its verification. It is important that this principle should not be misunderstood. It is not to be interpreted as signifying that the meaning of a proposition is its verification. This would lead to two absurdities: (1) a proposition could not have sense unless it was verified, (2) false propositions would have no sense. On the other hand, it is clear that if a proposition can be verified at all it must have sense prior to its actual verification. The phrase "method of verification" must be taken to mean "what would be the case if the proposition was true". As Schlick has expressed it, the meaning of a proposition is the possibility of the state of affairs which it represents.[2]

A slight digression will suffice to explain what possibility means in Wittgenstein's theory. The "possible" as a modal predicate is, of course, excluded from the theory at

[1] Carnap, R., "Überwindung der Metaphysik durch logische Analyse der Sprache," *Erkenntnis*, Bd. ii.
[2] Schlick, M., "Meaning and Verification." Forthcoming article in the *Philosophical Review*.

the outset. "Certainty, possibility, or impossibility of a state of affairs are not expressed by a proposition but by the fact that an expression is a tautology, a significant proposition, or a contradiction." [1] Possibility can best be understood in this way: Given a set of facts which have some common constituents and some common components, it is seen that a certain constituent, say "*a*", occurs in several different facts, F_1, F_2, F_3. . . . It is clear, then, that a fact of the same structure as any one of the set, F_1, F_2, F_3 . . ., and containing "*a*" is a possible fact. "Possibility" is thus a term indicating that a fact is imaginable or constructible because it has the form and constituency of facts which have occurred. For example, it is known that a specific hue ϕ_1 has occurred as the colour of several different objects, and that a given object is a coloured object. Then, although ϕa may never have occurred, the fact is imaginable, i.e. constructible, because all the constituents and the component of such a fact are known to have existed. The "possible" fact is the subject-matter of a proposition perhaps not known to be true but known to contain names of objects arranged in a way which has been realized in true propositions.

When the sense of a proposition is described as the possibility of the state of affairs which it represents, what is meant is that the *kind* of fact represented by the proposition has existed. A proposition may, therefore, also be described as the construction of a possible fact for the purpose of experiment.[2]

It is not necessary, of course, to have an "image" of the alleged fact which is asserted by a proposition in order to understand the sense of the proposition.[3] It is simply necessary to know the method by which the proposition would be verified; possession of a mental image of the alleged fact is only one of several ways of knowing the method. Another way would be to know the logical form

[1] Wittgenstein, op. cit., *supra*, 5.525. [2] Wittgenstein, 4.031.
[3] So it is said, at least. But it would seem necessary to the understanding of the elementary proposition to be able to imagine its referent, and, without an image, it is difficult to see how this could be the case.

of the proposition, and this is given in the definition of the terms of the language in which the proposition occurs. It is clear, then, what is meant by the statement that the sense of the proposition is the method of its verification.

For the sake of convenience I shall adopt Wittgenstein's terminology and speak (1) of the meaning of names and other ingredients of symbols, whereas when propositions are in question I shall speak generally of their *sense*. It is then possible to give an exhaustive list of all kinds of symbols, signs, etc., in order to explain the logical syntax of language as Wittgenstein conceives it. The logical language of the *Principia Mathematica* is the model from which Wittgenstein derives his own system of language.

The categories of Wittgenstein's symbolism are as follows :—

(I) Undefined primitive signs.

(*a*) Names of objects. (An object is any ingredient of a fact ; a name is the designation of an object.)

(*b*) Functions of the names. (These represent the manner in which names are composed and thus the structure of the fact.)

(*c*) The logical constants or operations. (Only one is required since all logical constants are definable in terms of this one, namely the stroke " / ", interpreted either as mutual rejection [neither . . . nor . . .] or as incompatibility [. . . is incompatible with . . .].)

(*d*) The elementary proposition. (This is a combination of names in some quite definite way, the way being indicated by the functional sign.)

(*e*) Forms of elementary propositions and general forms of functions and operations.

(II) Defined signs.

(*a*) Any truth-functions involving the primitive truth-functions, " / ".

e.g. P implies $Q = df.\ \overline{P/P/Q}$

P implies $Q = df.$ not-(P and not-Q).

(*b*) Any truth-function of a specific form of propositions.

e.g. $aR|S\ c = df\ a\ R\ x\ .\ x\ S\ c$

Relative product of two relations = logical product of $aRx.xSc$.

