

Post-Empiricism and Philosophy of Science

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Abstract

The aim of this paper is to provide some sketchy remarks on the post-empiricist phenomenon in philosophy of science, taking into account the themes of the relationships between language on the one side and reality on the other, and the parallel problem of the alleged elimination of metaphysics. Unlike the logical empiricists, Popper believes that a clear separation between (i) analytic and synthetic sentences, and (ii) between theory and observation, is an impossible task. According to his view, theory and observation are intimately linked to each other, and no pure observation is ever possible. A position very similar to Popper's was endorsed by the American pragmatists in the last two centuries with Charles S. Peirce, William James and John Dewey. There also are important similarities between what Popper says and William James' theses. It is clear that if we recognize that the theoretical dimension precedes observation, and if we claim furthermore that scientific theories have a creative character, then we may explain the "jumps" that often take place in the history of science. Later on Feyerabend and his followers have turned philosophy of science into something mysterious and not easily classifiable in philosophical or scientific terms. The anything goes undermines the meaning itself of the discipline. If science is equated to any other dimension of spirit - art, religion, or even witchcraft - the specific and cognitive character of scientific rationality is eliminated. It follows that philosophy of science loses any meaningful role within the field of human knowledge, while even philosophy as such becomes more similar to a joke than to a serious endeavor.

Keywords: science; philosophy of science; logical positivism; post-empiricism; pragmatism; methodological anarchism.

It is well known that, in the last few decades, the logical positivist supremacy within philosophy of science has been replaced by that of the so-called "post-empiricist" thought. My intention is not to outline an historical account of this important change of outlook, because this has been done already by other authors.¹ What I want to do, instead, is to provide some short and sketchy remarks on the post-empiricist phenomenon, taking into account the themes of the relationships between language on the one side and reality on the other, and the parallel problem of the alleged elimination of metaphysics. Let us begin with Karl R. Popper whose falsificationism,

¹ A good example is the book by D. Oldroyd, *The Arch of Knowledge. An Introductory Study of the History, Philosophy, and Methodology of Science*, Methuen, New York, 1986.

although from some aspects it is still close to logical empiricism, nevertheless gave rise to a true epistemological revolution.

Unlike the logical empiricists, Popper believes that a clear separation between (i) analytic and synthetic sentences, and (ii) between theory and observation, is an impossible task. According to his view, a general sentence is not produced by many particular observations, and scientific theories are nothing but *conjectures* freely created by the human mind in order to explain empirical phenomena. Theory and observation are thus intimately linked to each other, and no pure - and detached from some theoretical context - observation is ever possible. A very important point may be noted here. A position very similar to Popper's was endorsed by the American pragmatists in the last two centuries with Charles S. Peirce and - especially - William James, and more recently with John Dewey. To my knowledge this fact is not very well known nowadays, maybe because the analytic thinkers usually do not pay much attention to the history of philosophy. Only recently, for instance, did Hilary Putnam rightly underline these beautiful remarks by William James concerning the relationships between theory and observation:²

"The knowing subject is no mirror reflecting passively an order that already exists. The knowing subject is an actor, who both codetermines truth and registers the truth he manages to create."

Putnam, however, does not mention the striking similarities between what Popper says and William James' theses, although we cannot infer from this fact that the founder of falsificationism was somehow influenced by the American pragmatist tradition. Anyhow, it is clear that if we recognize that the theoretical dimension precedes observation, and if we claim furthermore that scientific theories have a creative character, then we may explain the "jumps" that often take place in the history of science (i.e., the genial intuitions that allow scientists to interpret usual phenomena in a new way) better than by having recourse to the classical logical positivist model.³ Einstein himself, in fact, used to say that there is no logical and safe path able to take us automatically to the discovery of the universal laws of physics, since only a mixture of intuition and experience may bring scientists in the right direction.

