

## Chapter Six

# Philosophy in the 20th Century

Philosophy in our time enters into a phase of irreversible decline. In all the trends of modern Western philosophy, one looks in vain for a single idea that has not been expressed long ago, and far better by others. Bourgeois philosophy has withered on the vine. It has nothing new or meaningful to say. For that very reason, it is justly subject to universal contempt, or, more accurately, indifference.

Here again the baneful effects of the extreme division of labour make themselves felt with a vengeance. Isolated in their ivory towers, the academics pass their lives writing obscure theses which are read, and sometimes answered, by other academics. Few people understand what they write. Fewer still care a damn. Like some antiquated priest-caste with its own secret language, comprehensible only to the initiated, they resort to all kinds of symbols and jargon, which seems deliberately designed not to be understood. Here, however, the comparison ends. The mysterious utterances of the priests were taken in deadly earnest by most people. Now the only ones who pay the slightest attention are other philosophers, who, after all must earn a living somehow or other.

Long ago, Joseph Dietzgen said that official philosophy was not a science, but a safeguard against socialism. No matter how indignantly they deny it, professional philosophers have been enlisted by the defenders of the status quo as allies in the struggle against Marxism. This was particularly blatant in the period of the Cold War, but it still remains true. There is nothing new in this, either. Ever since Marxism emerged as a significant force, challenging the existing order, the Establishment has declared war on every aspect of Marxist ideology, starting with dialectical materialism. The very mention of Marxism is guaranteed to provoke a knee-jerk reaction in such circles. "Out of date," "unscientific," "disproved long ago," "metaphysics," and all the rest of the threadbare and tiresome litany.

Not only are Marx and Engels persona non grata in the hallowed halls of the philosophy department, but poor old Hegel, who was once hailed as the philosopher's philosopher par excellence, is subjected to a quite shameful conspiracy of silence. This situation is not only a reflection of material interests, which soon convince all but the bravest souls that it is not wise to offend those who provide the grants and control careers. It is also that they do not like to be reminded of the fact that there was once a time when philosophers actually had something profound and important to say about the real world.

### Main Trends

If we leave aside a few mavericks, such as Henri Bergson, John Dewey, George Santayana and A. N. Whitehead, the great bulk of modern Western philosophy falls into just a couple of categories. On the one hand we have the subjectivist schools related to existentialism, on the other, the various brands of "logical positivism," including linguistic philosophy. The former trend has, in general, had more of an echo in the Latin countries, especially France. The latter, until quite recently, enjoyed widespread support in the Anglo-Saxon world. We shall devote most of our attention to it, because of its

pretension to represent the philosophy of science. The trend which dominated philosophy in Britain and the United States for the greater part of the 20th century, has appeared in different disguises, and under all kinds of aliases—neo-positivism, logical empiricism, empirio-criticism, analytical philosophy, etc., etc. Although it rose to prominence in Britain and the USA, it owes a great deal to German and especially Austrian philosophers. About the turn of the century, the physicist Ernst Mach was developing his philosophy of empirio-criticism. Mach, argued that it was impossible to prove the existence of the material world.

To most people, this idea may seem, to put it mildly, a bit peculiar. And so it is. Yet it has enjoyed considerable popularity with philosophers for most of this century. It is not, however, a new idea. It is based on the ideas worked out by Bishop Berkeley in the 18th century. This was the worst kind of subjective idealism, and the neo-positivists are not very pleased to be reminded of the real author of their philosophy. They regard themselves as scientific empiricists. But then, Bishop Berkeley's ideas were ultimately derived from the narrow British philosophy of empiricism, based on Locke's idea that all human knowledge comes from our senses.

Since all knowledge is derived from sense-perception, he argued, can I assert, for example, that this apple exists? Not at all. All I can say for certain is that I see it, smell it, taste it, etc. In other words, all that I can know is my sense-impressions. Despite all claims to the contrary, the inevitable conclusion of this line of thought is that only I exist. This view is known in philosophy as solipsism (from the Latin *solo ipse*—"I alone"). The argument that it is impossible to prove the existence of the physical world was answered by Engels as long ago as 1892, when he wrote, in the Introduction to the English edition of *Socialism Utopian and Scientific*:

"Again, our agnostic admits that all our knowledge is based upon the information imparted to us by our senses. But, he adds, how do we know that our senses give us correct representations of the objects we perceive through them? And he proceeds to inform us that, whenever he speaks of objects or their qualities, he does in reality not mean these objects and qualities, of which he cannot know anything for certain, but merely the impressions which they have produced on his senses. Now, this line of reasoning seems undoubtedly hard to beat by mere argumentation. But before there was argumentation there was action. In *Anfang war die Tat* ('In the beginning was the deed,' from Goethe's *Faust*, Part I, Scene III.) And human action had solved the difficulty long before human ingenuity invented it. The proof of the pudding is in the eating. From the moment we turn to our own use of these objects, according to the qualities we perceive in them, we put to an infallible test the correctness or otherwise of our sense-perceptions. If these perceptions have been wrong, then our estimate of the use to which an object can be turned must also be wrong, and our attempt must fail. But if we succeed in accomplishing our aim, if we find that the object does agree with our idea of it, and does answer the purpose we intended it for, then that is positive proof that our perceptions of it and of its qualities, so far, agree with reality outside ourselves." (MESW, Vol. 3, p. 101.)

### **Materialism and Empirio-Criticism**

Mach's basic argument—echoing the ideas of Berkeley—was that "I interpret the world

through my senses." A materialist would add to this "the world exists independently of my senses." Failure to accept this elementary truth immediately lands us in all kinds of absurdities—for example, we would have to admit that the world did not exist before there were people present to observe it. More correctly, it did not exist before I was present to observe it, since all I know is my own senses, and therefore I cannot be certain that anyone else exists. In fact, it would follow from this madness that if I close my eyes, the world disappears! Sounds crazy? So it is. Yet not only philosophers, but some very respectable scientists have adopted views which are quite close to these. Let us recall that Mach himself was a physicist.

Mach's arguments were completely answered by Lenin in his book *Materialism and Empirio-Criticism*, where Lenin explains that: "Matter is a philosophical category denoting the objective reality which is given to man by his sensation, and which is copied, photographed and reflected by our sensations, while existing independently of them." (Lenin, *Collected Works*, Vol. 14, p. 130.) Marx and Engels had already clarified this point: "Indeed, being is always an open question beyond the point where our sphere of observation ends. The real unity of the world consists in its materiality, and this is proved not by a few juggling phrases, but by a long and laborious development of philosophy and natural science." (Engels, *Anti-Dühring*, p. 54, our emphasis.) As a matter of fact, it was already dealt with by Hegel, who pointed out that "In the language of common life we mean by objective what exists outside of us and reaches us from without by means of sensation." (Hegel, *Logic*, p. 67.)

The fundamental error of Mach, which is derived from Hume and Kant, was to regard the senses as a kind of barrier separating the individual (the subject) from the material world (the object). In reality, the senses themselves cannot exist without a nervous system, a brain, a body, food, and therefore a physical environment. To present the senses as if they were something independent and separate from the body, i.e. matter organised in a certain way is idealist nonsense of the worst kind. It has nothing in common with science, and everything in common with religion and spiritualism.

Thought is nothing but matter that thinks. It is the product of matter organised in a certain way. Thus, man is part of nature, but a very special part, characterised by the capacity to reflect and comprehend the rest of nature. One of the most striking contradictions of subjective idealism is this: if the physical world only exists if it is perceived, how could it have existed before the existence of the human race, or life itself? Although they twist and turn, the logical positivists, right up to the present, are unable to provide a satisfactory answer to this elementary question.

"That is what comes of accepting 'consciousness,' 'thought,' quite naturalistically as something given, something opposed to being, to nature, from the outset. If this were so, it must seem most odd that consciousness and nature, thinking and being, the laws of thought and the laws of nature, should so closely correspond. But if we then ask what thought and consciousness are and whence they come, we find that they are products of the human brain and that man himself is a product of nature, who has developed in and along with his environment; whence it is self-evident that the products of the human brain, which in the last analysis are also products of nature, do not contradict the rest of nature's interconnections but correspond to them." (Engels, *Anti-Dühring*, p. 44.)

And Lenin, dealing with the same subject, writes:

"For every scientist who has not been led astray by professorial philosophy, as well as for every materialist, sensation is indeed the direct connection between consciousness and the external world; it is the transformation of the energy of external excitation into the fact of consciousness. This transformation has been, and is, observed by each of us a million times on every hand. The sophism of idealist philosophy consists in the fact that it regards sensation as being not the connection between consciousness and the external world, but a fence, a wall, separating consciousness from the external world—not an image of the external phenomenon corresponding to the sensation, but as the 'sole entity.'" (Lenin, Collected Works, Vol. 14, p. 51).