(*c*) Any truth-function limiting the scope of an apparent variable.

$$(x)\phi x = df.\ \phi a.\phi b.\phi c.\phi d.\phi e$$
$$(\exists x)\phi x = df.\ \phi a \vee \phi b \vee \phi c \vee \phi d \vee \phi e$$

(*d*) Specific instances of the application of operational schemata or forms.

e.g. $\Omega^{\nu}\,`\Omega`\chi = df.\ \Omega^{\nu+1}\,`\chi$

$N\,`N^{\nu}\,`P = df.\ N^{\nu+1}\,`P.$

This list (perhaps not entirely complete) may be summarized as follows : Language consists (1) of names, the use of each of which is predetermined by those elementary propositions in which a given name occurs : (2) of the elementary propositions thus formed ; (3) of truth-functions of the elementary propositions all of which are defined in terms of a single primitive function, the stroke ; (4) of definitions of truth-functions ; (5) of real variables which exhibit (*a*) the structure of facts or (*b*) the structure of sign-complexes ; (6) of nominal definitions of sign-complexes.

The meaning of the names is determined by the sense of the propositions in which the names occur. The sense of any truth-function of a group of elementary propositions is determined by the sense of the elementary propositions and by the way they are combined in the truth-function. Hence the sense of any complex proposition presupposes the sense and truth of the elementary proposition, whereas the sense of elementary propositions presupposes only the way in which the objects are possibly or actually combined with one another. All defined signs signify in and through the signs by which they are defined. Ultimately these signs occur as parts of the elementary proposition or as forms of the elementary propositions. Everything in symbolism finally depends, therefore, on the elementary propositions

and these depend on the empirical structure of the world. It is consequently impossible to say anything which is not finally connected with some possible or actual empirical fact or other.

The elimination of metaphysics by means of logical analysis simply consists of showing that, within a correctly constructed language, metaphysical (i.e. non-empirical) terms occur only in such sentences as cannot be reduced to the elementary propositions. The application of the rules of the language (nominal definitions and demonstrative symbols [1]) would always show that some error in the construction of symbols had occurred whenever metaphysical sentences or terms were found in the language. These sentences or terms would be, therefore, without any significance.

Thus the Viennese Positivists divide sentences into two mutually exclusive groups, namely significant sentences or propositions and non-significant sentences or pseudo-propositions. Significant sentences or propositions are capable of verification. This is a tautology, since, by definition, a capacity for verification constitutes the significance of the propositions. Non-significant sentences are not capable of verification. In this latter case the incapacity of verification is not merely a practical impossibility. When it is said that a proposition is theoretically unverifiable, this means that no method of verification can be given in the nature of the case. It may be that a given proposition is significant even though there is no method at present by which it may be verified. The lack of means of verification in this case is not a theoretical lack but a practical one. We do not, for example, possess the instruments necessary to verify statements about the other side of the moon or about the interior of the stars. This inability is simply the lack of technical facilities. Verification is, therefore, out of the question because of the lack of these

[1] What Schlick, op. cit., calls " deictic definitions ".

technical devices. Nevertheless, we can formulate the rules by means of which such a proposition as " There is a mountain on the dark side of the moon " would be verified. It is altogether otherwise in the case of theoretical incapacity of verification. It is impossible to formulate the rules by means of which verification would proceed in this case. For example, it is theoretically impossible to verify the statement " Adjectives love analysis ". It is likewise impossible to verify the statement " The Babig is green ". Again, " 'Twas brillig and the slithy toves Did gyre and gimble in the wabe " is incapable of verification. In all these the syntax of the propositions is not known. There is, therefore, no method of determining what would be the case if these alleged propositions were true. This is true not only of these cases of obvious nonsense, but also of all non-empirical assertions.

The Cartesian resolution of doubt is a capital illustration of the metaphysical misunderstanding of the logical syntax of language. For the Continental rationalists, two of the most important sources of knowledge were intuition and deduction. The *cogito ergo sum* may be interpreted either as the expression of an immediate intuition or as a deduction. Either interpretation reveals the senselessness of the statement. On the hypothesis that it is the expression of an immediate intuition, it would be necessary to show that " I think, therefore, I exist " was composed entirely of names representing objects. This cannot be done because what is given here is the immediate presentation of a feeling. From such a feeling the proposition " this is a thought-feeling " may be formed. The other words occurring in the cogito, viz. " I ", " therefore ", " exist ", cannot possibly be fitted into the context of an elementary proposition. This refutes the hypothesis that the cogito expresses a primitive fact of intuition. On the hypothesis that the cogito is an inference (which Descartes and Spinoza expressly deny) it would have the form :—

" I think " implies " something thinking exists ". But

the antecedent must be changed to " something thinks " from the consideration just mentioned. We have, then :—

" Something thinks " implies " something thinking exists ". This, in logical symbolism, is $\phi u . \supset . (\exists x)\phi x$, which is a tautology. Tautologies assert no facts because, as has been shown above (Chapter II), they are entirely concerned with symbols. In this case ϕu is one way of saying $(\exists x)\phi x$. Nothing has been demonstrated about the world. On this hypothesis, the cogito is a deduction but it presents nothing new, and, moreover, does not demonstrate what Descartes attempted, i.e. that a simple, identical, substantial, and spiritual entity exists.

