

ROUTLEDGE REVIVALS

Logical Empiricism at its Peak

Schlick, Carnap, and Neurath

Volume II

Edited by
Sahotra Sarkar



SCIENCE AND PHILOSOPHY IN THE TWENTIETH CENTURY

*Basic Works of
Logical Empiricism*

SERIES EDITOR

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*Dibner Institute at MIT
and McGill University*

A GARLAND SERIES IN
READINGS IN PHILOSOPHY

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Modern Reappraisals

VOLUME

**LOGICAL
EMPIRICISM
AT ITS PEAK**

SCHLICK, CARNAP,
AND NEURATH

Edited with introductions by
SAHOTRA SARKAR
*Dibner Institute at MIT
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Routledge
Taylor & Francis Group

First published 1996 by Garland Publishing, Inc

This edition first published in 2021 by Routledge
605 Third Avenue, New York, NY 10017
and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

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Library of Congress Cataloging-in-Publication Data

Logical empiricism at its peak : Schlick, Carnap, and Neurath /
edited with introductions by Sahotra Sarkar.

p. cm. — (Science and philosophy in the twentieth
century ; v. 2)

Includes bibliographical references.

ISBN 0-8153-2263-1 (alk. paper)

1. Logical positivism. 2. Logical positivism—History—
Sources. 3. Schlick, Moritz, 1882–1936. 4. Carnap, Rudolf,
1891–1970. 5. Neurath, Otto, 1882–1945. I. Schlick, Moritz,
1882–1936. II. Carnap, Rudolf, 1891–1970. III. Neurath, Otto,
1882–1945. IV. Sarkar, Sahotra. V. Series.

B824.6.L623 1996

146'.42—dc20

95-26649

CIP

ISBN 13: 978-1-03-216576-9 (hbk)

ISBN 13: 978-1-03-216723-7 (pbk)

ISBN 13: 978-1-00-324957-3 (ebk)

DOI: 10.4324/9781003249573

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SERIES INTRODUCTION

The early years of the twentieth century saw remarkable developments in the sciences, particularly physics and biology. The century began with Planck's introduction of what came to be known as the "quantum hypothesis," followed by the work of Einstein, Bohr, and others, which paved the way for the development of quantum mechanics in the 1920s. It remains the most radical departure from the classical worldview that physics has seen. Not only were some physical quantities "quantized," that is, they could only have discrete values, but there were situations in which some of these values were indeterminate. Perhaps even worse, the basic dynamics of physical systems was indeterministic. The mechanical picture of the world, inherited from the seventeenth century, and already under attack during the nineteenth, finally collapsed beyond hope of recovery. Nevertheless, the new physics was unavoidable. Not only did atomic phenomena abide by its rules, but it provided a successful account of chemical bonding and valency. Meanwhile, in 1905, Einstein's special theory of relativity challenged classical notions of space and time. A decade later, general relativity replaced gravitation as a force by the curvature of space-time. Developments in astrophysics confirmed general relativity's unusual claims.

Also around 1900, biologists recovered the laws for the transmission of hereditary factors, or "genes." These laws, though published by Mendel in 1865, had remained largely unknown for a generation. By 1905, a new science called "genetics" had been created. For the first time, the phenomena of heredity were subsumed under exact (mathematical) laws. In the early 1920s, these laws were used by Fisher, Haldane, and Wright to formulate a quantitative, basically testable theory of evolution by natural selection. Around 1900 it also became clear that the transfer of chromosomes mediated the transmission of hereditary characters from parents to offspring. Between 1910 and 1920, genes were shown to be linearly positioned on chromosomes. The rudiments of a physical account of biological inheritance were in place by the mid-1920s. Eventually this work was integrated with other biological subdisciplines, especially biochemistry (itself largely a

turn-of-the-century creation), to generate molecular biology, arguably the greatest triumph of science since 1950.

The philosophical response to the advances of early twentieth century science was schizophrenic. Some philosophers, especially in Germany, ignored scientific developments almost altogether and continued to elaborate extensive metaphysical systems having little contact with the physical world. Collectively, these projects came to be called phenomenology. In sharp contrast, another group of philosophers attempted to reform—or, perhaps, even replace—academic philosophy so as to bring it into consonance with modern science. At times, they claimed to have inherited the mantles of Aristotle and Descartes, Newton and Leibniz, Locke and Hume, Kant and Marx. More often, they claimed to be doing something altogether novel.

Most prominent among the latter group of philosophers were those who called themselves “logical positivists” or “logical empiricists.” Many of them were associated, in their early years, with a group that met regularly in Vienna (starting in 1922) and called itself the Vienna Circle. The central figure was Moritz Schlick. (A complete list of members of the Vienna Circle will be found in their 1929 manifesto, which is reprinted in Volume 2.) The members of the Vienna Circle had an almost worshipful attitude towards the new physics though, in general, they seemed to have been completely ignorant of the equally fundamental changes taking place in biology. They were impressed by developments in logic, particularly Whitehead and Russell’s attempt to carry out Frege’s project of constructing mathematics from logic. Kurt Gödel, a member of the Vienna Circle, though hardly a logical empiricist in his philosophical leanings, probed the foundations of logic and showed that any relatively complex system of mathematics must allow statements to be formulated that can neither be proved nor disproved using formalized rules of proof—this is Gödel’s famous incompleteness theorem.

Meanwhile, in Berlin, a smaller group around Hans Reichenbach came to a similar philosophical orientation and concentrated on probing the foundations of physics. In Poland, an eminent group of logicians, with Alfred Tarski as the central figure, began equally important investigations of logical notions. There was considerable intellectual exchange between these different groups. These exchanges led to convergence on many points—the philosophical theses that were most commonly advanced will be described below (and in the introductions to Volumes 1–4).

To return to the historical story, most of the logical empiricists had relatively progressive politics. A few, notably Otto Neurath,

were avowed Marxists. Others, including Rudolf Carnap and Hans Hahn, were socialists. With the rise of nazism and fascism in Europe in the 1930s, many of the logical empiricists emigrated to Britain and, especially, to the United States. There they eventually came to establish a temporary hegemony over academic philosophy. Reichenbach moved to the University of California at Los Angeles; Herbert Feigl to the University of Minnesota; and Carnap to the University of Chicago. Meanwhile, during his youthful days, W.V.O. Quine was already preaching the logical empiricist gospel at Harvard. Of the major figures, only Neurath remained in Europe. (Hans Hahn had died in 1934 and Schlick had been murdered in 1936—see the introduction to Volume 2.)

Because of its migration to the U.S., logical empiricism became part of the Anglo-American tradition in philosophy, in spite of its European origins. It is at least arguable that as a movement it matured in the U.S. However, in spite of being relatively organized compared to other philosophical movements, the logical empiricists did not present a unified system of universally held theses—a point that seems to elude their modern critics—though they generally exhibited a coherent attitude to the analysis of philosophical problems. This attitude can be traced back to the 1920s. They *generally* accepted an *a priori* faith in logic, though they were sometimes known to disagree on what logic could be. Other than in logic (and in mathematics, which, for most logical empiricists, could be derived from logic), the logical empiricists endorsed a thoroughgoing empiricism—hence their name. All factual (that is, nonlogical) knowledge was ultimately empirical. A sharp distinction between empirical, *a posteriori*, synthetic claims on one hand and *a priori*, analytic claims on the other was a cherished doctrine for most (but not all) logical empiricists. Its rejection by Quine and others in the 1950s was a significant event in the decline of logical empiricism (see Volume 5).

Any claim that was neither logic nor able to be adjudicated by empirical means was rejected by the logical empiricists as “meaningless” or “cognitively insignificant,” whatever its noncognitive (for instance, emotional) appeal. Logic escaped this fate by being true by virtue of meaning (of the logical connectives such as “not” and “and” and operators such as “all,” “any,” and “some”) or of conventions. Mathematics was true because it could be reduced to, or constructed from, logic. Besides logic, the logical empiricists generally did not accept any other normative discipline as consisting of meaningful claims. (Ethical claims, according to some of them, were only devices to evoke appropriate emotive responses from others.)