The question of the reality or non-reality of the world outside us is, in fact, not a philosophical but a practical question. It is not solved in the study, but through the entire experience of the human race in its struggle to dominate and transform the real conditions of its existence, and, in so doing, to transform itself also. This was very well expressed by Marx in the second of his Theses on Feuerbach:

"The question whether objective truth can be attributed to human thinking is not a question of theory but is a practical question. In practice man must prove the truth, that is, the reality and power, the this-sidedness of his thinking. The dispute over the reality or non-reality of thinking which is isolated from practice is purely a scholastic question." (MECW, Vol. 5, p. 3.)

### **Reaction Against Hegelian Idealism**

In Britain, the dominant philosophy in the universities in the second half of the 19th century was, oddly enough, Hegelianism, which was presented in a suitably mystical and religious manner. Empiricism is a deeply-rooted tradition in the Anglo-Saxon world. Russell and G. E. Moore reacted against the vapid idealist caricature of Hegelian philosophy represented by the likes of Bradley, McTaggart and Stirling, the author of *The Secret of Hegel* (of which Lenin remarked that "The secret was well kept!"). These idealists taught a bowdlerised version of Hegel, omitting all of value, and preserving only the mystical side. McTaggart, for instance, taught that the concept of time is inconsistent and therefore cannot be exemplified in reality. Such mystical twaddle repelled a whole generation of younger philosophers, such as G. E. Moore and Bertrand Russell.

This started as a healthy reaction against idealist mystification. But what to put in its place? They searched around for an alternative, and found a good old British one—"common sense" and "the facts." They advocated a return to empiricism, in an attempt to purge idealism from philosophy. Their watchword was that of Isaac Newton: "Physics, beware of metaphysics!" In place of wrong-headed idealist theorising, empiricism prefers no theorising at all. Regrettably, that is not possible. Philosophy, like nature, abhors a vacuum.

The only viable alternative to metaphysics is consistent materialism—dialectical materialism. By ignoring the philosophical revolution effected by Marx and Engels, who had stripped the Hegelian philosophy of its idealist trappings to reveal its rational core,

they threw the baby out with the bathwater. They were thus obliged to return to an earlier standpoint which had already been completely overtaken and surpassed.

The line of development of the British empiricist school founded by Bacon, Hobbes and Locke entered into a prolonged decline with Berkeley and Hume, eventually ending up in a complete blind alley. The attempt of J. S. Mill to revive it was merely a lifeless vulgarisation. The fundamental proposition of empiricism is: "I interpret the world through my senses." To this self-evident proposition, it is necessary to add: "the world exists independent of my senses."

The senses are ultimately the source of all human knowledge. Equally, it is the source of many errors. At its birth, empiricism represents a giant leap forward in human thought. It marked a rejection of the dictatorship of the Church over science, and the victory of the genuine scientific method, based on experiment and observation, as opposed to the stultifying idealism of the Schoolmen.

But this materialism remained incomplete and one-sided. Above all, it fell prey to the prevailing mechanistic mode of thinking. It is a paradox that the greatest advances in philosophy were made by idealist philosophers like Spinoza, Leibniz, Kant and, above all, Hegel. This contradiction was solved by Marx and Engels, combining for the first time dialectics with the scientific method of materialism.

To his credit, G. E. Moore tried to oppose not only Hegelian mysticism, but also the mysticism that inevitably arises from a one-sided empiricism. The example of Berkeley and Hume shows where this leads—to the morass of subjective idealism and solipsism (the idea that only "I" exist). In his paper *The Nature of Judgment* (1899), Moore argued for a theory of knowledge that accepts the existence of the physical world independent of the senses.

In his 1925 essay *Defence of Common Sense*, he says: "I had breakfast this morning, (therefore time exists) and I do have a pencil in my hand (therefore the external world exists)." While this is preferable to the mystical nonsense of Mach and Heisenberg, it is hardly satisfactory. Such superficial arguments do not carry philosophy a single step forward from the time when Diogenes the Cynic "proved" the existence of movement simply by walking up and down. Within certain limits, "common sense" can stand on its own. But beyond that, it breaks down utterly, and leads to even more serious mistakes. Let us not forget that "common sense" tells us that the world is flat, and the sun goes round the earth.

Try as we may, we cannot do without theoretical generalisations which take us far beyond the world immediately given in sense-perception. Moore's attempts to combat metaphysics by appealing to the "beliefs of common sense" are quite empty from a philosophical point of view. Why appeal to these beliefs, rather than any other beliefs? What this amounts to is an appeal to the commonplaces and prejudices of the society in which we live. Thus, at the end of the day, we once again find ourselves stuck with an essentially subjective philosophy, and moreover, one that is firmly rooted in the status quo.

## "Logical Atomism"

Whereas Moore advocated a return to "common sense"—a typically Anglo Saxon response, not just to idealism but to any kind of theoretical thought which seems to conflict with the narrow world of experience—Russell was moving in an altogether different direction.

Russell and, at least at first, Wittgenstein, thought that the underlying structure of language mirrors that of the world, and that, therefore, the analysis of language would reveal important truths about reality. In fact, there is just a germ of truth in this idea, as Hegel pointed out long before. Here, however, it is presented in a narrow, one-sided way, which leads straight to a dead-end.

"Out of the frying-pan, and into the fire!" Russell differed from Moore in attempting to work out a new theory and methodology. How to put logic on a scientific basis? Why, by giving it a mathematical language. In 1918-19, under the influence of the brilliant young Austrian Wittgenstein, he published a series of articles entitled *The Philosophy of Logical Atomism*, in which he endeavoured to disclose the fundamental workings of language and thereby reveal the fundamental structures that language describes.

Wittgenstein, who had moved to Cambridge, initially shared the position of Russell and Carnap, but later became skeptical of the foundations of mathematics and logic and moved away, to a study of ordinary language. He advanced the idea that "all philosophy is a critique of language." His declared aim was to wage a "battle against the bewitchment of our intelligence by means of language."

This kind of thing is seriously put forward as the "final solution" for all the great philosophical problems of the past. Just tidy up your grammar and syntax, and all will be well! As if these problems were caused by some misunderstanding, or by not speaking correctly, or formal defects of thought. Now for the first time in 2,500 years, the great men of Oxbridge suddenly begin to think and speak with the necessary clarity, and quickly sort out all the confusions caused by muddleheads like Socrates, Aristotle, and, of course, Marx.

The theory of logical atomism is based on a completely false understanding of language. It is derived from a superficial analogy with the physics of the day. The simplest kind of statement is called "atomic," while more complex statements are given the label "molecular." By borrowing a few phrases from physics, Russell hoped to lend his assertions about language a scientific air. There is absolutely nothing scientific about it. Language is least of all susceptible to a "reductionist" treatment of this sort. It is a complex whole that is much more than the totality of its individual parts. Russell's whole approach reflects the deficiencies, not only of his narrow and formalistic philosophy, but also the limitations of physics at that time.

There is nothing new even in the notion of linguistic philosophy. This was already present in the writings of Locke, Berkeley and Hume, let alone Hegel, who had some brilliant dialectical insights on language. The celebrated *Tractatus* of Wittgenstein is a good example of how these ladies and gentlemen tied themselves in knots with their

metaphysical speculations on language. According to Wittgenstein, we can only know the world through the empirical sciences, yet the Tractatus claims to reveal the relationship between language and the real world. The Tractatus actually says of itself that what it says cannot be coherently said. And these people accuse Hegel of obscurantism!

### **The Vienna Circle**

After the First World War, a group called the Vienna Circle, led by Rudolph Carnap, with a flourish of trumpets, launched the school of logical empiricism, announcing to the world that "philosophy must be scientific." This has been the battle-cry of logical positivism ever since. It is alleged that this brand of philosophy is entitled to what amounts to a monopoly of the "scientific method."

All other philosophies, past and present, are sternly required to submit to the terms of the self-proclaimed philosophy of science, and, if they do not conform to its tenets, they are instantly declared to be unscientific, or even worse, metaphysical, and are cast into the outer darkness. Here, amidst wailing and gnashing of teeth, they can rub shoulders with the likes of Marx, Hegel, Freud, Aristotle, Spinoza, Saint Augustine, and all the host of obdurate metaphysicians, condemned for all eternity by the Supreme Wisdom of The Philosophy of Science.

Carnap started with perception (The Logical Structure of the World, 1928), then turned to semantics (The Logical Syntax of Language, 1934), and ended up with logic (Meaning and Necessity, 1947).

Ludwig Wittgenstein published his Tractatus Logico-Philosophicus in 1922, with the laudable intention of arriving at "clear thinking," (the clear assumption being that human beings were unable to think clearly before). But we have already had occasion to point out that one of the hallmarks of this tendency is its remarkable humility.

The basic ideas are as follows:

- 1) All meaningful discourse consists either of a) the formal sentences of logic and mathematics, or b) the factual propositions of the special sciences.
- 2) Any assertion that claims to be factual has meaning only if it is possible to say how it might be verified.
- 3) "Metaphysical" assertions, coming under neither of these classes are meaningless.
- 4) All statements about moral, aesthetic, or religious values are scientifically unverifiable, and therefore meaningless.