The important thing to notice about this treatment of the cogito is the elimination of the first person from the proposition. The means of determining the sense of " I think " cannot be given, so that, in this form, the proposition is meaningless, whereas if it is changed to " something thinks ", the deduction " a thinking thing exists " is evidently no new information. Consequently nothing metaphysical could be intuited or inferred from the proposition.

I believe that the method of logical analysis as it is applied to eliminating the pseudoassertions of metaphysics may best be shown in some more detailed cases. Carnap has given a good illustration of the analysis of some pseudo-propositions. I shall add to this an analysis of faulty deductive procedure in metaphysics.

According to Carnap (in agreement with Wittgenstein, Schlick, and others), the logical syntax of a language fixes the meaning of every word and the sense of every proposition in the language. Errors of interpretation of meaning and sense can, therefore, be traced to two principal sources :

(1) words are used in propositions which have no determinate meaning.

(2) a word which possesses a meaning in the context of certain propositions is used in the context of other propositions in which it has no meaning.

" 'Twas brillig and the slithy toves," etc., is an example of the first sort of error. (I have not forgotten that Carroll supposed that we could make words mean whatever we wished. The Positivist denies just this thing.) " Adjectives love analysis," " Cæsar is a prime number," and " Substance is essence including its own existence," are all examples of the second species of error.

To show how metaphysical nonsense arises and also how it can be corrected, Carnap selects some passages from Heidegger's " Was ist Metaphysik ? " The most important of these passages is the following : " Only the existing is to be studied, and otherwise—nothing ; the existing alone and further—nothing ; the existing uniquely and beyond this—nothing. What about this *nothing* ? Is there *nothing* only because there is *not*, i.e. *negation* ? Or is it just the converse ? Do *negation* and *not* exist only because *nothing* exists ? We assert that *nothing* is more primitive than *not* and *negation*. Where do we seek for *nothing* ? How do we find it ? We know it. Care reveals *nothing*. Why and wherefore we experience care is ' essentially ' *nothing*. In fact, *nothing* itself—as such—was there. What is the condition of *nothing* ? The *nothing* itself nothings." (This is not a complete connected passage but is selected from several different sections of Heidegger's essay.)

Carnap then proceeds to analyse this passage in order to show that it consists almost wholly of senseless series of words, that is sentences with which no sense is combined and which, as a consequence, are pseudopropositions. The pseudopropositions arise because of the violation of the rules of logical syntax. The errors in syntax are, in general, of one or both of the kinds mentioned above, viz. the use of words which have no determinate meaning of any kind, or the use of words in a context to which they are wholly unsuited, even though the words have meanings in some contexts.

" In order," writes Carnap, " to show that the possibility of constructing pseudopropositions rests on a logical mis-

understanding of language, let us set up the following schema :—

I. Significant Propositions of Ordinary Language	II. Genesis of Nonsense from Significance in Ordinary Language.	III. Logically Correct Language
A. What is outside ? outside (?) Rain is outside outside (rain).	A. What is outside ? outside (?) Nothing is outside outside (nothing).	A. There is not something which is outside. $\sim(\exists x).x$ is outside.
B. What about this rain ? (i.e., what is the rain doing, or what more can be said about the rain ?) ? (rain)	B. What about this nothing? ? (nothing)	B. None of these forms can be constructed.
(1) We perceive the rain. perceive (rain).	(1) We seek the nothing. We find the nothing. We perceive the nothing. perceive (nothing).	
(2) The rain rains. rains (rain).	(2) The nothing nothings. nothings (nothing).	
	(3) There is a nothing only because . . . exists (nothing) . . .	