In criticizing logical empiricism, Popper says something new and important about the relation between language and the world. In the 1959 foreword to his most famed epistemological work, in fact, he claims:⁴

² H. Putnam, *Pragmatism: An Open Question*. Blackwell, Oxford-Cambridge (Mass.), 1995. The quotation is drawn from W. James' essay "Spencer's Definition of Mind as Correspondence", in W. James, *Essays in Philosophy*, Harvard University Press, Cambridge (Mass.), 1978, p. 21.

³ David Oldroyd, in the book mentioned in note 1, shows that the creation of the relativity theory by A. Einstein cannot be accounted for using a logical empiricist strategy of explanation.

⁴ K.R. Popper, *The Logic of Scientific Discovery*, Hutchinson, London, 1968, revised edition, pp. 15-19.

“Language analysts believe that there are no genuine philosophical problems, or that the problems of philosophy, if any, are problems of linguistic usage, or of the meaning of words. I, however, believe that there is at least one philosophical problem in which all thinking men are interested. It is the problem of cosmology, the problem of understanding the world - including ourselves, and our knowledge, as part of the world. All science is cosmology, I believe, and for me the interest of philosophy, no less than of science, lies solely in the contributions which it has made to it (...) It seems to me paradoxical that philosophers who take pride in specializing in the study of ordinary language nevertheless believe that they know enough about cosmology to be sure that it is in essence so different from philosophy that philosophy cannot make any contribution to it.”

True, according to our author this is “cosmology”, but would the meaning of his words change by using, instead, the term “metaphysics”? I do not believe so, even though, as I said previously, that term may be abandoned if for some reason it is deemed to be bothersome. It is in any event obvious that a mere change of words does not modify the substance of things. Popper thinks that “prohibiting” any talk about non-scientific problems is simply ridiculous; men’s talk is both scientific and non-scientific, and, far from eliminating one of the two, it is instead important not to confuse them.

It follows that, according to the Austrian born philosopher, metaphysics *is* a part of meaningful discourse, even though metaphysical theories are different (i.e., they are not falsifiable) from scientific ones. But there is a sort of contiguity between science and metaphysics, because we often find in the history of thought metaphysical theories which, later on, became scientific. The real problem at stake is, thus, to find valid criteria of demarcation. Since metaphysical ideas are often able to influence scientific activity, metaphysics turns out to have a precious *euristic* value, and any attempt at eliminating it is bound for failure.⁵ Using Ian Hacking’s words, we may say that:

“He (Popper) does define science as the class of testable propositions, but far from decrying metaphysics, he thinks that untestable metaphysical speculation is a first stage in the formation of more testable bold conjectures.”⁶

Popper, however, is still close to logical empiricism when he claims that the metaphysics’ role is after all auxiliary, because it is only within science that men can get a true knowledge of reality.

Turning our attention now to the “methodological anarchism” endorsed by Paul K. Feyerabend - and leaving aside, for reasons of space, any reference to such important authors as Thomas Kuhn, Imre Lakatos and many others - we may note that, today, the role played by science within the vaster domain of human knowledge has

⁵ Popper’s position is compatible with the revival of metaphysical attitudes currently thriving.

⁶ I. Hacking, *Representing and Intervening*, Cambridge University Press, Cambridge & London, 1983, p. 43.

been strongly questioned. Feyerabend, for instance, claims that man's landing on the Moon has no objective value. This event is in his view important only for the citizens of the Western and industrialized nations, who are accustomed to judging reality through the lenses of scientific progress. In his opinion the shaman of a primitive tribe has a kind of knowledge which is by no means inferior to that of Western scientists, while myth and science are on the same level: they are just different world-perspectives, which are both valid and endorsable.

Taking this path, the notion of scientific progress becomes meaningless: if someone believes that magic is better and more useful than science, let him think that way. And if we underline the *practical* results obtained by science, Feyerabend's answer is that there is no reason to judge the goodness of a particular world-perspective on practical bases. At this point, no doubt, any kind of dialogue becomes rather difficult. Feyerabend's theses mirror ideas and cultural tendencies which are nowadays popular within public opinion. Newspapers and TV programs pay great attention to all kinds of magic and esoteric doctrines, and Feyerabend's popularity is thus understandable if we take it as a typical sign of our times.