Thus, in a couple of lines, we effortlessly dispose of two thousands years of human thought. If it does not fit into the narrow straitjacket of the rules of logical positivism, it is declared to be neither right nor wrong, but simply meaningless. Compared to this, all the battles of Julius Caesar and Napoleon are just child's play. God and the devil, dialectical materialism, psycho-analysis, the writings of Plato and Aristotle, of Spinoza, the Bible, the Koran and the Torah are dismissed, with no trouble at all.

After the rise of Hitler, Carnap and his collaborators moved to the USA, where their ideas were influential. But everywhere, the different brands of logical positivism have led to a

blind alley. Bertrand Russell started with logic, then turned to problems of perception, and finally ended up with semantics, a barren playing with words and symbols.

The declared intention was to purge philosophy of Metaphysics in general. But the way to a very warm place is paved with good intentions! What was so cavalierly ejected by the tradesman's entrance immediately flew back in through the window. Instead of combating idealist metaphysics fairly and squarely (which can only be done by adopting a consistent materialist standpoint, the only really scientific methodology), they resorted to a kind of philosophical subterfuge. "We cannot know, so we should not ask," ("the question has no meaning"). At best, this leads to agnosticism, shamefaced, inconsistent materialism. At worst, it leads straight into the morass of subjective idealism.

The first thing that strikes one here is the extreme poverty of thought, the narrow formalism, the absence of real content, the intellectual cowardice of this whole outlook. Do we really have to remind ourselves that all the advances of human thought, and especially of science, were made by great thinkers who were spurred on by the challenge of the unknown, who were not afraid to ask questions which could not be answered at that moment in time. How could the brilliant theories of the Greek atomists be "empirically verified" with the technology available at the time? We can imagine the ancient Greek counterparts of these philosophers of science scoffing at the "meaningless metaphysics" of Democritus and Epicurus!

### **Logical Positivism**

It is customary for the opponents of Marxism to have a good laugh at the numerous splinter groups on the political left. But the situation is not much different with the squabbling groups which emerged from logical positivism. Nevertheless, it is very much a question of the same tune played on different keys. In Britain, they were based at Oxford, where G. E. Moore represented a typically English trend based on a "realistic and commonsensical" approach to ethics and the theory of knowledge.

In the early years of the 20th century, Bertrand Russell and Alfred North Whitehead, reacting against the prevailing pseudo-Hegelian idealism in a different way, set out to develop a "new logic," in a work published in 1910-13, which they modestly gave the same name as Newton's epoch-making masterpiece *Principia Mathematica*. "The origin of this philosophy is in the achievements of mathematicians who set to work to purge their subject of fallacies and slipshod reasoning." (Bertrand Russell, *History of Western Philosophy*, p. 783.) This kind of boastful language is all too typical of the whole trend of logical positivism, which, just like Dühring promised a great deal, and delivered practically nothing.

Here reality is stood on its head. The world must be understood by analysing ideas, or, worse still, words. Here we are back with the same old mysticism of Mach's empirio-criticism, which Lenin had demolished in 1908. Russell twists and turns on the central issue of whether physical objects exist outside our senses. At one point, he claimed that the observer had to infer the existence of a material world as the best available hypothesis to account for his experiences. Elsewhere he argues that physical objects could be taken as logical constructions out of sense-data.

This obsession with language is no accident. It fits in well with the deeply ingrained prejudice of the intellectual that reality is equivalent to ideas and words. It requires an effort of the imagination to remember that the period under consideration was one of unprecedented social upheaval. A world war with millions slaughtered, the Russian Revolution, economic crisis, the miners' strike in Britain. And in Oxford and Cambridge? Thick tomes on the meaning of words, and attempts to create a "perfect" language. A retreat into the rarefied atmosphere of syntax, the breakdown of language into its "atoms," perhaps in an attempt to make sense of a senseless world. Better still, deny its existence altogether! That was the way of the Greek and Roman skeptics, of mediaeval monks, of Bishop Berkeley, and now of the self-appointed philosophers of science. Was there ever in the whole history of philosophy such a comically misnamed piece of pretentiousness?

There is a common thread connecting all these schools. It is the exaggerated importance given to language. "In the beginning was the Word," wrote John the Evangelist, at the beginning of his gospel. This has been taken by logical positivism as its rallying call, with one slight amendment: not just in the beginning, but in the middle and the end as well! It's all a question of words. This is entirely in consequence with the psychology and prejudices of people who live by words, written or spoken. A soil without nutrients will produce only feeble plants. An anaemic environment will only bring forth a bloodless philosophy. All this semantic fiddling and fussing for decades was supposed to represent philosophy. As Hegel once commented: "By the little with which the human spirit is satisfied we can gauge the extent of its loss."

Note that, by reducing everything to words and their meaning (semantics), we have by no means escaped from idealism. What are words if not expressed thoughts? This alleged "scientific realism" is, in fact, a resurrection of idealism in another disguise. The appeal to language, merely moves us one step further away from the material world, so that, instead of asking whether a particular idea corresponds to reality, we now confine ourselves to asking whether a given word or phrase corresponds to the idea we wish to express!

Here again, we see how all the riches of philosophy are reduced to a few desiccated crumbs. Without for a moment denying the importance of the study of language and meaning as a specialised branch of science and philosophy, to attempt to reduce everything to this is frankly absurd. This empty and arid philosophy was followed in the USA by Gilbert Ryle, J. L. Austin, P. F. Strawson and others.

The only "innovation" here in comparison to Mach is the introduction of the linguistic dimension. This does not signify any real advance, but merely pushes the whole argument one step further away from reality. Instead of asking whether a given idea is correct or not (that is to say, whether it reflects objective reality) we are only allowed to ask whether a given statement is meaningful or not. And how do we know whether we are saying something "meaningful"? By the definitions arbitrarily invented by the logical positivists themselves! This is like playing a game of football, where the rules state that only the other team is allowed to score goals, or, more accurately, make up the rules as they go along. It reminds one of the logic of Humpty Dumpty in *Alice in Wonderland*: "When I use a word it means just what I choose to mean—neither more nor less."

All statements must be empirically verifiable (the "principle of verification"). Thus, expressions like "God exists" are meaningless, because they can neither be proved or disproved. The same is said of most of the great central problems of philosophy, including the struggle between idealism and materialism. These are declared to be "non-problems." And, as in the rules of cricket, "the umpire's decision is final." Thus we dispose of the whole history of philosophy, without even removing our carpet slippers!

"But wait a minute!" comes a shout from the back of the lecture-hall. "Haven't you forgotten something? It's all very well disposing of God, Karl Marx and a few other notorious trouble-makers. But what about the eternal truths of mathematics? How on earth can we empirically verify Euclid's geometry? We all know that the axioms of mathematics are not proven, but have to be taken on trust. And things are just as bad with logic itself! How do we empirically verify the law of identity, when quantum mechanics seems to prove something altogether different?"

At this precise moment, the neo-positivist lecturer looks at his watch, and decides it is time for lunch. He cannot very well answer his naïve student, because the so-called truths of mathematics and formal logic cannot be empirically verified at all. They are what is known in the trade as a priori (from the Latin, meaning "from the beginning"). They are simply taken to be true at the outset. Thus, if we are to be consistent, not only Marx and Freud have failed the principle of verification, but Pythagoras and Euclid also. All should be renounced as pernicious metaphysicians, deceiving us with their unverifiable nonsense. So not only dialectical materialism ends up on the scrap-heap, but the whole of mathematics and formal logic as well!

Here the Tractatus hastens to the rescue with a barely-hidden trick. As in the kind of insurance policies sold by some of the less reputable salesmen to gullible clients, you have to read the small print, which contains an escape-clause: the truths of mathematics are declared to be "analytic" (a term filched from Kant). They are true, but tautologies (truisms) like the sentence "all bachelors are unmarried." They are conventional truths which underlie the use of the symbols involved. Make whatever sense you can of this!

What it really means is that, when faced with the insoluble contradictions of their own arguments, these "practical," "commonsensical," "scientific" gentlemen do not hesitate to resort to blatant trickery to cover their backsides. And all because of a dogmatic insistence that all truths must be derived from empirical knowledge! To which a dialectical materialist would reply, "Yes, but only in the last analysis." The history of thought is a very long one, and has acquired a life and logic all of its own, like the broomstick of the sorcerer's apprentice.

The laws of formal logic, like those of dialectics, are abstractions which are ultimately derived from nature. But, having once arrived at these important generalisations, is it really necessary for every generation, or individual, to rediscover them by trial and error ("empirically")? Do we need to re-invent the wheel? If the answer is no, then we must accept that not all knowledge is derived directly from experience; that the historically evolved forms of thought not only have a role to play, but a most important one. The only question we have to ask is whether these forms of thought (dialectics, formal logic) adequately reflect the objective world or not. Of course, if, like the philosophers of

science, we have problems deciding whether the objective world is out there or not, then the whole thing gets a bit awkward.