" The propositions in I are grammatically as well as logically free from objection, hence, significant. The propositions in II (exception B (3)) stand grammatically in complete analogy to those in I. The propositional forms, IIA (a question and answer), do not satisfy the requirements placed upon a logically correct language but they are, nevertheless, significant, since they can be translated into correct language ; this is shown by the fact that IIIA has the same sense as IIA. The unsuitable character of the propositional form IIA is shown by the fact that we can be led from it to the senseless propositional form IIB by grammatically unobjectionable operations. . . . The formation of the proposition (in IIB) simply rests on the error that the word ' nothing ' is employed as the name of an object since one is bound to employ it in this form in order to formulate a negative existence-proposition in ordinary language. In a correct language, on the other hand, a certain logical form of the proposition (IIIA) serves the same purpose without introducing an especial name.[1] In proposition IIB (2) something new is introduced, namely the formation of the meaningless word ' to nothing ' ; hence the proposition is senseless on two counts. We have shown above that the

[1] i.e. negation of existence is expressed by the prefix $\sim(\exists x)$ . . . rather than by the substantive " nothing ".

meaningless words of metaphysics usually arise in this way, that a meaning is assigned to a significant word by its metaphorical employment in metaphysics. Here, on the contrary, we have one of the infrequent instances of a new word being introduced which has no meaning to begin with. Proposition IIB (3) is likewise to be rejected on two counts. It agrees with the foregoing propositions in the error of using the word ' nothing ' as the name of an object. Moreover, it contains a contradiction. Even if it were permissible to introduce ' nothing ' as the name or description of an object, the existence of this object would be denied by its definition but would be asserted again in proposition B. This proposition, if it were not already senseless, would be contradictory and thus meaningless.[1]

" In view of these logical howlers, which we find in the proposition IIB, we might entertain the suspicion that perhaps the word ' nothing ' has a meaning in the treatise cited completely different from other usages. This suspicion is further strengthened if we read further that care (*Angst*) reveals the *nothing* ; that, in care, nothing itself is present. Indeed, here it seems that the word ' nothing ' is to designate a certain intuitive conception, perhaps of a religious sort, or something which lies at the foundation of such an intuition. If that were the case then the logical errors mentioned in regard to the proposition IIB would not occur. However, the beginning of the passage quoted shows that this interpretation is out of the question. From the comparison of ' only ' and ' and nothing further ' it follows definitely that the word ' nothing ' has here the usual significance of a logical particle, which serves for the expression of a negated existence-proposition. Then this introduction of the word ' nothing ' is followed directly by

[1] Carnap would now distinguish between " unsinnig " and " widersinnig ". A contradiction is not " unsinnig " but rather " widersinnig ". For this see Husserl, E., *Logische Untersuchungen*, 2. Bd., p. 326, and also Wittgenstein, *Tractatus*, 4.461, " Tautology and contradiction are without sense (*sinnlos*)," 4.4611 " Tautology and contradiction are not, however, senseless (*unsinnig*) ; they are a part of the symbolism just as " 0 " is a part of the symbolism of arithmetic."

the principal question of the treatise 'what about this nothing?' . . . Hence we find a good corroboration of our thesis." [1]

Carnap suggests that the other metaphysical usages of the word "nothing" such as, e.g., Hegel's assertion that "Pure being and pure nothing are the same", can be treated with the same kind of analysis and likewise shown to be nonsense.

The principal points of interest in Carnap's analysis reveal the way in which pseudo-propositions, *qua* propositions, arise in discourse. Most metaphysics involves the use of another kind of error not explicitly treated by Carnap in the article from which I have just quoted. This is the faulty deductive procedure characteristic of most rationalism and idealism. I think it not out of place to present some application of positivistic analysis to this type of error.

As everyone knows, the fundamental presupposition of rationalism is the doctrine that ratiocination is somehow capable of discovering the truth about the world. The qualification that every specific truth may not be discovered is, as has been frequently pointed out, not to be regarded as an essential limitation of the rationalistic method. This limitation depends, it is said, on the temporal limitation of human understanding, rather than on the power of the rationalistic method itself. It is supposed to be sufficient if the *general* features of reality are adumbrated. I shall not question this point.

The principal difference between rationalistic and empiristic theories in respect of meaning and truth are, as I have noted above, the following :—

(1) For rationalism (especially deductive rationalism), the criterion of the meaning of a concept is to be found in the concept itself or in some other concept which contains the meaning of the concept in question.

[1] Carnap, "Überwindung der Metaphysik," *Erkenntnis*, Bd. ii, pp. 229–232.

For empiricism (here I restrict myself to Positivistic empiricism) the meaning of a concept is to be found in other concepts which determine its meaning and, finally, in the reference of the concepts to the data (i.e. something not conceptual at all).