What, then, is the role of philosophy of science according to Feyerabend? And what is the role of philosophy at large? Such a role does not even exist - we might answer. Note that, in reacting against the typical scientific outlook endorsed by logical empiricism, Feyerabend is - at least partially - right. We may well agree that science, after all, does not give us the only type of knowledge worth pursuing. But is it necessary, when claiming that there are many kinds of knowledge available to human beings, to deny the fact that science - and *not* magic - provided us with a fair knowledge of the structure of the solar system? Feyerabend's answer: "Who cares?", makes any rational discussion pointless, and even questions the classical definition of man as a creature who naturally aims at knowing the reality which surrounds him. For this reason, we should not be surprised when reading these statements drawn another work of his:⁷

" 'To be a philosopher' either means that we approach the world as members of a club, or is a void expression, which can be applied to any individual, even to a dog. I gladly admit to be a philosopher in the second sense of the term but, certainly, not in the first one".

Nobody can thus deny that Feyerabend endorsed irrationalism (a charge that our author, after all, never rejected). But in my opinion a philosopher of science is not entitled to assume such a stance, because science is, by definition, a rational activity. So we may conclude that Feyerabend is no longer a philosopher of science, but something else: maybe a poet, or a propagandist of magic and esoterism. This is, according to my view, one of the main reasons why contemporary scientists no longer take philosophy

⁷ P.K. Feyerabend, *Three Dialogues on Knowledge*, Blackwell, Oxford, 1991.

of science seriously. Some philosophers answer that Feyerabend's positions, far from being irrationalist, are instead justified because they take into account a *different* kind of rationality. To which I reply: "All right, but *which* one?". His rationality might be valid in Terry Brooks' phantasy stories, that are certainly amusing and well written, but do not reflect reality at all. In everyday life, unfortunately, we have no magic swords, no elves and no knights endowed with supernatural powers who fight the forces of Evil.

We do not need to accept Feyerabend's theses in order to reject the scientific outlook on reality endorsed by the logical empiricists, or the linguistic absolutism put forward by the analytic conception of language. A rediscovery of American pragmatism is more than sufficient for that purpose. We may thus find that pragmatism and logical empiricism share many common positions: both are interested in science and its methodology; both have faith in human reason and its capacities; both believe that philosophers must try to *demonstrate* in a rigorous manner the correctness of their statements giving rise to an inter-subjective type of discourse.

Logical empiricists, however, endorse scientism and pragmatists do not. According to pragmatism, scientific knowledge is just one of many, available kinds of knowledge (although being very important and central), while for logical positivism no meaningful talk is possible outside the scientific field: every type of knowledge must be reduced to the scientific one.

So we have monism and reductionism on the one side, and pluralism and anti-reductionism on the other. The pragmatists, unlike logical empiricists, stress the primacy of *practice*, a fact on which any responsible scientist may easily agree. Analytic philosophers - and especially Carnap - believe in the existence of *one* method able to solve all epistemological problems, and this method is essentially based on the tools furnished by formal logic. Dewey, however, realized well in advance that this was a *philosophical utopia*,⁸ and now we may well understand the pragmatist rejection of the excesses of logical formalism. That rejection seemed outdated for a long period of time, while today it looks more and more justified. And what about the relationships between science and ethics? While Dewey deemed them essential, logical empiricists and analytic philosophers usually paid little attention to this topic.

So there are more rational ways for rejecting scientism than the endorsement of astrology and magic. Yet, many people claim that Feyerabend's positions are a necessary

⁸ I am obviously aware of the fact that the later Wittgenstein, especially in such books as *Philosophical Investigations* and *On Certainty*, adopted a stance that closely resembles the pragmatist positions. Hilary Putnam, for instance, entitled the second chapter of his book *Pragmatism: An Open Question*, cit., "Was Wittgenstein a Pragmatist?". It seems to me, though, that the absolute primacy of language endorsed *even* by the second Wittgenstein somehow lessens the efficacy of these insights. Furthermore, the thought of the second Wittgenstein may lead to conclusions like the following, which I deem misleading: "Objectivity and rationality must be things that we forge for ourselves as we construct a form of collective life. So the work of Copernicus is undone. Human beings are back in the centre of the picture (...) The things we had seen ourselves as answerable to, we are now answerable *for*." (D. Bloor, *Wittgenstein. A Social Theory of Knowledge*, Macmillan, London, 1983, p. 3).