### **"Analytic Philosophy"**

Deeper and deeper into the tangled undergrowth of syntax, they moved further and further away from reality, to the point where most present-day "analytical philosophers" now deny that language mirrors the objective world at all. They have spent so long floating around the rarefied heights, that they have now decided that the language of ordinary mortals is just not good enough. They have even proposed the creation of an "ideal" language, which will be pure, precise, and free from all ambiguity. No doubt, quite useful work can be done on linguistic analysis. But to claim that this is the key to all the fundamental problems of human thought is indeed a slight misunderstanding.

At bottom, the crisis of modern science is connected with the extreme division of labour. The sharp dichotomy between those sections of science which take as their point of departure the real world, experiment and practice, and the so-called "deductive" and "a priori" sciences—maths and logic. The tendency of theoretical physics and cosmology to depend increasingly on complex mathematical theories has made it increasingly inadequate to explain the real world.

A revolution in logic is demanded by the entire situation. But for all their semantic investigations and abstruse symbols, no revolution has emerged. The logical positivists merely warm up the same old dishes, with a slightly different garnish. Expressing the same old ideas in abstruse symbols borrowed from mathematics does not give them any greater validity. The only real outcome has been to increase still further the gulf separating the scientific priest-caste from the "common herd."

Philosophy finally takes its revenge on those who tried to ignore her. Those who insisted on the "facts," and heaped curses on the head of "metaphysics," religion, and all the rest, are themselves responsible for re-introducing religion and mystical ideas into science. All the abstruse investigations into language and syntax, the search for an "ideal" language, for a world of mathematical symbols, and the rest of it, signifies an ever-accelerating slide away from the world of reality, into the most crass idealism.

Formal logic and mathematics establish a series of a priori rules (axioms, theorems, etc.), out of which everything else is derived by a process of deductive reasoning. Language develops in an entirely different way. The real, historical development of language does not conform to this method in the slightest degree. Any attempt to make it conform to such narrow and arbitrary parameters is doomed in advance. Grammar, vocabulary, and syntax evolve historically, as the result of an extremely complex interplay of different phenomena: social, economic, political, national, religious, cultural, etc. These are not logical constructs, but are socially determined. Insofar as they have rules, these are of an entirely different character to the rules of formal logic and mathematics.

Dead rules cannot give life to words. Moreover, the rules themselves have to be explained. In general, this obsession with words and language merely removes us one step further away from the real subject of our inquiry, which is material reality. No matter

where we start, we find ourselves discussing something else altogether, namely, "what do you mean when you say A, B, C..." and so on ad infinitum, like a man who tries to quench his thirst by drinking salt water. Even insofar as it is valid (and the inquiry after the meaning of words is certainly a useful exercise), it does not get us very far in the real task in hand, and more often has exactly the opposite effect, recalling the interminable and sterile discussions of the mediaeval Schoolmen on how many angels can dance on the head of a pin.

This road eventually brings us back to subjectivism, very well exemplified by the theory of a "private language" put forward by Russell and Moore. What each individual "knows," according to this, is not the objective world, but only his own sensations, ideas and volitions. These are not physical, but mental phenomena. The things "known" are essentially private and individual, that is, inaccessible to others. Now this flies completely in the face of everything that is known about the development of language. Language is a social phenomenon. Historically, it arises out of the demands of collective, co-operative production. The very idea of a "private" language is a contradiction in terms. It is an extreme manifestation of the idea of "atomism," transferred from physics to language, and from language to society.

If this were the case, how could the physical world be known and expressed at all? In effect, here we have the trivialisation of philosophy, its reduction to commonplaces, or investigations into this or that detail. This senseless and futile theory shows clearly that what the linguistic philosophers understood least of all is—language.

### **Blind Alley of Linguistic Philosophy**

"I am tempted to say of metaphysicians what Scalinger used to say to the Basques: they are said to understand one another, but I don't believe a word of it." (Nicolas-Sebastien Chamfort, *Maximes et Pensees*, ch. 7.)

In 1929, Wittgenstein returned to Cambridge from Austria, and promptly did an about-face from the positions he had previously put forward in the *Tractatus*. Opposing the ideas of logical atomism which he had earlier defended. Thus we have a curious split between the earlier and the later Wittgenstein. Dropping all pretence to represent a "scientific system," he now resorted to loose remarks and unconnected paragraphs, which suggest disorientation, rather than a system of thought. Here we have isolated pronouncements about the philosophy of mathematics, ethics, aesthetics, and much besides.

It was undoubtedly a positive thing that he dropped the untenable idea that language is a simple affair, which can be reduced to a rigid set of rules. Language can be used for the most varied purposes, which cannot be determined by a handful of a priori principles. Russell (and the early Wittgenstein of the *Tractatus*) took symbolic logic as the model for the underlying structures of language. In fact, formal logic and mathematics are thoroughly bad models for language.

Locke held that, in order to express an idea meaningfully, it is necessary to have in mind a rule for applying it correctly. Wittgenstein pointed out, against this, that a rule by itself

was dead. It was like a ruler in the hands of one who had never learnt to use it, a mere string of words. Rules cannot compel, or even guide, a person unless he or she knows how to use them; and the same is true about mental images, which have often been thought to provide the standard for using linguistic expressions.

Wittgenstein argued correctly that:

- a) What transpires in the mental life of an individual could only be conveyed in a language that this person alone could understand.
- b) Such a "private" language would be no language at all.
- c) It is impossible to say anything about this "private" language, since, by definition, it cannot be talked about in a language accessible to anyone but the person concerned.

His later work shows a process of disintegration, consisting of unconnected aphorisms, some useful insights, but lacking any overall view. This was not really a "school" at all. Although some consider themselves "Wittgensteinians" (G. E. Anscombe, Norman Maleon, etc.), it consists mainly of appeals to "common sense," "everyday language," and so on.

The attempts to make language conform to the rules of formal logic can, within certain limits, help to produce a clearer mode of expression. But language is an immensely rich, varied and powerful instrument which has evolved over millions of years. It cannot adequately be reduced to the narrow limits prescribed by formal logic, an extremely limited and ultimately unsatisfactory mode of thought. It is typical of the one-sidedness of this logic that in the formal language worked out by Russell and Whitehead in their *Principia Mathematica* that it admits only statements which are true or false. "Let your communication be Yea, yea; Nay nay, for whatsoever is more than these cometh of evil."

Now even everyday language is not as restricted as this, and would soon rebel against any attempt to imprison it in such a narrow cell. In our normal speech, we do not limit ourselves to simple "yes" and "no" statements, but we also ask questions, issue commands, make (and break) promises, express beliefs (not all of them logical). We talk about possibilities, probabilities as well as certainties. In addition, there is a whole gamut of expressions expressing feelings and emotions, which may not be written as a mathematical equation, but which certainly play a most important role in the lives of real men and women. A moment's reflection will suffice to expose the arbitrary, superficial, in short, nonsensical, nature of the whole construction.

Other philosophers have attempted to make good these deficiencies, by developing new and various "systems of logic." But none of them have been prepared to grasp the nettle, tackling the essential defect of formal logic, which lies in the basic laws themselves. One group of logicians have rejected the law of the excluded middle ( $A$  is not  $B$ ). That is an advance, but still does not go far enough. Nor is any real advance possible until it is admitted that the law of identity ( $A = A$ ) is itself defective, as is the so-called law of contradiction ( $A$  is not not- $A$ ), which is supposed to be deduced from it.

To be fair to Wittgenstein, having helped Russell in his attempt to force language into his arbitrary system, he subsequently concluded that the whole approach was false, even

from the standpoint of how language itself works. Language is a highly complex phenomenon, in which apparently similar statements express a myriad of different—even contradictory—meanings. This was already pointed out by Hegel in *The Science of Logic*. The detailed study of language is itself a vital task for modern science, closely connected with information technology and the whole question of "artificial intelligence." But it cannot succeed if it is restricted to an abstract study of the structure of language, separate and apart from the study of psychology, physiology, the workings of the brain and the nervous system, and the material world and society which alone imbue the sounds made by our vocal chords with real content and meaning.

The study of language is not purely a question of the structure of sentences. It is necessary to study the social and historical basis of language. Wittgenstein correctly observed that the limits of one's language are the limits of one's world. The Inuits (Eskimos) have many more words for snow than in any other language, and therefore a much more precise classification of this subject. This is a reflection of their practical mode of existence and economy. For these people, the varieties of snow are a question of vital importance for hunting, and therefore, survival. Similar examples can easily be found in all languages.

Language is the product of a long period of social development. Its content and forms have been repeatedly transformed, and it is still evolving. The attempt to force upon this extremely fluid and complex phenomenon an arbitrary "logical" straitjacket is, in the best case, restricted and oversimplified, and in the worst, the source of a huge number of philosophical blunders. Language does not operate according to a rigid and simple set of rules. The very attempt to make it do so has only served to reveal the impossibility of such a task. What was supposed to be simple and straightforward has turned into its opposite—a highly complex and contradictory thing.