(2) For rationalism, the truth of an assertion is either evident from the nature of the assertion or is deducible from other assertions.

For empiricism the truth of an assertion depends either on the truth of other assertions or on the correspondence of the sense of the assertion with the data which lie beyond discourse altogether.

Truth, in rationalistic systems, thus becomes identified with evident or deductive necessity, and falsehood with evident or deductive impossibility. In empiristic systems the truth of assertions cannot be determined by an examination of the assertions as such; truth can only be established, in the final analysis, by a comparison of an assertion with its alleged datum. These observations make it abundantly clear that rationalism insists on our capacity to deduce or intuit the truth about the world.

One further observation is necessary before I proceed to analyse the method of rationalism. The species of deductive method employed by rationalistic philosophers differs radically from that employed by empiristic philosophers. Empiricism requires the extensional logic, whereas rationalism requires a logic of intension. The essential difference between these two logical systems consists of the relation in which concepts stand to one another. The relation of the subject and predicate of assertions in the two logical systems reveals the difference as well as any other example. Let S stand for the subject of an assertion, P for the predicate, $\subset$ for inclusion. Then, $S \subset P$ in extension, whereas $P \subset S$ in intension. The syllogism in Barbara is likewise differently interpreted in the two logics. Thus "$A \subset B$ and $B \subset C$ implies $A \subset C$" in extension, whereas "$B \subset A$ and $C \subset B$ implies $C \subset A$" in intension. The difference

in syllogistic meaning is even more marked when a negative premise is introduced. Thus, in intension, "A includes B and B does not include C does not imply A excludes C," whereas, in extension, "A is included in B and B is not included in C implies A is not included in C."

This difference shows how it is possible, granting the validity of intensional inference and the legitimacy of the claim that certain simple concepts ostensibly contain a whole group of other concepts, to deduce the general features of reality from a concept sufficiently rich in comprehension. It also shows how such a concept may be derived by the converse procedure, namely the derivation of the "fullest" concept from relatively empty ones by demonstrating their dependence on other concepts and the latter on others until the ultimate and independent concept is attained.

This method was pursued by, for example, Spinoza, who derived reality from the concept of substance. I do not mean to give the impression that Spinoza did not employ many axioms and definitions ostensibly different from the concept of substance. The point is that some of the definitions are redundant, while others are contained in the concept of substance. Other definitions are simply the correlatives of the essential properties of substance. Thus "cause of itself" and "substance" are redundant, "free" is a part of "substance", "finite in its kind" is a correlative of "infinity". It is true also that "postulates" are introduced at several points. But these postulates are entailed by the general nature of reality, i.e. they follow from the concept of substance implicitly or ostensibly. Similar, though not identical, methods are used by idealistic philosophers. In Spinoza's case it is easy to establish the erroneous character of such a deduction. Complex concepts entail all the simpler concepts composing them. From a simple concept, however, more complex concepts cannot be derived by deductive procedure (nor, in fact, by any procedure). Now the concept of substance is either simple or complex. If it is absolutely simple, nothing can be deduced

from it, whereas if it is complex only those concepts can be deduced from it which are contained in it as constituents. In the former case the derivation of any feature of reality is impossible; in the latter the concept of substance is composed of a group of concepts which determine its meaning. Whatever is deduced in *this* case is already contained in the concept *ex hypothesi* and nothing is revealed that was not already known. The intensional logical method is an attempt to avoid this result. Accordingly it is supposed that concepts may enter into other concepts in another way than by composition. It is then possible to maintain (1) that a concept is simple and (2) that it contains other concepts. This is, it must be admitted, difficult to maintain, except in a very restricted class of cases which are irrelevant to the present issue, e.g. "x is red entails x is coloured".

If it *is* maintained, another difficulty is encountered from which there is no escape. If the concept is simple it will not be possible to ascertain what concepts are derivable from it. This difficulty is not overcome simply by the doctrine that one concept can contain other concepts in another way than by composition. Not only is the latter doctrine wholly unexplained but also, even if accepted, the doctrine cannot tell us what we can derive from the simple concept. Thus the intensional logic presents two dogmas without any supporting evidence: (1) that a concept can contain other concepts without being a composition of them, and (2) that deductions can be made from the simplest concept.

The only way out of these difficulties is to admit that the whole rationalistic procedure is a mistake. Whenever deductions are made from propositions, the deduced proposition is wholly or partially identical with the original. In either case nothing has been proved about the world. If $P \supset P$ then the same thing is merely repeated. If $P \supset Q$ (necessary, i.e. tautological, implication is meant), then P must be composite and Q must be one of its parts. Here less is said in Q than was said in P. Again, nothing is proved.