Given these positions, there did not remain much metaphysics to be done (at least insofar as “metaphysics” was interpreted by the academic philosophers). Some logical empiricists, notably Carnap, claimed to have successfully eliminated metaphysics. In practice, metaphysics was replaced by attempts—rarely profound—at the analysis and interpretation of scientific concepts. Those logical empiricists who were particularly enamored of the technical apparatus of mathematical logic, again, most notably Carnap, interpreted this endeavor as describing the syntax and elaborating a semantics for the language of science. (In the case of logic itself, the logical empiricists achieved some important successes in their interpretive efforts in the 1930s—see Volume 3.) Metaphysics cast aside, the logical empiricists turned to epistemology; in particular, to the possibility of quantifying the extent to which different scientific claims were grounded in experience. The project turned out to be far more complex—and convoluted—than initially envisioned. By the time logical empiricism disappeared as an explicit movement within philosophy, little progress had been made towards this end.

An enumeration of positions advanced—or of successes and failures—only barely captures the spirit of logical empiricism. Within their self-proclaimed framework of accepting only logic and empirical knowledge, they venerated a critical attitude. This included continual self-criticism. Much has been written about the untenability of the doctrines espoused by the logical empiricists—what unfortunately goes unrecognized is that the most severe (and the most relevant) criticisms almost always came from within the movement or, at least, from individuals schooled in the movement (notably Quine). There were significant disagreements among the logical empiricists (for instance, between Carnap and Reichenbach on epistemology). There were also significant disagreements within the Vienna Circle: Kurt Gödel probably rejected most of the tenets in the Vienna Circle manifesto; Karl Menger refused to reject metaphysics on logical grounds (see his paper in Volume 2). These cases, however, may only show that not all members of that circle should be regarded as logical empiricists. Nonetheless, and most importantly, the logical empiricists believed philosophy to be a collective enterprise, like the natural sciences, and one in which progress could be made.

The logical empiricists’ domination of Anglo-American philosophy was never complete and whatever hegemony they established was brief. Even within their chosen subdisciplines, such as the philosophy of science or logic or mathematics, their positions came under attack in the 1950s. Cherished doctrines such as the

analytic-synthetic distinction were abandoned by a new generation of philosophers. The value of their type of conceptual analysis was sometimes derided by the later Wittgenstein's followers and by the so-called "ordinary language" philosophers. Metaphysics returned with a vengeance and, arguably, the influence of the logical empiricists was largely confined to the philosophy of science after the 1950s. But the 1960s saw logical empiricism under attack even among philosophers of science. It is probably reasonable to say that by around 1970, a new generation of philosophers of science had decided that the analyses offered by the logical empiricists were largely superficial and were to be replaced by more sophisticated work. The most popular position of those days was "scientific realism," a return to exactly the kind of metaphysics that the logical empiricists had found devoid of cognitive content.

Significant interest in logical empiricism resurfaced again in the early 1980s. This did not indicate any general return to the positions the logical empiricists advocated. Rather, the source of the interest was largely historical, part of a desire to understand the history of twentieth-century philosophy. It was aided by a new interest among philosophers in the history of the philosophy of science. Carnap and Reichenbach were probably the only prominent logical empiricists who had continued to be read during the 1960s and 1970s; now the works of Schlick and Neurath, among others, were once again read (and, sometimes, translated into English for the first time). Archives began to be mined to expose the intricate details of the relationships between the logical empiricists, and between them and other social and cultural movements of the 1920s and 1930s. This new work took place not only in the U.S., but also in Austria, Germany, and to a lesser extent, elsewhere in Europe. Slowly, as this historical work has progressed, a more positive philosophical assessment of the movement than was usually found in the 1960s and 1970s has also emerged (Sarkar 1992). These developments are far too recent for any assessment to be made of their lasting value. While the historical interest is neither hard to explain nor appreciate, it is less clear why, but perhaps even more interesting that, this positive reassessment is taking place.

There seem to be at least three reasons for the relatively positive reassessment that deserve mention: (1) since more than a generation had passed between the heyday of the movement and the mid- and late-1980s, the new commentators found it easier to have a more balanced view of both the contributions and the failures of logical empiricism than those—especially in the 1960s—who felt that they had to react to its dominance; (2) historical

exploration—and exegesis—has revealed that the logical empiricists held a variety of views that are both more complex and more interesting than what their critics attributed to them (see, for example, Suppe 1974); and (3) arguably, the various alternatives to logical empiricism as a philosophy of science that were formulated in the 1960s and 1970s have not delivered on their promises. Going further, and much more controversially, these alternatives (including scientific realism) have proved less fertile and less robust than logical empiricism.

In this new intellectual context, it seems appropriate to make available, to as wide an audience as possible, some of the basic works of logical empiricism, as well as some of the new commentaries that have followed the renewal of interest in the movement. Many of the original pieces are not easily available and there is, at present, neither a detailed history of logical empiricism nor an annotated guide to its most important writings. An important old collection is Ayer (1959), which has a fairly comprehensive bibliography of work up to that point. Many valuable collections devoted to individual figures have been published. Schilpp (1963) collects many important critical pieces on Carnap, with Carnap's responses. The basic works of Feigl (1981), Hahn (1980), Kraft (1981), Menger (1979), Neurath (1973, 1987), Reichenbach (1978), Schlick (1979, 1987), and Waismann (1977) have been published as part of the Vienna Circle Collection. Collections of articles on logical positivism from the 1960s and 1970s include Achinstein and Barker (1969) and Hintikka (1975). Recent works of interest include Coffa (1991), Haller (1982), Menger (1994), and Uebel (1991, 1992). However, a detailed history of logical empiricism remains to be written.

What makes this series different from these works is an attempt to present a global picture of logical empiricism, including the influences that led to its initiation and the criticisms that were responsible for its decline. The emphasis here is on issues rather than on individual figures even though some of the most influential figures—especially Carnap and Reichenbach—feature prominently. However, for most of the topics treated, all the historically and conceptually important exchanges on that topic are collected together. Finally, modern commentaries are also included to bring the series up to date. In general, complete papers (in English whenever translations are available) are included over book sections in an effort to present complete arguments as far as possible. Volume 1 deals with the initial influences on logical empiricism and with the Vienna Circle period. Volume 2 concerns primarily the 1930s, when logical empiricism was at its most confident

phase, when its adherents truly believed that they were reforming philosophy for all future times. Volume 3 includes pieces that reflect logical empiricism in its mature phase, after self-criticism and technical developments induced more sophisticated doctrines than those produced in the 1930s. Volume 4 shows how logical empiricism analyzed the special sciences. Volume 5 consists of the most important criticisms of logical empiricism and its responses. It marks the decline of logical empiricism. All of these volumes, except Volume 4, include a concluding section with modern commentaries. Volume 6 consists entirely of these commentaries. Each volume is introduced with an editorial note that puts the contents in perspective. Thanks are due to Richard Creath and Alan Richardson for advice on selecting the pieces for this series, and to Gregg Jaeger for help in assembling them and for commenting on the introductions. Work on these volumes was done while the editor was a Fellow at the Dibner Institute for the History of Science at MIT. Thanks are due to it for its support.