The school of logical empiricism, represented by Carnap, Reichenbach and others, form part of the general tendency of logical positivism. This is shown by the reduction of philosophy to the logical analysis of language, not just syntactical analysis (as in the 1930s) but also semantic analysis. Implicit in this is the idea that it is impossible to provide objective proof for the existence of the material world. They purport to offer an "empirical language of science," but this does not signify recognition of the objective world, only "purposive" forms of organising the data obtained by the senses. Nevertheless, this school represents a certain advance over the earlier positions. By moving away from sweeping philosophical generalisations, and concentrating on specific areas of research, it has made a positive contribution in some fields of logical research.

### **A. J. Ayer**

"'There's glory for you!' I don't know what you mean by 'glory,' Alice said. 'I meant, 'there's a nice knock-down argument for you!'" 'But 'glory' doesn't mean "a nice knock-down argument,"' Alice objected. 'When I use a word,' Humpty Dumpty said in a rather scornful tone, 'it means just what i choose it to mean—neither more nor less.'" (Lewis Carroll, *Alice's Adventures in Wonderland*.)

The most widely-read of the neo-positivists was A. J. Ayer. Whereas Wittgenstein's

writings are obscure treatises written for a few initiates, Ayer's *Language, Truth and Logic* (1936) and *The Problem of Knowledge* were written with a mass audience in mind. The basic postulate is that nothing can be learned except through the "methods of the empirical sciences." This boils down to the old empiricist argument that "I interpret the world through my senses." (cf. Locke's famous phrase: "Nothing is in the mind which was not first in the senses".)

Like Mach, of whom his entire position is merely a plagiarism, Ayer pretends to reject subjective idealism, but, in practice, he argues that we can only know sense-contents (Mach's sense-impressions), and therefore we cannot prove the existence of the physical world. In *The Problem of Knowledge*, he repeats, almost word for word, Mach's dishonest polemic against so-called naïve realism (materialism). To this subterfuge, Lenin replied:

"The reference to 'naïve realism,' supposedly defended by this philosophy, is sophistry of the cheapest kind. The 'naïve realism' of any healthy person who has not been a inmate of a lunatic asylum or a pupil of the idealist philosophers consists in the view that things, the environment, the world, exist independently of our sensation, of our consciousness, of our self and of man in general. The same experience (not in the Machist sense, but in the human sense of the term) that has produced in us the firm conviction that independently of us there exist other people, and not mere complexes of my sensations of high, short, yellow, hard, etc.—this same experience produces in us the conviction that things, the world, the environment exist independently of us. Our sensation, our consciousness is only an image of the external world, and it is obvious that an image cannot exist without the thing imaged, and that the latter exists independently of that which images it. Materialism deliberately makes the 'naïve' belief of mankind the foundation of its theory of knowledge." (Lenin, *Collected Works*, Vol. 14, p. 69-70.)

The logical contortions which are a constant feature of the writings of logical positivists reach the most bizarre proportions, as we see in the following extract from *The Problem of Knowledge*, where Ayer ties himself in knots, over the question of whether it is possible to prove that other people and their minds really exist. For example, if somebody else has a toothache, how do I know it? We apologise in advance for abusing the reader's patience, since, for our part, we have no doubt about their existence, or their ability to suffer considerable discomfort, on having to read the following lines. We can only plead as a mitigating circumstance that, if we were to omit it, people might think that we were making it all up!

"The suggestion is that if I say of myself that I am in pain I am referring to a feeling of which I alone am conscious; if my statement is true it may be that I also show certain outward signs of pain, but I do not imply that this is so: it is not part of what my statement means. Or even granting that it is part of what my statement means, it is not all that it means. But if I say of someone else that he is in pain, all that my statement is supposed to mean is that he displays signs of pain, that his body is in such and such a state, or that he behaves, or is disposed to behave, in such and such ways. For this is all that I can conceivably observe.

"An obvious objection to this thesis is that it entails that the statements which I make

about my feelings cannot have the same meaning for any other person as they have for me. Thus, if someone asks me whether I am in pain and I answer that I am, my reply, as I understand it, is not an answer to his question. For I am reporting the occurrence of a certain feeling; whereas, so far as he was concerned, his question could only have been a question about my physical condition. So also, if he says that my reply is false, he is not strictly contradicting me: for all that he can be denying is that I exhibited the proper signs of pain, and this is not what I asserted; it is what he understood me to be asserting but not what I understood myself." (Ayer, op. cit. pp. 214-5.)

The reason for these mental gymnastics is that Ayer knows that the inescapable conclusion of his own position is solipsism—the notion that only I exist. Lenin showed quite clearly in relation to Mach that logical positivism necessarily means a denial of the objectivity of the material world. There is no way round this. Like Mach, Ayer resorts to a subterfuge, pretending to polemicise against this position, which he calls scepticism, while simultaneously distancing himself from materialism (naïve realism). He correctly says of scepticism that "...if the theory were correct, this distinction between the mental and the physical, between what is private and what is public, could not be made in any case but one's own...The picture which this theory tries to present is that of a number of people enclosed within the fortresses of their own experiences. They can observe the battlements of other fortresses, but they cannot penetrate them. Not only that, but they cannot even conceive that anything lies behind them." (Ibid., pp. 215-6.)

The fact that Ayer, just like Mach, tries to distance himself from these outrageous conclusions, does not change anything. From his philosophical point of view, he has no real arguments against the so-called sceptics. At the end of the day, he is reduced to appealing to "common sense," and belief in the existence of a physical world, other people, and the fact that there was a world before he, or anyone else, was present to observe it. None of this can be logically deduced from his own arguments, which are, in fact, far less consistent than the position taken by those who openly deny the existence of the objective world. The problem is that it is impossible to argue with lunatics, using the logic of lunatics.

### **Logic and Ethics**

In the good old days before television, people used to read the kind of thriller novels where the hero is tied up, while the heroine awaits a fate worse than death. The reader bites his fingers, until he turns to the next chapter, where the great man is finally released with the famous phrase: "With one bound, he was free!"

When we get to the realm of moral philosophy, the situation of the philosophy of science gets about as desperate as the hero in the novel. Hume, the spiritual ancestor of this line of thought, argued that one cannot derive a conclusion about what ought to be from matters of fact. From the narrow standpoint of the verification principle, the whole of ethics must be written off as the most arrant nonsense imaginable. Philosophers have wracked their brains for many centuries over the definition of "good" and "bad." No matter! The philosophers of science can sort out all this mess in less time than it takes to say "empirical verification." All you have to do is to rule the whole lot out of order!

For thousand of years the question of the meaning of "the Good" has been discussed by the great philosophers, Socrates, Plato, Aristotle, Spinoza, Kant, Hegel. Finally, Marx and Engels showed that morality was not a supra-historical category, fixed for all time, but something that has evolved with society, and is ultimately determined by the existing social and economic order, reflecting definite class attitudes and interests. The historical relativity of morality is a closed book to the logical positivists. For them, morality is not a social relationship and a special, historically determined form of consciousness, but merely a question of—language! The analysis of this extremely complex social phenomenon, which has taxed the greatest minds for centuries, has now been achieved once and for all by simply reducing it to an analysis of words.

Instead of asking what morality consists of, and what it is based on in real life, they ask for a definition of moral judgments and terms. Displaying that modesty which is their hallmark, they invented a new and revolutionary word—"metaethics"—which was supposed to settle the whole affair. This is not a theory of ethics, but an abstract, scholastic conception, completely divorced from life. In place of a real study of the roots of morality, they endlessly argue about the meaning of words, hoping to derive some understanding of ethics by asking in what sense words like "good," "bad," "evil," and "duty" are used.

An incorrect method will inevitably give incorrect results. The philosophers of science attempted to approach morality from the standpoint of the natural sciences. In point of fact, the arbitrary criteria of logical positivism are generally useless in the physical sciences. How much more useless are they in the realm of morality! What epoch-making results did this method yield? Can good and evil be perceived by the senses? No. Can they be experimentally demonstrated? No. The conclusion is self-evident. These are unscientific, metaphysical pseudo-concepts, which no self-respecting philosopher of science would touch with a barge-pole.

The fact that these pseudo-concepts have played, and continue to play, a most powerful role in the life of society can only be explained by the perversity and ignorance of the human race, which, having heard the Word of the philosophers of science, stubbornly persist in the error of their ways, motivated by pseudo-concepts and fighting over pseudo-issues. Whereupon, the philosopher of science shakes his head, and returns to his study, where he closes the door firmly on a world that is not yet ready to hear the Message.