If this is true then the intensional method is based on the

erroneous supposition that a concept or an assertion can contain other concepts or assertions in some other way than by being complexes of the latter. With the elimination of this error, the entire structure of rationalism falls. The statement of Hume—that the sort of rationalistic argument which has been considered is " nothing but a mere imperfect definition "—definitely settles the whole matter. The deductions of rationalistic logic, i.e. intensional logic, are deductions from implicit definitions. As long as the rationalist refuses to define his original terms, he is subject to the criticism which Positivists bring against metaphysics, namely that the meaning of its concepts and the sense of its assertions cannot be made determinate. If, however, the terms in question are defined, the deductions from them are purely tautological transformations of the definitions and thus establish nothing.

Similar considerations obtain for the method of rationalism. It depends, as I have said, on two unjustified theses: (1) That intuition is a form of knowledge through which simple concepts may be known and (2) that a mode of reasoning is possible which is distinct from the extensional method of logic.

* * * *

These illustrations suffice to show the method of positivists in eliminating metaphysics. All metaphysical problems may be treated in this way. The analysis of causation, of the alleged freedom of the will, of the concept of existence, and so on, can be accomplished by similar applications of logic.[1]

The point at issue between Positivist and metaphysician is now clear and can be stated without reference to any particular problem. Is there any method of explaining the world of science and everyday experience other than the reduction of propositions (which allegedly provide such an

[1] See Frank, P., *Das Kausalgesetz und seine Grenzen*, Wien, 1932, for an analysis of causation; Schlick, M., *Fragen der Ethik*, Wien, 1930, pp. 105–111, for an analysis of the concept of free-will; *Principia Mathematica*, vol. i, 14, for an analysis of the concept of existence.

explanation) to the elementary propositions whose sense is completely determined by the real or possible empirical facts with which they are concerned? The metaphysician answers affirmatively and claims a special method whereby the meaning of non-empirical concepts and the truth of non-empirical propositions is revealed to him. The Positivist claims that syntactical analysis makes it logically impossible that such a method exist. The grounds for the metaphysician's claim have been, generally speaking, intuition, deduction from intuitively certain propositions, and similar non-empirical sources of knowledge. The Positivistic grounds for rejecting the validity of this claim have been the establishment of a logical language ultimately based on the elementary propositions, in which metaphysical speculation is logically impossible. In this language metaphysical sentences can be given no sense. The rejection of metaphysics is, I believe, fundamentally sound. It is in place, however, to ask whether the Positivistic principles on which it is based are wholly sound in themselves. Does the Positivistic analysis contain any metaphysics? If not, does it contain anything equally objectionable?

In the first place it seems best to put aside a petty objection to the Positivistic treatment of language. While it is true that no language has been constructed which is logically perfect (complete, demonstrably consistent, etc.), it is an admissible fiction to assume the existence of such a language if the general rules for its construction are known. Moreover, ordinary language is of such a character that rigorous logical analysis cannot be carried on within its limits. One of the many reasons for this is the following: In a logically perfect language the sense of every proposition is determined by the elementary propositions to which it is reducible. The rules for such reduction are explicitly given in the proposition. For example, the sense of " *a* is northwest of *b* (in a flat map) " is determined by its translation or reduction into " *a* is north of *x and x* is west of *b* ". In a language in which the rules determining the sense of

propositions are not explicit, the following situation might arise [1] :—

Assume that there are two languages, S and S', such that every proposition of S corresponds to a proposition of S' (with the same sense as the proposition of S) ; the converse does not obtain. It would then be possible (1) that a proposition P of S would be translatable into a proposition P' of S', (2) that P' of S' could be transformed into some given P'_1 of S', (3) that, however, no translation could occur between P of S and P'_1 of S' or between any proposition of S and P'_1. Thus :—

(1) P is identical in sense with P' and a rule to show this exists.

(2) P' is identical in sense with P'_1 and a rule to show this exists.