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INTRODUCTION

By the time the Vienna Circle's manifesto was published in 1929 (see Volume 1) the logical empiricists had formulated most of the radical doctrines that the movement is known for: the rejection of metaphysics, the idea that meaningful statements must have empirical consequences, physicalism, and the unity of science. However, in 1931, the movement received an unexpected setback. Kurt Gödel, a member of the Vienna Circle, proved two incompleteness theorems (1931). In rough terms, they showed that, in any consistent mathematical system with just enough resources to do elementary arithmetic, there will exist statements that can neither be proved nor disproved using the rules of proof in that system. (Adding such a statement as an axiom is of no help: then another unprovable statement can be found.) Gödel's result essentially dooms Hilbert's formalism—combinatorial rules (see Volume 1) cannot exhaust mathematical inference. However, logicism of Russell's sort was also in trouble, for the system Gödel had shown to be incomplete was that of *Principia Mathematica*.

In a series of brilliant philosophical moves, Carnap turned adversity to his advantage. In *The Logical Syntax of Language* (1937), he embraced and extended Gödel's result. He attempted to rescue logicism by introducing a "Principle of Tolerance" that allows the choice of a logic of any necessary strength (to obtain mathematics). Philosophically, he made an important move: fascinated by Gödel's arithmetization of syntax, he now suggested that philosophy become—or be replaced by—a study of the syntax of science. By insisting that the syntax-language (his term for the metalanguage prior to his acceptance of semantics) be a physical language, this conception of philosophy incorporated physicalism and the unity of science. Thus began the linguistic mode that dominated all further inquiry in logical empiricism, much to its detriment. (After he accepted semantics—see Volume 3—Carnap's only modification of this program was to suggest that philosophy be the study of the syntax and the semantics of the language of science.)

Somewhat oddly, within a few years of the publication of its manifesto (reprinted in Volume 1), the Vienna Circle dissipated.

In 1931, Frank and Carnap left Vienna to take up positions at the University of Prague. Hahn died in 1934. Schlick was murdered by a demented student in 1936, much to the delight of the Nazi press. Meanwhile, in 1933, A.J. Ayer attended meetings of the Vienna Circle. Returning to Britain, he published *Language, Truth and Logic* (1936). This immensely popular short book did much to initiate awareness of logical empiricism in the Anglophone world. However, it missed much of the subtlety of the positions that had been advanced and the disputes (for instance, about protocol sentences—see below) that had taken place in the Vienna circle. Its importance in the history of logical empiricism—except in a sociological sense—is doubtful.

The end of the Vienna Circle, followed by the rise of nazism, led to an exodus of the most prominent empiricists to the U.S. (see the series introduction). During this period of turmoil, a critically important conceptual development took place. Tarski's (1935) work on semantics showed how the concept of truth can be discussed in an appropriate metalanguage. The logical empiricists soon accepted semantics. That set the stage for the "mature" phase of logical empiricism—addressed in Volumes 3 and 4. This volume reprints pieces from the period between the manifesto and the adoption of semantics, as well as two commentaries. During this period, the logical empiricists were the most ambitious and the most confident about the success of their enterprise (the "flaming thirties," as Howard Stein calls it; see Volume 6). Many of the papers in this volume are marked by the sort of missionary zeal that follows a revelation even while they are written with the logical empiricists' customary logical decorum.

The first section consists of four ideological classics. Schlick's first piece announces that the "altogether final change in philosophy" is at hand. His second piece both defends the verification theory of meaning and attempts to bring whatever is sensible about realism within the logical empiricist and positivist framework. Carnap's first piece—one of the best-known papers of logical empiricism—shows how metaphysics is to be eliminated through linguistic analysis. It includes a well-known attack on Heidegger. His second piece summarizes the philosophical position later developed in *The Logical Syntax of Language*: how philosophical pseudoproblems arise because of a confusion between modes of speaking, how philosophical problems are all problems of the syntax of the relevant language, and how logicism is to be defended in the wake of Gödel's theorem.

The second section reprints three papers on physicalism, two by Neurath (who consistently championed physicalism) and one by

Carnap (who was slowly converted to it). It also provides an introduction to the important disputes within the Vienna Circle on the “protocol sentences” through which scientific theories met experience—see Uebel (1992) for an extended discussion of these disputes, and for a defence of Neurath’s epistemological holism against the more foundationalist tendencies of other logical empiricists. The third section consists of three papers on logic. Carnap’s piece is the standard defense of logicism in the pre-Gödel period. Hahn’s paper is basically a commentary on Carnap’s. Menger’s paper is from a relatively later period, when the importance of Tarski’s results had begun to be realized. Menger does not fully appreciate the significance of semantics; other than that, this paper provides a succinct account of the development of logic up to that point. (It also includes a historically important footnote [no. 23] in which Menger distances himself from both the Vienna Circle and from logical empiricism.)

The fourth section reprints three papers on truth, induction, and confirmation. All three show the state of the development of logical empiricist epistemology before the implications of Tarski’s work on semantics had fully set in. There was as yet no clear distinction between confirmation (of an empirical statement) and truth (as understood in semantics). Both, moreover, were largely treated as pragmatic concepts. This is clear in Hempel’s paper, which traces the development of the logical empiricists’ theories of truth from something akin to a correspondence view to a coherentist one. (In the process it also traces some of the history of the dispute over protocol sentences between Carnap and Neurath.) Feigl argues for a frequency interpretation of probability (see also Volume 3) even in the context of confirmation of scientific theories and, using that interpretation, argues that the traditional problem of induction is meaningless. A pragmatic maxim is supposed to replace it. Finally, the third piece, “Testability and Meaning,” is probably the most famous—and the most important—of Carnap’s shorter works. Here, his tolerance of implicit definitions (already fully seen in *The Logical Syntax of Language*) is extended to scientific contexts to provide a new account of the introduction of theoretical terms in science, including disposition predicates.

Ethics was not a serious philosophical concern of the logical empiricists—according to their account of meaning, ethical statements were not meaningful. The fifth section reprints two pieces that give an indication of the (rather different) ways in which the logical empiricists approached ethical (and, for that matter, aesthetic) problems. Schlick’s piece, which is excerpted from his *Fragen der ethik* (1930), attempts to reduce ethical questions to

psychological ones. C.L. Stevenson's paper develops the idea that all that ethical claims do is encapsulate attempts to influence the actions or attitudes of other individuals. Strictly speaking, Stevenson probably should not be considered part of the logical empiricist camp—this paper shows more explicit influence of G.E. Moore than of any logical empiricist. However, it is included here because its position toward ethical claims is not only consonant with logical empiricism (it denies that these claims convey information), but also because the same attitude was advocated, though only in incidental remarks, by many logical empiricists (including Carnap) toward both ethics and aesthetics.

The sixth section reprints two pieces of historical importance. The first is a short note by Charles W. Morris, a pragmatist at the University of Chicago who allied himself to logical empiricism and was instrumental in securing a position for Carnap at that university after the latter had left Europe. (A lively account of these years can be found in the correspondence between Carnap and Quine [reprinted in Creath 1990].) Morris's piece is an account of the career of the unity-of-science movement in the U.S. up to 1935, just as the migration of the logical empiricists to the U.S. was beginning. Neurath had just launched the idea of an *Encyclopedia of Unified Science* in 1934 at the Eighth International Congress of Philosophy at Prague. It was supposed to show how the unity of science was to be achieved in practice; that is, with a systematic reconstruction of actual science. With Morris and Carnap as assistant editors at the University of Chicago, and Neurath as editor, the university press agreed to publish the encyclopedia. Neurath's piece is his synopsis of the project. What is striking about the piece is that the accent is on unity itself, rather than on physicalism. Two volumes of the encyclopedia were immediately published. World War II set in, however, and Neurath was interned by the British on the Isle of Man after barely escaping the Nazi invasion of the Netherlands. After his release in 1941, his attention was distracted by other projects. Neurath died in 1945—a projected six more volumes of the encyclopedia were never published. (Reisch's paper in Volume 6 gives a detailed history of the encyclopedia project.)