These are all value judgments, you see, and, as such, are "not necessary adjuncts to science," as mathematics and logic are. Furthermore, they cannot be verified either by definition or by linguistic convention. Problem solved, once more. Or is it? The trouble is that the overwhelming majority of human beings persist in seeing some things as good, others as bad. They are so convinced of this that no matter how many times they are advised that these notions are unverifiable, they stubbornly persist in their belief. Worse still, it appears to govern all their actions, from the smallest to the most important, from buying a shirt to voting at election time. So what is written off by the philosophy of science as a meaningless irrelevance turns out to be quite a significant element of all social life, which still requires an explanation. In other words, a problem is not eliminated simply by declaring it to be a non-problem, any more than a predatory animal can be disposed of by the ostrich burying its head in the sand.

The standard view of logical positivism to morality is that it relates to feelings towards a given situation. Thus, the sentence, "One should not steal" simply means "I have a negative feeling about stealing." Thus morality is reduced to an entirely subjective state of mind on the part of the individual. How it comes about that millions of individuals come to possess exactly the same state of mind about the most varied subjects is a complete mystery. Even more mysterious is how these collective states of mind can change into their opposite, according to whether one lives under slavery, feudalism, capitalism, or tribal communism.

Our worthy logical positivist, having made his bed, must now lie in it. It is, however, a lot more roomy than before, since he has unceremoniously turfed out Logic, Mathematics, Ethics and Morality. But at least he has, in the process, also got rid of Religion and Metaphysics. Or so he thinks. Agnosticism is a way of avoiding the question of religion by treating it as a non-issue. Since it cannot be empirically verified, let's agree not to talk about it—just as polite persons agree not to mention disagreeable topics at the dinner-table. Unfortunately, religion is not a non-issue for millions of people in the world today, and cannot be disposed of so lightly. As opposed to religious fanatics and fundamentalists, agnosticism may be seen as a half a step in the right direction. But it is insufficient, precisely because it is only half a step, and therefore leaves ample scope for a return to all the old nonsense.

Although some of the present-day supporters of "Analytical Philosophy" probably consider themselves materialists, the problem concerning the difference between the mental and the physical still remained unresolved.

Increasingly, theories are elaborated without reference to the physical framework, as the result of deduction from given axioms—theorems, equations, etc. Worse still, the facts are forced to fit the theory. The Oxford school of "Analytical Philosophy" maintains that philosophy is an "a priori discipline" in which the philosopher is already in possession of the concepts he or she needs, and requires no observations for the purpose of analysis.

Like the bullfrog in Aesop's fable who puffed himself up until he went "pop," the pretensions of "Analytical Philosophy" have been exploded. Its proponents were to have solved all the problems of philosophy by merely getting to the roots of ordinary language and exposing the errors deriving from its misuse. Instead, they have merely piled confusion upon confusion, finally ending up in an inevitable dead end.

### **The Poverty of Popperism**

"There is nothing so absurd but some philosopher has said it." (Cicero, *De Divinatione*.)

If it were not so serious, it would be comical. In the most pompous manner, the advocates of the most unscientific theory imaginable immediately elbowed aside all other trends and loudly proclaimed themselves to be the philosophy of science. It was the intellectual equivalent of gate-crashing a party. And, as sometimes happens, the people at the party may be too polite, or too afraid of a bunch of rowdies, to shut the door, so they just keep quiet and let them in. Of course, it always helps if someone on the inside calls out: "Oh, it's O. K., they're friends of mine!"

In the development of quantum mechanics, an important role was played by Niels Bohr and Werner Heisenberg. They worked together, and developed the so-called Copenhagen Interpretation of quantum mechanics, which we have already commented on. There was, however, a difference in their approach. Whereas Bohr was basically a pragmatic scientist, Heisenberg was always inclined to a more philosophical approach, and, for a time, accepted the theories of logical positivism. The whole Copenhagen Interpretation of quantum mechanics is permeated with the spirit of subjective idealism as a result.

It was bad enough that this trend should claim to speak for "modern science" in the field of philosophy. But that was not enough for them. They had to teach the scientists their business as well. If they were really the philosophy of science, then all scientists must heed them! They had worked out a "scientific method" which was foolproof. Now everyone must accept it, on pain of being denounced as unscientific. And in case anyone thought they were joking, just look at the job they did on psycho-analysis!

There was only one slight problem in all this. The standards of so-called logicity set by these ladies and gentlemen have nothing whatever to do with the actual practice of science itself. Most practical scientists just shrug their shoulders, and get on with their work as if these people were not there, just like those who move into the kitchen to get away from those noisy party-crashers; which does not prevent them from continuing to make an awful lot of noise.

One of the noisiest was Sir Karl Popper, who died recently. Like Napoleon, who literally crowned himself Emperor, Popper proclaimed himself the philosopher of science, and, without waiting for the outcome of a referendum on the subject, proceeded to hold court on a world scale. In between ferocious polemics against Marx (whom he did not understand), he wrote a great deal on the method of science (which he interpreted in a completely one-sided way). It is a measure of the vacuum in modern philosophy that this kind of nonsense was taken seriously for so long.

### **Induction Versus Deduction?**

In 1934, Popper, then living in Vienna, published his book *The Logic of Scientific Discovery*. In this work, Popper completely rejects the method of induction, insisting that all conclusions must be drawn from logical deduction. Popper specifically rules out the method of induction, based on observation. To qualify for Popper's certificate of "science-worthiness," a theory must be internally consistent, must not be a tautology, and must make predictions that can be tested. Moreover, he maintained that the results of a test cannot verify a theory, only falsify it.

All of this sounds very nice, and is in complete accord with the method of formal logic. But it has got very little to do with the actual practice of science. One physicist commented wryly that Popper's ideas were strategically sound but tactically indefensible, in other words, fine in (formal logical) theory, but, like an umbrella full of holes—useless precisely for the purpose for which it was intended.

Induction (from the Latin *inducere*, to lead in) is another method of reasoning. It was already known to Aristotle, but achieved wide acceptance during the Renaissance, when

it was championed by Bacon and Galileo. As a form of reasoning, induction proceeds from single facts to general propositions. Men and women have always made such generalisations on the basis of their experience, often reaching correct conclusions, sometimes not.

Let us consider an example of inductive reasoning. A child burns its hand on a flame, and draws the conclusion, on the basis of experience that it is not a good idea to get too close to fire. "Fire (in general) burns." That is an inductive reasoning—from the particular to the general. In this case, the conclusion is perfectly valid and rather useful. But consider another example. A turkey is visited every morning by a nice old lady with a bag of corn in her hand. The turkey, by the method of inductive reasoning, might very well conclude that the kind lady means food. This conclusion is drawn from the same experience repeated many times—364 times, to be exact. Then, one morning, the farmer's wife appears with a butcher's knife in her hand. Here the turkey's inductive logic proves to be somewhat defective, and does not really help it to clarify its existential dilemma!

Scientific induction, like its popular equivalent, also consists of drawing conclusions from a whole class based on the number of elements of that class. But here the grounds for conclusion are provided by the discovery of essential connections between the elements studied, which show that the given feature must be possessed by the whole class. The task of discovering these necessary connections involves detailed observation. Thus, induction signifies experimental study of things, in such a way that we pass from single facts to generalisations.

The method of deduction is, on the face of it, the exact opposite of induction. Deduction consists of proving or inferring a conclusion from one or more premises by the laws of logic. The deductive method does not set out from particular experiences, but from so-called axioms, which are assumed to be correct from the start. This is the traditional method of mathematics, for example classical geometry, based on the axioms of Euclid, which were for centuries supposed to represent absolute truths, valid for all time, under all circumstances. Deductive reasoning therefore proceeds from the general (law) to the particular.

The struggle between induction and deduction goes back to the 17th century, to the different approaches adopted by two great scientific thinkers—Bacon and Descartes. The Englishman Bacon was the father of empiricism, and the method of inductive reasoning, which attempts to derive theories from observed facts alone. In Bacon's case, the obsession with observation proved fatal; he died of bronchitis as a result of an early experiment in refrigeration, involving stuffing a chicken with snow.

Descartes approached science from a diametrically opposite standpoint. Taking Euclid's geometry as his model, he attempted to develop consistent and coherent theorems derived from pure reason, without recourse to the unreliable evidence of the senses. His method was that of rationalism, which became the main tradition in France. Bacon's empiricism triumphed on the other side of the Channel. Both men, in different ways, advanced the cause of science, and both made important discoveries.

However, neither deduction nor induction on their own are capable of grasping the whole

picture. The problem with Bacon's method is that the facts do not select themselves. You need an initial theory (a hypothesis) even to decide what observations to make in the first place. Moreover, the results of induction always have a more or less provisional character. For example, a person who had observed a hundred swans might draw the conclusion that all swans were white. This is an inductive conclusion. But it would be wrong, because some swans are black. Engels makes the point that "The empiricism of observation alone can never adequately prove necessity." (The Dialectics of Nature, p. 304.)

We therefore did not have to wait for Sir Karl to point out the limitations of inductive logic. However, to deny induction altogether is to jump from the frying pan into the fire. Induction plays a necessary role in science, as well as in everyday life. Is it really necessary for somebody to drink all the water in the sea before being prepared to admit that sea water is salty? Popper's attempt to eliminate induction from science shows a lamentable ignorance both of the true relationship between deduction and induction, and of how science works in real life.