(3) By syllogism, if $P = P' . P' = P'_1$ we should have $P = P'_1$,

but since there is no rule by which P or any other expression of S is translatable into P'_1, $P = P'_1$ cannot be asserted. Hence S is an incomplete language because there are propositions in S' equivalent to propositions of S which cannot be expressed in S. Another way of saying the same thing is that some of the rules for the determination of sense are implicit or latent in S. As long as this is the case, logical analysis cannot be successfully carried out in respect of S. The language of everyday life and even the language of *Principia Mathematica* are incomplete in this sense. It is, therefore, an admissible fiction to suppose that a language exists in which every sense is determined by explicit rules. Consequently it is a petty and ineffective criticism to urge that ordinary language does not have the structure required to eliminate metaphysics. The possibility of such a perfect language has been, in essentials, shown to be genuine because we can state the conditions which such a language would have to fulfil.

[1] This example is from Ajdukiewicz K., " Sprache und Sinn," *Erkenntnis*, Bd. 4, Heft 2, p. 120.

There are, nevertheless, two serious objections which may be raised against the theory of language through which metaphysics is allegedly shown to be nonsense. First, the criterion of sense depends on an assumption for which there is neither logical nor empirical justification. Second, the theory of language which depends on the criterion of sense cannot be expressed. Thus there is the paradox of a theory of logical syntax which cannot be formulated.

In the first chapter I showed that the doctrine of logical atomism could not be proved by Wittgenstein's argument about the infinite regress of meaning. It is impossible to demonstrate the existence of ultimate simples by means of the assumptions about language (in particular, about the sense of propositions) ; conversely, the assumption of logical atoms cannot prove that language is absolutely unambiguous in Wittgenstein's sense. The univocality of sense depends on the simple nature of objects, yet the simple nature of objects is not a sufficient reason for the existence of univocal propositions. Nothing can be satisfactorily demonstrated either way from the logical point of view.

If the existence of elementary propositions, that is propositions the sense of which is univocally and immediately determined by the atomic facts, cannot be demonstrated, the doctrine that the meaning of all concepts is grounded in the empirical world remains unproved, assuming that empiricism involves atomism as some Logical Positivists evidently assume. The elimination of metaphysics, however, depends on this unproved dogma. Metaphysics, therefore, cannot be eliminated from significant discourse by this method.

It must not be thought that this result saves metaphysics, for there are other methods of eliminating it. All that my argument proves is that Positivism cannot wholly eliminate metaphysics by its own methods. If another meaning is given to the statement " The sense of a proposition is determined by the method of its verification ", it is still

possible to show that metaphysical assertions cannot be established or refuted by any experiment.

The second objection results from Wittgenstein's doctrine that the structure of the facts is shown or mirrored *in* the propositions but is not expressible *by* propositions. The pictorial relation which obtains between the proposition and its objective, being a presupposition of the possibility of representation, cannot, in its turn, be represented. Now the most important branch of logical syntax should treat of the structure of the elementary propositions because it is upon them that the entire significance of language depends. (This obtains without prejudice from the preceding objection, inasmuch as *every* language, including relativistic ones, will have elementary propositions.) If Wittgenstein's limitation of language to the expressible is valid, the logical syntax of the elementary propositions cannot be expressed but must be shown. But a logical syntax which cannot be expressed is a contradiction in terms. It is a misnomer to call the " deictic " definitions and operational rules of elementary propositions by the name " *logical syntax* ". All statements *about* the entire structure of language must therefore be regarded as nonsense.

This final result may be illustrated in some examples. A proposition about the syntactical relations obtaining within a given language might have the following form: " P_1 " = *df.* " ' P_2 ' means what is meant by ' P_3 ' ". It is easy to show that the criterion of the truth of P_1 cannot be given without circularity. In order to know whether P_1 is true it is necessary to understand the meaning of P_2 and P_3 (assuming, of course, that P_2 is not a nominal equivalent of P_3), whereas in order to understand the meaning of P_2 and P_3 it is necessary to know that P_1 is true.[1] The syntactical assertion P_1 has no significance since

[1] This derives from Juhos, B., " Kritische Bermerkungen zur Wissenschaftstheorie der Physikalismus," *Erkenntnis*, Bd. 4, Heft 6, p. 401. The circle which he presents is not identical with what I have given here, although the same principle is involved. Juhos gives the following: Let P_2 = *df.* *A* understands $P_1 \equiv A$ behaves in such and such a way.

the method of its verification cannot be given. The identity of meaning of two expressions cannot be asserted but must be shown, i.e. that two expressions signify in the same way must be seen in the inspection of the expressions.[1]

Again, let it be assumed that an elucidation (deictic definition) could actually explain the meaning of a name occurring in an elementary proposition. For example, take " *aRb* " and suppose the elucidation has the form: " The ' *a* ' in ' *aRb* ' means . . ." In order to explain the meaning of the primitive sign " *a* ", the elucidation must include mention of " *a* ". It is not possible to understand the meaning of a proposition unless the meaning of each part is understood. Since the elucidation in question contains " *a* ", it can only be understood when the meaning of " *a* " is known. Wherefore it is superfluous and circular, and thus, on both counts, meaningless.