Finally, the last section contains two papers. The first, by Sarkar, is both a commentary on and a resumé of Carnap's (1937) *The Logical Syntax of Language*. It is primarily included because it proved impossible to excerpt Carnap's book in such a way that all its major points would be retained. Sarkar also argues that Carnap's logicism, by this point, had become little more than conventionalism. The second paper, by Goldfarb and Ricketts, presents a rather

different interpretation of *Logical Syntax*. Other interesting commentaries on that book include Coffa (1991) and Oberdan (1992).

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**Logical
Empiricism
at Its Peak**

7. THE TURNING-POINT IN PHILOSOPHY*

From time to time the question of the progress made by philosophy during a certain period has been the object of prize contests. The period has been customarily marked off at one end by the name of an eminent thinker, and at the other by 'the present'. It has seemed to be understood, therefore, that up to that thinker some degree of clarity has prevailed concerning the philosophic advances of mankind, but that from then on it has been doubtful what new achievements the latest epoch has added to them.

Such questions clearly evince a mistrust of the philosophy of the period most recently elapsed at any time, and one has the impression that the task set was merely a timid formulation of the query: Has philosophy made any sort of progress *at all* during the period in question? For if it were certain that achievements existed, it would also be well-known what they consisted in.

If the earlier past is regarded with less skepticism, and with more inclination to recognize an ascending evolution in its philosophy, this may well be because we confront everything that has already become historic with greater respect. Moreover the older philosophers have at least demonstrated their historical influence, so that consideration of them can be founded on their historical rather than their actual importance, and the more so in that often no distinction whatever is ventured between the two.

But the very best minds among these thinkers seldom had any belief in unshakeable, enduring results attained by earlier philosophizing, even by the classical exemplars; this appears from the fact that every new system basically starts from the very beginning again, that every thinker seeks his own firm ground and does not care to stand on the shoulders of his predecessors. Descartes – not unjustly – feels himself in every way a pioneer; Spinoza believes that with the (admittedly quite external) introduction of mathematical form he has discovered the ultimate philosophical method; and Kant was convinced that philosophy would now finally take the sure path of a science along the road he had opened up. Further examples are superfluous, for

* 'Die Wende der Philosophie', *Erkenntnis* 1 (1930) 4–11.
Translated by Peter Heath.

almost all great thinkers have held a radical reform of philosophy to be necessary, and have themselves attempted it.

This peculiar fate of philosophy has been so often described and lamented, that it is already trivial even to talk of it; silent skepticism and resignation seems the only attitude appropriate to the case. An experience of more than two thousand years seems to teach us that all attempts to put an end to the chaos of systems, and to alter the destiny of philosophy, can no longer be taken seriously. The reminder that man has eventually solved the most obstinate problems, such as that of Daedalus, gives the expert no comfort, for his fear is precisely that philosophy will never get to the point of framing a genuine 'problem'.

I permit myself this allusion to the oft-depicted anarchy of philosophical opinions in order to leave no doubt about my full awareness of the scope and significance of the conviction I now wish to express. For I am persuaded that we are at present in the midst of an altogether final change in philosophy, and are justly entitled to consider the fruitless conflict of systems at an end. The present age, I maintain, is already in possession of the means to make all such conflict essentially unnecessary; it is only a matter of resolutely using them.

These means have been fashioned quietly, unnoticed by the majority of philosophical writers and readers, and thus a situation has arisen that has no parallel with any earlier one. That the position is really unique, and the change now in progress a really final one, can be discerned only by acquainting oneself with the new methods, and by looking back, from the standpoint they lead to, upon all the endeavours that have ever been reckoned 'philosophical'.

The methods proceed from *logic*. Their beginnings were obscurely perceived by Leibniz; in recent decades important stretches have been opened up by Gottlob Frege and Bertrand Russell; but the decisive turning-point was first reached by Ludwig Wittgenstein (in his *Tractatus Logico-Philosophicus*, 1922).

It is well-known that in recent decades the mathematicians have developed new methods in logic, primarily to solve their own problems, which could not be mastered by means of the traditional forms of logic. But elsewhere, too, the logic so evolved¹ has long since proved its superiority to the old forms, and will soon, no doubt, have entirely superseded them. Now is this logic the great instrument of which I said before that it could in principle deliver us from all philosophical controversies? Does it provide us with general precepts whereby all traditional problems of philosophy can at least in principle be solved?

If this were so, I could scarcely have been entitled to say that an entirely new situation has been created, for in that case only a gradual and, as it were, technical advance would have been achieved, much as the invention of the internal combustion engine finally made it possible to solve the problem of flight. But however highly we must esteem the value of the new methods, the mere elaboration of a method can never accomplish anything so fundamental as this. This great change is not therefore due to the method itself, but to something quite different, first made possible and stimulated thereby, but operating at a much deeper level: it is the insight into the nature of the logical itself.

That the logical is in some sense the purely *formal*, is an old and oft-stated view; but the nature of pure forms had not really been clearly understood. The road to clarity on this subject starts from the fact that every item of knowledge is an expression or presentation. It expresses the state-of-affairs known in it, and this can be done in any number of ways, in any language, and by means of any arbitrary system of signs; all these possible modes of presentation, so long as they really express the same piece of knowledge, must for that very reason have something in common, and this common factor is their logical form.

Thus all knowledge is knowledge only by virtue of its form; through the latter it presents the situation known, but the form itself can not in turn be presented on its own account; it is the only thing that matters in knowledge — everything else therein is inessential and contingent material of expression, no different, say, from the ink we use to write down a sentence.

This simple insight has consequences of the very greatest significance. It serves, in the first place, to do away with the traditional problems of the 'theory of knowledge'. Investigations of the human 'faculty of cognition', so far as they cannot be consigned to psychology, are replaced by inquiries into the nature of expression or presentation, that is, of any possible 'language' in the most general sense of the term. Problems about the 'validity and limits of knowledge' are swept away. Everything that can be expressed is knowable, and that is all that can be meaningfully asked about. There are therefore no questions that cannot in principle be answered, no essentially insoluble problems. What have hitherto been taken for such are not genuine questions, but meaningless concatenations of words, which do, indeed, outwardly resemble questions, since they seem to conform to the usual grammatical rules, but in truth consist of empty sounds, since they clash with the deep inner rules of logical syntax which the new analysis has laid bare.

Wherever a meaningful problem presents itself, it is always possible, in

theory, to indicate the road leading to its solution, for it turns out that the indication of this road is basically equivalent to stating its meaning; the traversing of the road in practice can of course be prevented by factual circumstances, such as defective human capacities. The act of verification, in which the road to solution finally terminates, is always of the same kind: it is the occurrence of a particular state-of-affairs, ascertained by observation and immediate experience. It is thus, in fact, that the truth (or falsity) of every statement is established, both in science and everyday life. There is no other way, therefore, of testing and confirming truths, save by observation and experimental science. Every science (if we mean by this term the *content*, and not the human procedures for obtaining it) is a system of knowledge, that is, of true empirical propositions; and the totality of sciences, including the statements of everyday life, is *the* system of knowledge; there is no additional domain of 'philosophical' truths, for philosophy is not a system of propositions, and not a science.

But what is it, then? Well, not a science indeed, but still something so great and significant that it may continue to be honoured henceforth, as in former days, as the queen of the sciences; for it is nowhere laid down that the queen of the sciences must herself also be a science. We now see in her — and this gives a positive indication of the great change at present occurring — not a system of knowledge but a system of *acts*; philosophy, in fact, is that activity whereby the *meaning* of statements is established or discovered. Philosophy elucidates propositions, science verifies them. In the latter we are concerned with the truth of statements, but in the former with what they actually *mean*. The content, the heart and soul of science, is naturally located in what its propositions ultimately *signify*; the philosophic activity of giving significance is thus the alpha and omega of all scientific knowledge. This has no doubt been correctly divined in the assertion that philosophy furnishes both the foundation and the summit to the edifice of science; the only error has been to suppose the foundation to consist of 'philosophical propositions' (the propositions of the theory of knowledge) and the building also to be crowned by a dome of philosophical propositions (called metaphysics).