Until the end of the 19th century, the deductive method was used almost exclusively in mathematics. Not until the 20th century were attempts made to apply it to fields such as physics, biology, linguistics, sociology, etc. Despite all the impressive claims made on its behalf, experience shows that the axiomatic-deductive method is quite limited in what it can achieve. The controversy between induction and deduction is pointless, since, in practice, induction always exists together with deduction. Neither is self-sufficient as a method, but, in dialectical materialism, they are combined as different aspects of the process of cognizing reality, which are inseparably connected, and determine each other.

The Economist article already mentioned goes on to criticise Popper's rejection of the inductive method:

"A number of philosophers also question Popper's rejection of induction. The use of induction, they say, is logically unsatisfactory but inescapable. Deductions about the real world are only as good as the assumptions about the real world on which they are based. These assumptions rest on induction, as does the scientist's interpretation of the experimental results that test the conclusions drawn from them. Both in forming a hypothesis and in interpreting tests of it, a scientist makes the basic assumption that nature will behave in other places and at other times as it behaves here and now. That is an inductive assumption." And it continues:

"Dr. Jennifer Trusted is one British philosopher who puts induction in perspective. Induction, she says, is essential but not sufficient for knowledge of the real world. The same could be said for deduction."

This last observation is absolutely correct, and goes to the heart of the matter. Neither induction nor deduction, taken on its own, is sufficient. It is necessary to combine them, which is just what dialectics does. Deduction is also a conclusion, and therefore induction is also a kind of deduction. On the other hand, all deductions are, in the last analysis, derived from material reality. This is true even of axioms, which are supposed to be the products of "pure theory." For example, Euclid's axiom that a straight line is the shortest

distance between two points is clearly the result of long experience and observation. Engels explains the one-sidedness of both induction and deduction, when taken in isolation, and also explains the dialectical relation between them:

"Induction and deduction belong together as necessarily as synthesis and analysis. Instead of one-sidedly lauding one to the skies at the expense of the other, we should seek to apply each of them in its place, and that can only be done by bearing in mind that they belong together, that they supplement each other." (The Dialectics of Nature, p. 302.)

### **What Can we Predict?**

Popper's insistence that all conclusions must be drawn by deduction, then, is at variance with the reality of scientific practice. Indeed, those areas of science—like certain branches of particle physics and cosmology—which have developed an excessive dependence on the method of deduction and abstract reasoning, are getting into a deeper and deeper mess. Nor is the business of the testing of a new hypothesis as straightforward as Popper makes out. There are many theories which are in daily use, despite the fact that they are known to be quite inadequate, for the simple reason that they are the best available; an example is Hooke's law, used by engineers to check the relationship between stresses and strains in a material.

In a very perceptive article (unfortunately unsigned) published in the Science section of The Economist in December 1981, Popper's views on science are exposed to a searching analysis, with quite devastating results:

"There are a lot of experiments where you cannot restrict the results to yes-or-no answers or where it is extremely hard to interpret what the answers are, because of the so-called signal-to-noise ratio. Suppose you repeat an experiment six times and get the result you predicted only twice. Does that prove the prediction was wrong? Or that four times out of six you failed to get the experiment right? In biology, such results are common: the vagaries of nature are notorious.

"While scientists strive for unambiguous answers, often they have to settle for less. And even if you do get results that unambiguously show the prediction of a theory is wrong, it is still not always clear what you have falsified. Strictly speaking, testing an isolated hypothesis is impossible. Consciously or unconsciously, the scientist assumes much else from the pyramid of knowledge besides the hypothesis tested." (The Economist, December 26th 1981, p. 101.)

The emphasis on prediction as a necessary precondition of the scientific method has been greatly exaggerated, and does not conform in the slightest to the reality of science. An astronomer can sometimes predict the position of a star many millions of years hence. But Darwin could not predict what species would evolve in a million years' time. Geologists cannot predict precisely the time and place of an earthquake. And with meteorologists, the situation is still more hopeless. Even with all the armoury of modern computers and satellite technology behind them, they can only predict the weather with any degree of accuracy for a maximum of three days. Incidentally, even astronomy is not such an exact science as used to be thought. There are plenty of unpredictable phenomena

in cosmology, yet no-one in their right mind would deny that astronomy is a science because it is unable to predict precisely where the next star will be born.

The reality of science certainly does involve making predictions to test out theories, although the nature of the prediction and the type of experimental "test" will vary enormously from laboratory test tubes to vast astronomical distances. Just because some predictions are not, and cannot be made, does not rule out the idea as a scientific method. There are sciences and sciences, and there are predictions and predictions. Predictions involving simple linear systems can be made with a high degree of certainty. But complex systems are difficult, or impossible to predict with any degree of accuracy.

For all the satellites and computers, it is impossible to predict the weather accurately more than three days in advance. Is meteorology a science, or not? Earthquakes cannot be predicted, and there are no neat laboratory experiments to prove the theories of geology. Is the latter a science, or is it not? And what about the predictions of a doctor? Even the best doctors make mistaken diagnoses, sometimes with fatal results. Is medicine a science? Clearly, it is, but not a precise science like some branches of physics.

When we reach a field like psychology, things get even more complicated. Psychology, as a science, is still in its infancy. One cannot yet speak of a fully worked-out body of ideas which is generally accepted in this most complex field, involving the basic driving-forces of human behaviour. And when we come to sociology, which, after all, deals with the complex behaviour of masses, the huge amount of variables makes the task of prediction doubly difficult. Difficult, yes. Impossible, no. For in human society also there are certain patterns of behaviour, certain processes, which can be identified and explained. General conclusions can be drawn, and, yes, predictions made, which can be tested in practice. Only don't expect the same precise degree of accuracy in such predictions as you would hope to find in a carefully-conducted laboratory experiment!

At best, it is possible to predict the most general tendencies in society, and even these predictions must be constantly revised, added to and modified in the light of experience. In the end, they may be falsified by events, for a number of reasons, just as even the best doctor's diagnosis may turn out to be wrong. Does the doctor then draw the conclusion that diagnosis in general is an unscientific occupation, a waste of time? Or does he go back and try to discover the source of his error, in order to learn from it? The real question that should be asked is: Do we believe that it is possible to obtain a rational understanding of the laws that govern social evolution? If the answer is no, then all further discussion is pointless. If human history is seen as an essentially meaningless string of accidents, then there is no point in trying to understand it. But if science has succeeded in discovering the laws which governed the development of humankind in the remote past, based on the extremely scanty evidence of a few precious fossils, then it is not at all obvious why it should be impossible to uncover the laws which determined the evolution of our species for the last 10,000 years. Yet this is declared out of bounds by Professor Popper. All who attempt to do this will be immediately be condemned for the heinous crime of historicism.

Thus, we are entitled to ask about the far-flung galaxies, and the smallest particles of matter, but if we attempt to arrive at a rational understanding of society, of history—that

is to say of ourselves, who we are and where we came from—that is not allowed. The arbitrary nature of this prohibition is so glaring that one cannot avoid asking what the reason for it is. Is it really to do with science? Or might it have more to do with certain vested interests which do not want people to ask too many questions about the past and present of the type of society in which we live, for fear that they might draw all the wrong conclusions about the type of society we would like to live in in the future.

### **Nothing to Do with Science**

Popper's attempt to elevate the rules of deduction and formal logic above all else is the 20th century equivalent to the dictatorship of the Church's one-sided and rigid caricature of Aristotle in the Middle Ages. Once again we have the attempt to force science into the straitjacket of a rigid and preconceived idealist schema, which lays claim to the status of an absolute truth to which everyone must bend the knee. Unfortunately, unruly, rebellious, contradictory nature will not submit meekly to such treatment. However self-consistent logic may be, it provides no ready-made answers about the world. Indeed, as we have seen, logic and mathematics in the 20th century has found it impossible to deal with contradictions even in its own house, as in the following sentences: "The next sentence is false. The previous sentence is true." Professional logicians cannot even agree among themselves whether this, and other "anomalies" have been resolved. Yet this did not prevent the likes of Sir Karl Popper from laying down the law for the whole domain of human thought.

The problem is that science, lives in the physical world, that crude world of contradictory, non-linear material reality. It is simply not good enough for the philosophy of science. Karl Popper is not a bit bothered about the discrepancy. If science does not match up to the stern criteria of the verification principle, so much the worse for science! Let us hear what the great man himself has to say on the subject:

"Science is not a system of certain, or well-established, statements; nor is it a system which steadily advances towards a state of finality. Our science is not knowledge (episteme): it can never claim to have attained truth, or even a substitute for it, such as probability.

"Yet science has more than mere biological survival value. It is not only a useful instrument. Although it can attain neither truth nor probability, the striving for knowledge and the search for truth are still the strongest motives of scientific discovery.