Another example of the attempt to formulate a syntactical principle makes it clear again that the syntax of Wittgenstein's language is not formulable. The syntax of a language would classify words in groups such as adjectives (= functions), nouns (= names), etc. Adjectives would also be grouped as colour-words, sound-words, etc. There would therefore be a syntactical proposition of the form: " ' Red ' is a colour-word ". In order to verify this proposition one of two methods would have to be employed: (1) it would be necessary to know all the propositions in which " red " was used and also to know that " blue " could replace " red " in these propositions without making nonsense; or (2) it would be necessary to *see* from an inspection of several propositions involving " red ", " blue ", etc., that they possessed a particular kind of structure. Now (1), besides being factually an impossible task, would presuppose that the common structure could somehow be

Now P_2 is not equivalent with P_1. Therefore one must, on the one hand, know that P_2 is true in order to understand P_1, whereas, on the other hand, one must have already understood P_1 in order to determine the truth of P_2. This is an obvious circle.

[1] Wittgenstein, op. cit., *supra*, 6.2322.

intuited, whereas (2) is an admission that intuition rather than expression is necessary to understand how " red " occurs in propositions. In either case " ' Red ' is a colour-word " becomes a pseudoproposition, for no way of verifying it can be given.

On Positivistic principles no syntactical proposition asserts anything. As a consequence " The meaning of a proposition is the method of its verification ", which itself is a syntactical proposition, is nonsense. It is reasonable to reject any account of meaning which is self-stultifying and, on this ground, if no other, the Positivistic theory of meaning should be abandoned. The logical elimination of metaphysics depends on the theory of logical syntax which I have described here. Since this theory fails, the assertions of metaphysics cannot be shown to be absurd by *this* method.

It might be urged as a reply to the foregoing criticism that there are two kinds of nonsense. First there is the nonsense which results from the use of words which have no meaning at all, or of words which have a meaning in some contexts but not in the one in which they are used in the nonsensical case in question. Then there is the nonsense which results from the attempt to say what can only be shown. The latter is important nonsense in so far as crude verbal attempts of this kind may orient us so that we can see the inexpressible. This is, I think, an evasion of the issue. If there are two kinds of nonsense it must be possible *discursively* to distinguish them by pointing out what differences exist between them. *Ex hypothesi* this is out of the question. If a sentence is nonsense it is impossible to say anything about it ; consequently it is impossible to say wherein two different nonsenses differ. This is reinforced by the fact that we cannot, on Wittgenstein's principles, express any significant sentence about " the sense of propositions " ; *a fortiori*, it would be impossible to say anything significant about " nonsense ".

Thus, within the very limits set by this theory of logical

syntax, intolerable contradictions and other fallacies occur which render it unacceptable. There is, as I have pointed out in Part II (Chapters II and III), another difficulty which lies outside these limits, but is, nevertheless, important. The Positivistic criterion of meaning includes all prescriptive formulæ and all theory in the realm of pseudopropositions. There is no possibility of verifying a direction or command. Sentences expressing directions and commands are meaningless. Ethical principles and directions in scientific manuals are thus kinds of nonsense. Theories are groups of propositional functions (usually axiomatically arranged). There is no possibility of verifying a propositional function. Therefore, theories are nonsense. I am sure that Positivists are not prepared to admit quite all of this.[1] Nevertheless, a consistent adherence to the criterion of meaning entails the elimination of prescriptions, theories, and other indispensable devices of science and practice. This, then, is a further count against the method of Logical Positivism.

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It is now clear that Logical Positivism cannot eliminate metaphysics without destroying itself, and that it cannot establish the logical foundations of science without alteration of the principles absolutely essential to its teaching.

However, even if it is assumed that Positivism could somehow survive all these objections, certain consequences of its criterion of meaning constitute a permanent barrier to the establishment of the foundations of science. I shall assume, for the sake of argument, that the elimination of metaphysics has been accomplished successfully by means of the criterion of meaning. I shall then show that this criterion leads to a result which is wholly inimical to science. This demands a special chapter.

[1] See however, Karl Popper's communication to *Erkenntnis* (Bd. iii, pp. 426–7), and his *Logik der Forschung*, Wien, 1935, in which the same point is forcibly argued.