That the work of philosophy does not consist in asserting propositions, and that the giving of meaning to statements cannot, therefore, be done in turn by other statements, is easy enough to see. For if, say, I state the meaning of my words by elucidatory propositions and definitions, and thus by means of new words, we have again to ask for the meaning of these other words, and so on. This process cannot continue indefinitely, and always terminates at last in mere factual indications, in demonstrations of what is

meant, and thus in real acts; these alone neither can nor need be given any further explanation; the final giving of meaning therefore always takes place by means of *actions*, and it is these that constitute the philosophic activity.

It was one of the gravest errors of past ages to believe it possible to formulate the true meaning and ultimate content by means of further statements, and thus to present it as knowledge; this was the error of 'metaphysics'. The efforts of the metaphysicians have forever been directed to the absurd aim² of expressing as knowledge the content of pure qualities (the 'essence' of things), and thus of saying the unsayable; qualities cannot be stated, but only pointed out in experience [*Erlebnis*], and knowledge has nothing to do with this.

So metaphysics collapses, not (as Kant thought) because the performance of its task is an undertaking to which human reason is unequal, but because there simply is no such task. Once the mistaken posing of the question is discovered, however, the history of metaphysical dispute at once becomes intelligible.

If our view is correct, it is bound, as such, to vindicate itself in history as well. It has to show itself capable of giving some sort of account of the change in the meaning of the term 'philosophy'.

Now this is indeed the case. In antiquity, and right up into modern times, when philosophy was simply identical with any sort of purely theoretical scientific inquiry, this was an indication that science remained at a stage in which it still had to regard the clarification of its own basic concepts as its main task; and the emancipation of the particular sciences from their common mother, philosophy, gives expression to the fact that the meaning of certain basic concepts had grown clear enough for further work to be successfully pursued by their use. When we still find today, moreover, that ethics and aesthetics, for example, and sometimes even psychology, still rank as branches of philosophy, these disciplines show by this fact that they are not yet in command of sufficiently clear basic concepts, and that their efforts, rather, are still mainly directed to the *meaning* of their own propositions. And finally, if right in the middle of a well-established science there suddenly arises at some point the necessity of pondering anew about the true significance of fundamental concepts, and if a deeper clarification of meaning is thereby effected, this achievement is at once felt as an eminently philosophical one. It is generally agreed, for example, that Einstein's achievement, which proceeded from an analysis of the meaning of statements about time and space, was really a philosophical one. We may add here that the wholly decisive, epoch-making advances in science are always of this sort, that they represent a clarification

of the meaning of fundamental principles, and hence are accomplished only by those with a talent for philosophizing; the great scientist is thus always a philosopher as well.

It seems equally comprehensible that the name of philosophy should also often be given to such mental efforts as are concerned, not with pure knowledge, but with the conduct of life. For the sage stands out from the common herd by this very fact, that he knows how to point out, more clearly than they do, the meaning of statements and questions about life in general, both actual and desired.

The great change in philosophy also signifies a final abandonment of certain wrong turnings taken since the second half of the 19th century, and which were bound to lead to an utterly mistaken estimate and evaluation of philosophy: I mean the attempts to ascribe it an inductive character, and thus to suppose that it consists merely of hypothetically valid propositions. The older thinkers had no idea of claiming mere probability for their assertions; they would have rejected it as out of keeping with the dignity of philosophy. In this they displayed a sound instinct for the fact that philosophy is called on to provide the ultimate foundation of knowledge. Now we must indeed see in their contrary dogma, that philosophy furnishes unconditionally true *a priori* principles, an exceedingly unfortunate expression of this instinct, seeing that philosophy does not consist of propositions at all; but we, too, believe in the dignity of philosophy, and consider the character of uncertainty and mere probability to be incompatible with it, and rejoice that the great change makes it impossible to credit philosophy with such a character. For the concept of probability or uncertainty is simply inapplicable to the acts of giving meaning, in which philosophy consists. Its concern is indeed with assertions which give all statements their meaning in an absolutely final sense. Either we *have* this meaning, and then know what the statement intends; or we do not have it, and are then confronted with meaningless words merely, and no statements at all; there is no third possibility, and there can be no talk of validity being probable. So after the great change, philosophy displays its character of finality more clearly than before.

Only in virtue of this character can the conflict of systems itself be brought to an end. I repeat that in consequence of the views outlined we may already consider it ended in principle today, and I hope that this may also become ever more clearly visible in the pages of this journal³, now that it has acquired a new lease of life.

To be sure, there will still be many a rearguard action, and many will still continue for centuries to pursue the accustomed paths; philosophical authors

will go on discussing the old pseudo-problems for a long time yet, but in the end they will no longer be listened to and will resemble actors who go on performing for a time before noticing that the audience has gradually stolen away. By then there will be no further need to talk of ‘philosophical problems’, since *all* questions will be dealt with philosophically; that is, in a clear and meaningful way.

NOTES

¹ See Rudolf Carnap’s article in this issue of our periodical [‘Die alte und die neue Logik’, *Erkenntnis* 1 (1930)].

² Cf. my article ‘Erleben, Erkennen, Metaphysik’, *Kant-Studien* 31 (1926) [Engl. present vol., no. 3].

³ [*Erkenntnis*, zugleich *Annalen der Philosophie* (vol. 9 of *Annalen der Philosophie* appeared as vol. 1 of *Erkenntnis*).]



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The Elimination of Metaphysics
Through Logical Analysis
of Language

BY RUDOLF CARNAP

(TRANSLATED BY ARTHUR PAP)

1. INTRODUCTION

THERE HAVE BEEN many *opponents of metaphysics* from the Greek skeptics to the empiricists of the 19th century. Criticisms of very diverse kinds have been set forth. Many have declared that the doctrine of metaphysics is *false*, since it contradicts our empirical knowledge. Others have believed it to be *uncertain*, on the ground that its problems transcend the limits of human knowledge. Many anti-metaphysicians have declared that occupation with metaphysical questions is *sterile*. Whether or not these questions can be answered, it is at any rate unnecessary to worry about them; let us devote ourselves entirely to the practical tasks which confront active men every day of their lives!

The development of *modern logic* has made it possible to give a new and sharper answer to the question of the validity and justification of metaphysics. The researches of applied logic or the theory of knowledge, which aim at clarifying the cognitive content of scientific statements and thereby the meanings of the terms that occur in the statements, by means of logical analysis, lead to a positive and to a negative result. The positive result is worked out in the domain of empirical science; the various concepts of the various branches of science are clarified; their formal-logical and epistemological connections are made explicit. In the domain of *metaphysics*,

This article, originally entitled "Überwindung der Metaphysik durch Logische Analyse der Sprache," appeared in *Erkenntnis*, Vol. II (1932). It is published here with the kind permission of Professor Carnap.

including all philosophy of value and normative theory, logical analysis yields the negative result *that the alleged statements in this domain are entirely meaningless*. Therewith a radical elimination of metaphysics is attained, which was not yet possible from the earlier antimetaphysical standpoints. It is true that related ideas may be found already in several earlier trains of thought, e.g. those of a nominalistic kind; but it is only now when the development of logic during recent decades provides us with a sufficiently sharp tool that the decisive step can be taken.