"We do not know: we can only guess. And our guesses are guided by the unscientific, the metaphysical (though biologically explicable) faith in laws, in regularities which we can uncover—discover. Like Bacon, we might describe our own contemporary science—'the method of reasoning which men now ordinarily apply to nature'—as consisting of 'anticipations, rash and premature,' and of 'prejudices.'" (Quoted in Ferris, pp. 797-8, our emphasis.)

These few observations, delivered in a typically modest style quite in the tradition of Herr Dühring, were made in a lecture delivered to the Aristotelian society in Oxford in 1936. The lecturer later recalled with some irritation that "the audience took this for a joke, or a

paradox, and they laughed and clapped." Evidently, they did not know their Karl Popper! There was no joke intended. He meant every word. For Popper and his disciples, the purpose of science is not to discover truths about the world, but merely a formal logical exercise, like chess or a crossword puzzle.

What is one to say about all this? At the end of the 20th century, when the discoveries of science have attained unheard-of peaks, we are informed that science cannot really know anything at all. On this issue, we completely concur with the following assessment:

"A distinction should be made between theories and facts. Scientists assume theories; they know facts to be true, within acceptable limits of confidence. As time advances, they replace one theory with another, arguably a better one. What should be beyond argument is that there is an accretion of known facts.

"On the whole, science is 'true.' To deny that man knows more about the workings of nature now than he did in the Middle Ages is perverse. Undoubtedly, some scientific discoveries are false and scientists are often a bit irrational in how they set about finding things out. But the alternative to accepting that there is a strong measure of truth in science is to go back to blaming a witch when the cow is sick." (The Economist, *ibid.*, p. 103.)

The final refutation of Popperism and logical positivism in general is that, for all its bragging claims, it has nothing to do with the realities of science. This is shown by the attitudes of scientists, including, as we have seen, of those who could be expected to be sympathetic to it. This is what Niels Bohr had to say, after a conference of scientists and logical positivists held in Copenhagen about the philosophical implications of quantum mechanics:

"For my part, I can readily agree with the positivists about the things they want, but not about the things they reject. All the positivists are trying to do is to provide the procedures of modern science with a philosophical basis, or, if you like, a justification. They point out that the notions of the earlier philosophies lack the precision of scientific concepts, and they think that many of the questions posed and discussed by conventional philosophers have no meaning at all, that they are pseudo problems and, as such, best ignored. Positivist insistence on conceptual clarity is, of course, something I fully endorse, but their prohibition of any discussion of the wider issues, simply because we lack clear-cut enough concepts in this realm, does not seem very useful to me—this same ban would prevent our understanding of quantum theory." (Quoted in T. Ferris, *op. cit.*, p. 822, our emphasis.)

The famous physicist Wolfgang Pauli observed that the logical positivists merely used the term metaphysics as a kind of swearword, or at best, as an euphemism for unscientific thought. "I should consider it utterly absurd—and Niels (Bohr), for one, would agree—were I to close my mind to the problems and ideas of earlier philosophers simply because they cannot be expressed in a more precise language. True, I often have great difficulty in grasping what these ideas are meant to convey, but when that happens, I always try to translate them into modern terminology and to discover whether they throw up fresh answers." (Quoted in T. Ferris, p. 824.)

Finally, let us call as a key witness for the prosecution a man who might be expected to support the logical positivist line enthusiastically—Werner Heisenberg. In fact, he generally followed this line in the beginning, denying the independence of physical reality from the act of observation, insisting on the "indeterminateness" of processes at the sub-atomic level, and so on. However, as a scientist, involved in serious research, Heisenberg had to come to terms with the objective reality of the physical world. In the end, the absurd claims of the self-appointed philosophers of science were too much even for him.

"The positivists," he wrote, "have a simple solution: the world must be divided into that which we can say clearly and the rest, which we had better pass over in silence. But can anyone conceive of a more pointless philosophy, seeing that what we can say clearly amounts to next to nothing? If we omitted all that is unclear, we would probably be left completely uninteresting and trivial tautologies." (Ibid., p. 826.)

After decades of wandering in this arid desert, the most forward-looking scientists have finally turned their backs on a philosophy which taught them absolutely nothing either about the way nature works or how to understand it. The advent of the theories of chaos and complexity marks a decisive break with the narrow limitedness of the philosophy of science, and an approximation to a dialectical view of nature. The attitude of the new generation of scientists to the existing schools of thought is summed up in the following observations by the biologist Stuart Kaufmann on why he decided not to study philosophy:

"It wasn't that I didn't love philosophy. It's that I distrusted a certain facility in it. Contemporary philosophers, or at least those of the 1950s and 1960s, took themselves to be examining concepts and the implications of concepts—not the facts of the world. So you could find out if your arguments were cogent, felicitous, coherent, and so on. But you couldn't find out if you were right." (M. Waldrop, *Complexity*, p. 105.)

There is an English proverb: "Little things please little minds." Those who place impossible demands upon science and then, when their demands are not met, draw the conclusion that science is not really "true" say nothing at all about science, but quite a lot about a trivial method which seeks simple answers to complex questions and complains when they are not forthcoming. The old claims to represent the philosophy of science are as dead as a doornail. To paraphrase what Marx once said about Matthew Arnold, the philosophy of science is too good for this world.

## **Existentialism**

Existentialism has its roots in the irrationalist trend of 19th century philosophy, typified by Nietzsche and Kierkegaard. It has assumed the most varied forms and political colouring. There was a religious trend (Marcel, Jaspers, Berdyayev and Buber) and an atheistic trend (Heidigger, Sartre, Camus). But its most common feature is extreme subjectivism, reflected in its preferred vocabulary: its watchwords—"being-in-the-world," "dread," "care," "being towards death," and the like.

It was already anticipated by Edmund Husserl, a German mathematician turned

philosopher, whose "phenomenology" was a form of subjective idealism, based on the "individual, personal world, as directly experienced, with the ego at the centre."

For Karl Jaspers, the aim of philosophy was the "revelation of Being." Clearly religious and mystical.

Jean-Paul Sartre spoke of "Being and the threat of Nothingness," "Freedom of Choice," "Duty," and so on.

This expressed a certain mood among section of the intellectuals after the first world war in Germany, and then in France. What it indicates is the profound crisis of liberalism, as a result of "the Great War," and the upheavals which followed in its wake. They saw the problems facing society, but could see no alternative. A sense of impending doom, and a feeling of powerlessness and "Dread" fill these writings, accompanied by an attempt to seek an alternative on an individual basis.

Existentialism represents an irrational reaction against the rationalism of the Enlightenment and German classical philosophy—a rationalism now glaringly out of place in a world gone mad. The existentialists criticise the latter for dividing the world into subject and object. The unity of subject and object, according to them, is existence. In order to be aware of existence, it is necessary to find oneself in a critical border-line situation, for example, confronted with death. As a result, the world becomes "intimately near" to man. Thus, existence is to be known, not through reason, but through intuition.

A central place in existentialism is occupied by the question of freedom of choice. Freedom is seen as the "free choice" of the individual of one possibility among an infinite number of possibilities. Thus we arrive at an entirely abstract conception of "freedom," conceived of as the polar opposite of necessity.

This boils down to an assertion of voluntarism, that the individual is free to make a choice, irrespective of objective circumstances. This, in turn, implies the "freedom" of the isolated individual from society. It is the "freedom" of a Robinson Crusoe, that is, no freedom at all. In effect, they turn the question of freedom into an abstract ethical problem. Yet, in practice, freedom is a very concrete question. It is not possible for real men and women to become free by ignoring the constraints that hold them in bondage, any more than they can jump off a cliff and ignore the laws of gravity.

With existentialism, we reach the complete dissolution of modern philosophy. Jean-Paul Sartre made an unsuccessful attempt to unite existentialism with Marxism, with predictable results. One cannot unite oil and water. Sartre's thought cannot be described as a coherent body of philosophical ideas. It is a disorderly mishmash of notions borrowed from different philosophers, particularly Descartes and Hegel. The end result is total incoherence, shot through with a pervading spirit of pessimism and nihilism.

For Sartre, the fundamental philosophical experience is nausea, a feeling of disgust at the absurd and incomprehensible nature of being. Everything is resolved into nothingness. This is a caricature of Hegel, who certainly did not think that the world was incomprehensible. In Sartre's writings, Hegelian jargon is used in a way that makes even Hegel's most obscure passages seem models of clarity.

Underlying all this is the feeling of impotence of the isolated intellectual, faced with a hostile and uncomprehending world. The attempt to escape from the wicked world into individualism is summed up in Sartre's celebrated (or notorious) phrase: "L'enfer, c'est les Autres." ("Hell is other people"). How this outlook could ever be squared with the revolutionary optimism of dialectical materialism it is hard to imagine. But then, no-one could ever accuse Sartre of consistency. It is, of course, to his credit that he espoused progressive causes, like Vietnam and solidarised with the movement of the French workers and students in 1968. But from a philosophical and psychological point of view, the position of Sartre was completely foreign to Marxism.