and inevitable reaction to logical empiricism's scientific dogmas. In philosophy as anywhere else - they say - an excess always prompts an opposite one. When someone reduces rationality *as such* to scientific rationality, it is not surprising to find authors who claim that the landing on the Moon has no objective value.

This thesis, however, is too strong: we should not talk of "inevitable reaction" but, rather, of the creation of a peculiar cultural climate. No doubt logical positivism and analytic philosophy have some responsibility if we live today in a cultural environment that largely accepts an irrationalist outlook on reality. If we claim that science is everything, we are likely, sooner or later, to be confronted by someone objecting that science is, instead, nothing. When common men find out that science cannot face all problems, they will most likely turn their attention to charlatans who promise to solve all those problems science is unable to cope with.

Let me conclude the analysis going back to Feyerabend's theses once again. He attacked - and this is indeed an original stance - scientific rationality *from inside*, by using epistemological tools. Philosophy of science, thus, finds enemies within the walls of its own stronghold: Feyerabend and his followers have turned philosophy of science into something mysterious and not easily classifiable in philosophical or scientific terms. The *anything goes* undermines the meaning itself of the discipline, to the point that scientists find it difficult to understand what Feyerabend's philosophy of science is up to.

If science is equated to any other dimension of spirit - art, religion, or even witchcraft - the specific and cognitive character of scientific rationality is eliminated. It follows that philosophy of science loses any meaningful role within the field of human knowledge, while even philosophy as such becomes more similar to a joke than to a serious endeavor. In Feyerabend's opinion, both philosophy and the philosophy of science are nothing but products of our particular - i.e., Western - kind of rationality, which has no supremacy on different types of rationality, including those endorsed by primitive tribes. He thus claims that history must be defended by freeing it from the (alleged) chains that Western epistemology has placed everywhere, re-evaluating all the different cultural traditions. It seems to me that the physicist Steven Weinberg gave the right answer to such arguments claiming that:

"I suspect that Gerald Holton is close to the truth in seeing the radical attack on science as one symptom of a broader hostility to Western civilization that has bedeviled Western intellectuals from Oswald Spengler on. Modern science is an obvious target for this hostility; great art and literature have sprung from many of the world's civilizations, but ever since Galileo scientific research has been overwhelmingly dominated by the West. This hostility seems to me tragically misdirected. Even the most frightening Western applications of science such as nuclear weapons represent

just one more example of mankind's timeless efforts to destroy itself with whatever weapons it can devise. Balancing this against the benign applications of science and its role in liberating the human spirit, I think that modern science, along with democracy and contrapuntal music, is something that the West has given the world in which we should take special pride. In the end this issue will disappear. Modern scientific methods and knowledge have rapidly diffused to non-Western countries like Japan and India and indeed are spreading throughout the world. We can look forward to the day when science can no longer be identified with the West but is seen as the shared possession of humankind."⁹

Granting that Feyerabend was certainly right in saying that different cultural traditions have the right to be respected and preserved, it must nevertheless be noted that nature does not react in the same way to any kind of inquiry. This is the real point at stake: some actions are successful and others are not, and this means that reality itself poses structural limits and bounds to human research, limits and bounds that men cannot overcome. Feyerabend's extreme relativism misses the point precisely for this reason.

These are the roots of the growing conflict between philosophers of science and scientists. Despite any difference of opinion, the dialogue between a logical empiricist or a Popperian philosopher of science on the one side, and a professional scientist on the other is always possible. But, when it comes to Feyerabend and his followers, this dialogue turns out to be null. The current situation is thus dangerous, because it tends to deepen a gap between philosophy and science that was - at least partially - filled in the first decades of the past century.

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