In saying that the so-called statements of metaphysics are *meaningless*, we intend this word in its strictest sense. In a loose sense of the word a statement or a question is at times called meaningless if it is entirely sterile to assert or ask it. We might say this for instance about the question "what is the average weight of those inhabitants of Vienna whose telephone number ends with '3'?" or about a statement which is quite obviously false like "in 1910 Vienna had 6 inhabitants" or about a statement which is not just empirically, but logically false, a contradictory statement such as "persons A and B are each a year older than the other." Such sentences are really meaningful, though they are pointless or false; for it is only meaningful sentences that are even divisible into (theoretically) fruitful and sterile, true and false. In the strict sense, however, a sequence of words is *meaningless* if it does not, within a specified language, constitute a statement. It may happen that such a sequence of words looks like a statement at first glance; in that case we call it a *pseudo-statement*. Our thesis, now, is that logical analysis reveals the alleged statements of metaphysics to be pseudo-statements.

A language consists of a vocabulary and a syntax, i.e. a set of words which have meanings and rules of sentence formation. These rules indicate how sentences may be formed out of the various sorts of words. Accordingly, there are two kinds of pseudo-statements: either they contain a word which is erroneously believed to have meaning, or the constituent words are meaningful, yet are put together in a counter-syntactical way, so that they do not yield a meaningful statement. We shall show in terms of examples that pseudo-statements of both kinds occur in metaphysics. Later we shall have to inquire into the reasons that support our contention that metaphysics in its entirety consists of such pseudo-statements.

2. THE SIGNIFICANCE OF A WORD

A word which (within a definite language) has a meaning, is usually also said to designate a concept; if it only seems to have a

meaning while it really does not, we speak of a "pseudo-concept." How is the origin of a pseudo-concept to be explained? Has not every word been introduced into the language for no other purpose than to express something or other, so that it had a definite meaning from the very beginning of its use? How, then, can a traditional language contain meaningless words? To be sure, originally every word (excepting rare cases which we shall illustrate later) had a meaning. In the course of historical development a word frequently changes its meaning. And it also happens at times that a word loses its old sense without acquiring a new one. It is thus that a pseudo-concept arises.

What, now, is *the meaning of a word*? What stipulations concerning a word must be made in order for it to be significant? (It does not matter for our investigation whether these stipulations are explicitly laid down, as in the case of some words and symbols of modern science, or whether they have been tacitly agreed upon, as is the case for most words of traditional language.) First, the *syntax* of the word must be fixed, i.e. the mode of its occurrence in the simplest sentence form in which it is capable of occurring; we call this sentence form its *elementary sentence*. The elementary sentence form for the word "stone" e.g. is "x is a stone"; in sentences of this form some designation from the category of things occupies the place of "x," e.g. "this diamond," "this apple." Secondly, for an elementary sentence S containing the word an answer must be given to the following question, which can be formulated in various ways:

(1.) What sentences is S *deducible* from, and what sentences are deducible from S?

(2.) Under what conditions is S supposed to be true, and under what conditions false?

(3.) How is S to be *verified*?

(4.) What is the *meaning* of S?

(1) is the correct formulation; formulation (2) accords with the phraseology of logic, (3) with the phraseology of the theory of knowledge, (4) with that of philosophy (phenomenology). Wittgenstein has asserted that (2) expresses what philosophers mean by (4): the meaning of a sentence consists in its truth-condition. ((1) is the "metalogical" formulation; it is planned to give elsewhere a detailed exposition of metalogic as the theory of syntax and meaning, i.e. relations of deducibility.)

In the case of many words, specifically in the case of the overwhelming majority of scientific words, it is possible to specify their meaning by reduction to other words ("constitution," definition).

E.g. "arthropodes" are animals with segmented bodies and jointed legs." Thereby the above-mentioned question for the elementary sentence form of the word "arthropode," that is for the sentence form "the thing *x* is an arthropode," is answered: it has been stipulated that a sentence of this form is deducible from premises of the form "*x* is an animal," "*x* has a segmented body," "*x* has jointed legs," and that conversely each of these sentences is deducible from the former sentence. By means of these stipulations about deducibility (in other words: about the truth-condition, about the method of verification, about the meaning) of the elementary sentence about "arthropode" the meaning of the word "arthropode" is fixed. In this way every word of the language is reduced to other words and finally to the words which occur in the so-called "observation sentences" or "protocol sentences." It is through this reduction that the word acquires its meaning.

For our purposes we may ignore entirely the question concerning the content and form of the primary sentences (protocol sentences) which has not yet been definitely settled. In the theory of knowledge it is customary to say that the primary sentences refer to "the given"; but there is no unanimity on the question what it is that is given. At times the position is taken that sentences about the given speak of the simplest qualities of sense and feeling (e.g. "warm," "blue," "joy" and so forth); others incline to the view that basic sentences refer to total experiences and similarities between them; a still different view has it that even the basic sentences speak of things. Regardless of this diversity of opinion it is certain that a sequence of words has a meaning only if its relations of deducibility to the protocol sentences are fixed, whatever the characteristics of the protocol sentences may be; and similarly, that a word is significant only if the sentences in which it may occur are reducible to protocol sentences.

Since the meaning of a word is determined by its criterion of application (in other words: by the relations of deducibility entered into by its elementary sentence-form, by its truth-conditions, by the method of its verification), the stipulation of the criterion takes away one's freedom to decide what one wishes to "mean" by the word. If the word is to receive an exact meaning, nothing less than the criterion of application must be given; but one cannot, on the other hand, give more than the criterion of application, for the latter is a sufficient determination of meaning. The meaning is implicitly contained in the criterion; all that remains to be done is to make the meaning explicit.

Let us suppose, by way of illustration, that someone invented

the new word "teavy" and maintained that there are things which are teavy and things which are not teavy. In order to learn the meaning of this word, we ask him about its criterion of application: how is one to ascertain in a concrete case whether a given thing is teavy or not? Let us suppose to begin with that we get no answer from him: there are no empirical signs of teavyness, he says. In that case we would deny the legitimacy of using this word. If the person who uses the word says that all the same there are things which are teavy, and there are things which are not teavy, only it remains for the weak, finite intellect of man an eternal secret which things are teavy and which are not, we shall regard this as empty verbiage. But perhaps he will assure us that he means, after all, something by the word "teavy." But from this we only learn the psychological fact that he associates some kind of images and feelings with the word. The word does not acquire a meaning through such associations. If no criterion of application for the word is stipulated, then nothing is asserted by the sentences in which it occurs, they are but pseudo-statements.

Secondly, take the case when we are given a criterion of application for a new word, say "toovy"; in particular, let the sentence "this thing is toovy" be true if and only if the thing is quadrangular (It is irrelevant in this context whether the criterion is explicitly stated or whether we derive it by observing the affirmative and the negative uses of the word). Then we will say: the word "toovy" is synonymous with the word "quadrangular." And we will not allow its users to tell us that nevertheless they "intended" something else by it than "quadrangular"; that though every quadrangular thing is also toovy and conversely, this is only because quadrangularity is the visible manifestation of toovyness, but that the latter itself is a hidden, not itself observable property. We would reply that after the criterion of application has been fixed, the synonymy of "toovy" and "quadrangular" is likewise fixed, and that we are no further at liberty to "intend" this or that by the word.

Let us briefly summarize the result of our analysis. Let "a" be any word and "S(a)" the elementary sentence in which it occurs. Then the sufficient and necessary condition for "a" being meaningful may be given by each of the following formulations, which ultimately say the same thing:

1. The *empirical criteria* for a are known.
2. It has been stipulated from what protocol sentences "S(a)" is *deducible*.

3. The *truth-conditions* for "S(a)" are fixed.
4. The method of *verification* of "S(a)" is known.¹

3. METAPHYSICAL WORDS WITHOUT MEANING

Many words of metaphysics, now, can be shown not to fulfill the above requirement, and therefore to be devoid of meaning.

Let us take as an example the metaphysical term "principle" (in the sense of principle of being, not principle of knowledge or axiom). Various metaphysicians offer an answer to the question which is the (highest) "principle of the world" (or of "things," of "existence," of "being"), e.g. water, number, form, motion, life, the spirit, the idea, the unconscious, activity, the good, and so forth. In order to discover the meaning of the word "principle" in this metaphysical question we must ask the metaphysician under what conditions a statement of the form "x is the principle of y" would be true and under what conditions it would be false. In other words: we ask for the criteria of application or for the definition of the word "principle." The metaphysician replies approximately as follows: "x is the principle of y" is to mean "y arises out of x," "the being of y rests on the being of x," "y exists by virtue of x" and so forth. But these words are ambiguous and vague. Frequently they have a clear meaning; e.g., we say of a thing or process y that it "arises out of" x when we observe that things or processes of kind x are frequently or invariably followed by things or processes of kind y (causal connection in the sense of a lawful succession). But the metaphysician tells us that he does not mean this empirically observable relationship. For in that case his metaphysical theses would be merely empirical propositions of the same kind as those of physics. The expression "arising from" is not to mean here a relation of temporal and causal sequence, which is what the word ordinarily means. Yet, no criterion is specified for any other meaning. Consequently, the alleged "metaphysical" meaning, which the word is supposed to have here in contrast to the mentioned empirical meaning, does not exist. If we reflect on the original meaning of the word "principium" (and of the corresponding Greek word ἀρχή), we notice the same development. The word is explicitly deprived of its original meaning "beginning"; it is not supposed to mean the temporally prior any more, but the prior in some other, specifically metaphysical, respect. The criteria for this "metaphysical respect," however, are lacking. In both cases,

1. For the logical and epistemological conception which underlies our exposition, but can only briefly be intimated here, cf. Wittgenstein, *Tractatus Logico-Philosophicus*, 1922, and Carnap, *Der logische Aufbau der Welt*, 1928.

then, the word has been deprived of its earlier meaning without being given a new meaning; there remains the word as an empty shell. From an earlier period of significant use, it is still associatively connected with various mental images; these in turn get associated with new mental images and feelings in the new context of usage. But the word does not thereby become meaningful; and it remains meaningless as long as no method of verification can be described.

Another example is the word "God." Here we must, apart from the variations of its usage within each domain, distinguish the linguistic usage in three different contexts or historical epochs, which however overlap temporally. In its *mythological* use the word has a clear meaning. It, or parallel words in other languages, is sometimes used to denote physical beings which are enthroned on Mount Olympus, in Heaven or in Hades, and which are endowed with power, wisdom, goodness and happiness to a greater or lesser extent. Sometimes the word also refers to spiritual beings which, indeed, do not have manlike bodies, yet manifest themselves nevertheless somehow in the things or processes of the visible world and are therefore empirically verifiable. In its *metaphysical* use, on the other hand, the word "God" refers to something beyond experience. The word is deliberately divested of its reference to a physical being or to a spiritual being that is immanent in the physical. And as it is not given a new meaning, it becomes meaningless. To be sure, it often looks as though the word "God" had a meaning even in metaphysics. But the definitions which are set up prove on closer inspection to be pseudo-definitions. They lead either to logically illegitimate combinations of words (of which we shall treat later) or to other metaphysical words (e.g. "primordial basis," "the absolute," "the unconditioned," "the autonomous," "the self-dependent" and so forth), but in no case to the truth-conditions of its elementary sentences. In the case of this word not even the first requirement of logic is met, that is the requirement to specify its syntax, i.e. the form of its occurrence in elementary sentences. An elementary sentence would here have to be of the form "x is a God"; yet, the metaphysician either rejects this form entirely without substituting another, or if he accepts it he neglects to indicate the syntactical category of the variable x. (Categories are, for example, material things, properties of things, relations between things, numbers etc.).

The *theological* usage of the word "God" falls between its mythological and its metaphysical usage. There is no distinctive meaning here, but an oscillation from one of the mentioned two uses to the other. Several theologians have a clearly empirical (in our termin-

ology, "mythological") concept of God. In this case there are no pseudo-statements; but the disadvantage for the theologian lies in the circumstance that according to this interpretation the statements of theology are empirical and hence are subject to the judgment of empirical science. The linguistic usage of other theologians is clearly metaphysical. Others again do not speak in any definite way, whether this is because they follow now this, now that linguistic usage, or because they express themselves in terms whose usage is not clearly classifiable since it tends towards both sides.

Just like the examined examples "principle" and "God," most of the other *specifically metaphysical terms are devoid of meaning*, e.g. "the Idea," "the Absolute," "the Unconditioned," "the Infinite," "the being of being," "non-being," "thing in itself," "absolute spirit," "objective spirit," "essence," "being-in-itself," "being-in-and-for-itself," "emanation," "manifestation," "articulation," "the Ego," "the non-Ego," etc. These expressions are in the same boat with "teavy," our previously fabricated example. The metaphysician tells us that empirical truth-conditions cannot be specified; if he adds that nevertheless he "means" something, we know that this is merely an allusion to associated images and feelings which, however, do not bestow a meaning on the word. The alleged statements of metaphysics which contain such words have no sense, assert nothing, are mere pseudo-statements. Into the explanation of their historical origin we shall inquire later.

4. THE SIGNIFICANCE OF A SENTENCE

So far we have considered only those pseudo-statements which contain a meaningless word. But there is a second kind of pseudo-statement. They consist of meaningful words, but the words are put together in such a way that nevertheless no meaning results. The syntax of a language specifies which combinations of words are admissible and which inadmissible. The grammatical syntax of natural languages, however, does not fulfill the task of elimination of senseless combinations of words in all cases. Let us take as examples the following sequences of words:

1. "Caesar is and"
2. "Caesar is a prime number"

The word sequence (1) is formed countersyntactically; the rules of syntax require that the third position be occupied, not by a conjunction, but by a predicate, hence by a noun (with article) or by an adjective. The word sequence "Caesar is a general," e.g., is

formed in accordance with the rules of syntax. It is a meaningful word sequence, a genuine sentence. But, now, word sequence (2) is likewise syntactically correct, for it has the same grammatical form as the sentence just mentioned. Nevertheless (2) is meaningless. "Prime number" is a predicate of numbers; it can be neither affirmed nor denied of a person. Since (2) looks like a statement yet is not a statement, does not assert anything, expresses neither a true nor a false proposition, we call this word sequence a "pseudo-statement." The fact that the rules of grammatical syntax are not violated easily seduces one at first glance into the erroneous opinion that one still has to do with a statement, albeit a false one. But "a is a prime number" is false if and only if a is divisible by a natural number different from a and from 1; evidently it is illicit to put here "Caesar" for "a." This example has been so chosen that the nonsense is easily detectable. Many so-called statements of metaphysics are not so easily recognized to be pseudo-statements. The fact that natural languages allow the formation of meaningless sequences of words without violating the rules of grammar, indicates that grammatical syntax is, from a logical point of view, inadequate. If grammatical syntax corresponded exactly to logical syntax, pseudo-statements could not arise. If grammatical syntax differentiated not only the word-categories of nouns, adjectives, verbs, conjunctions etc., but within each of these categories made the further distinctions that are logically indispensable, then no pseudo-statements could be formed. If, e.g., nouns were grammatically subdivided into several kinds of words, according as they designated properties of physical objects, of numbers etc., then the words "general" and "prime number" would belong to grammatically different word-categories, and (2) would be just as linguistically incorrect as (1). In a correctly constructed language, therefore, all nonsensical sequences of words would be of the kind of example (1). Considerations of grammar would already eliminate them as it were automatically; i.e. in order to avoid nonsense, it would be unnecessary to pay attention to the meanings of the individual words over and above their syntactical type (their "syntactical category," e.g. thing, property of things, relation between things, number, property of numbers, relation between numbers, and so forth). It follows that if our thesis that the statements of metaphysics are pseudo-statements is justifiable, then metaphysics could not even be expressed in a logically constructed language. This is the great philosophical importance of the task, which at present occupies the logicians, of building a logical syntax.

5. METAPHYSICAL PSEUDO-STATEMENTS

Let us now take a look at some examples of metaphysical pseudo-statements of a kind where the violation of logical syntax is especially obvious, though they accord with historical-grammatical syntax. We select a few sentences from that metaphysical school which at present exerts the strongest influence in Germany.²

"What is to be investigated is being only and—*nothing* else; being alone and further—*nothing*; solely being, and beyond being—*nothing*. *What about this Nothing? . . . Does the Nothing exist only because the Not, i.e. the Negation, exists? Or is it the other way around? Does Negation and the Not exist only because the Nothing exists? . . . We assert: the Nothing is prior to the Not and the Negation. . . . Where do we seek the Nothing? How do we find the Nothing. . . . We know the Nothing. . . . Anxiety reveals the Nothing. . . . That for which and because of which we were anxious, was 'really'—nothing. Indeed: the Nothing itself—as such—was present. . . . What about this Nothing?—The Nothing itself nothings."*

In order to show that the possibility of forming pseudo-statements is based on a logical defect of language, we set up the schema below. The sentences under I are grammatically as well as logically impeccable, hence meaningful. The sentences under II (excepting B3) are in grammatical respects perfectly analogous to those under I. Sentence form IIA (as question and answer) does not, indeed, satisfy the requirements to be imposed on a logically correct language. But it is nevertheless meaningful, because it is translatable into correct language. This is shown by sentence IIIA, which has the same meaning as IIA. Sentence form IIA then proves to be undesirable because we can be led from it, by means of grammatically faultless operations, to the meaningless sentence forms IIB, which are taken from the above quotation. These forms cannot even be constructed in the correct language of Column III. Nonetheless, their nonsensicality is not obvious at first glance, because one is easily deceived by the analogy with the meaningful sentences IB. The fault of our language identified here lies, therefore, in the circumstance that, in contrast to a logically correct language, it admits of the same grammatical form for meaningful and meaningless word sequences. To each sentence in words we have added a corresponding formula in the

2. The following quotations (original italics) are taken from M. Heidegger, *Was Ist Metaphysik?* 1929. We could just as well have selected passages from any other of the numerous metaphysicians of the present or of the past; yet the selected passages seem to us to illustrate our thesis especially well.

notation of symbolic logic; these formulae facilitate recognition of the undesirable analogy between IA and IIA and therewith of the origin of the meaningless constructions IIB.

I. <i>Meaningful Sentences of Ordinary Language</i>	II. <i>Transition from Sense to Nonsense in Ordinary Language</i>	III. <i>Logically Correct Language</i>
A. What is outside? Ou(?) Rain is outside Ou(r)	A. What is outside? Ou(?) Nothing is outside Ou(no)	A. There is nothing (does not exist any- thing) which is outside. $\sim(\exists x).Ou(x)$
B. What about this rain? (i.e. what does the rain do? or: what else can be said about this rain? ? (r)	B. "What about this Nothing?" ?(no)	B. None of these forms can even be constructed.
1. We know the rain K(r)	1. "We seek the Nothing" "We find the Nothing" "We know the Nothing" K(no)	
2. The rain rains R(r)	2. "The Nothing nothings" No(no)	
	3. "The Nothing exists only because . . ." Ex(no)	

On closer inspection of the pseudo-statements under IIB, we also find some differences. The construction of sentence (1) is simply based on the mistake of employing the word "nothing" as a noun, because it is customary in ordinary language to use it in this form in order to construct a negative existential statement (see IIA). In a correct language, on the other hand, it is not a particular *name*, but a certain *logical form* of the sentence that serves this purpose

(see IIIA). Sentence IIB2 adds something new, viz. the fabrication of the meaningless word "to nothing." This sentence, therefore, is senseless for a twofold reason. We pointed out before that the meaningless words of metaphysics usually owe their origin to the fact that a meaningful word is deprived of its meaning through its metaphorical use in metaphysics. But here we confront one of those rare cases where a new word is introduced which never had a meaning to begin with. Likewise sentence IIB3 must be rejected for two reasons. In respect of the error of using the word "nothing" as a noun, it is like the previous sentences. But in addition it involves a contradiction. For even if it were admissible to introduce "nothing" as a name or description of an entity, still the existence of this entity would be denied in its very definition, whereas sentence (3) goes on to affirm its existence. This sentence, therefore, would be contradictory, hence absurd, even if it were not already meaningless.

In view of the gross logical errors which we find in sentences IIB, we might be led to conjecture that perhaps the word "nothing" has in Heidegger's treatise a meaning entirely different from the customary one. And this presumption is further strengthened as we go on to read there that anxiety reveals the Nothing, that the Nothing itself is present as such in anxiety. For here the word "nothing" seems to refer to a certain emotional constitution, possibly of a religious sort, or something or other that underlies such emotions. If such were the case, then the mentioned logical errors in sentences IIB would not be committed. But the first sentence of the quotation at the beginning of this section proves that this interpretation is not possible. The combination of "only" and "nothing else" shows unmistakably that the word "nothing" here has the usual meaning of a logical particle that serves for the formulation of a negative existential statement. This introduction of the word "nothing" is then immediately followed by the leading question of the treatise: "What about this Nothing?"

But our doubts as to a possible misinterpretation get completely dissolved as we note that the author of the treatise is clearly aware of the conflict between his questions and statements, and logic. "*Question and answer* in regard to the Nothing are equally *absurd* in themselves. . . . The fundamental rule of thinking commonly appealed to, the law of prohibited contradiction, general '*logic*,' destroys this question." All the worse for logic! We must abolish its sovereignty: "If thus the power of the *understanding* in the field of questions concerning Nothing and Being is broken, then the fate of the sovereignty of '*logic*' within philosophy is thereby decided as

well. The very idea of 'logic' dissolves in the whirl of a more basic questioning." But will sober science condone the whirl of counter-logical questioning? To this question too there is a ready answer: "The alleged sobriety and superiority of science becomes ridiculous if it does not take the Nothing seriously." Thus we find here a good confirmation of our thesis; a metaphysician himself here states that his questions and answers are irreconcilable with logic and the scientific way of thinking.

The difference between our thesis and that of the *earlier anti-metaphysicians* should now be clear. We do not regard metaphysics as "mere speculation" or "fairy tales." The statements of a fairy tale do not conflict with logic, but only with experience; they are perfectly meaningful, although false. Metaphysics is not "*superstition*"; it is possible to believe true and false propositions, but not to believe meaningless sequences of words. Metaphysical statements are not even acceptable as "*working hypotheses*"; for an hypothesis must be capable of entering into relations of deducibility with (true or false) empirical statements, which is just what pseudo-statements cannot do.

With reference to the so-called *limitation of human knowledge* an attempt is sometimes made to save metaphysics by raising the following objection: metaphysical statements are not, indeed, verifiable by man nor by any other finite being; nevertheless they might be construed as conjectures about the answers which a being with higher or even perfect powers of knowledge would make to our questions, and as such conjectures they would, after all, be meaningful. To counter this objection, let us consider the following. If the meaning of a word cannot be specified, or if the sequence of words does not accord with the rules of syntax, then one has not even asked a question. (Just think of the pseudo-questions: "Is this table teavy?", "is the number 7 holy?", "which numbers are darker, the even or the odd ones?"). Where there is no question, not even an omniscient being can give an answer. Now the objector may say: just as one who can see may communicate new knowledge to the blind, so a higher being might perhaps communicate to us metaphysical knowledge, e.g. whether the visible world is the manifestation of a spirit. Here we must reflect on the meaning of "new knowledge." It is, indeed, conceivable that we might encounter animals who tell us about a new sense. If these beings were to prove to us Fermat's theorem or were to invent a new physical instrument or were to establish a hitherto unknown law of nature, then our knowledge would be increased with their help. For this sort of thing we