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Is Science an Ideology?

Our last issue contained two articles on the philosophy of science: an analysis of the works of Khun and a review of Feyerabend's *Against Method*. **Mike Fuller** continues their debate about science, philosophy, & truth.

To defenders of science, like Karl Popper, the claim that science itself might be prey to distortion, prejudice and ideology is anathema. To people who believe like Paul Feyerabend that science is "just another ideology", the common belief that science is a neutral and objective body of knowledge is an indication of just how great an ideological grip it has on people's minds.

Science and Pseudo-Science

Popper's famous distinction between science and pseudo-science (or ideology) depends on his equally famous principle of falsification. Quite simply, he argues that if a theory is in principle open to being disproved or 'falsified' by the facts of the world, then it is scientific. If it is not open to being falsified by the facts of the world, then it is pseudo-science, ideology. For example, the claim "Nothing can travel faster than the speed of light", on which the Special Theory of Relativity crucially depends, can in principle be falsified by observing something in the actual world that *does* travel faster than the speed of light. But the statement "God's in His Heaven" *cannot* be scientific, because it's unclear what sort of evidence in the world would count as falsifying it. Therefore it must be pseudo-science or ideology.

More insidiously, some pseudo-sciences or ideologies which do, on the face of it, seem capable of having the facts of the world cited against them as contrary evidence, resort to a more devious tactic. Such is the case, thinks Popper, with Marxism and Psychoanalysis. What he objects to is that both Marxism and Psychoanalysis *call* themselves 'scientific' while their procedure is thoroughly pseudo-scientific. How so? Because, for example, if you say to a Marxist: "Look, Communist regimes have collapsed all over the world and global Capitalism seems stronger than ever. Doesn't that falsify your claim that Marxism is the 'inevitable lesson of history'?", the Marxist can always reply: "Not at all. It's just another twist in the materialist dialectic of history. Communism will win in the end." And so on for every bit of contrary evidence that you might try to cite as falsifying Marxism. It will always, says Popper, be 'explained away' by the Marxist.

So, for Popper, the mark of pseudo-science or ideology is *that it will never allow itself to be falsified by any evidence. It will always reinterpret what is proposed as evidence against it by interpreting that evidence in its own favour*, as in the Marxist example given above.

So far so good. But the trouble is that it has been persuasively argued that science can and does behave in just the same way as Popper claims that pseudo-science or ideology behaves.

Defenders of a scientific theory may either ignore anomalies – awkward facts that don't behave as the scientific theory says they should – or they may try to explain them away by inventing auxiliary hypotheses to try and make the anomalies consistent with the theory. In other words, they may and do try to *reinterpret contrary evidence in their own favour*. Some people have accused supporters of the Theory of Evolution of doing just

this. And it has been argued that it is a perfectly sensible thing to do, especially if there is no better theory available at present and if the existing theory is fruitful in other respects.

But the price of defending any theory – scientific or not – against an increasing body of factual evidence that seems to cast doubt on its truth is that your theory becomes more and more difficult to defend, more and more cumbersome to work with, and less and less persuasive. So you can defend any theory indefinitely, *but only at the price of sounding less and less convincing*. But exactly the same thing applies to what Popper calls 'pseudo-science' as applies to what Popper calls 'science'. Just as the Theory of Evolution will look less and less convincing if contrary evidence mounts against it, so too will the theory of Marxism. But it is bound to be a messy and imprecise decision at what point any theory is so riddled with anomalies, so weighed down with auxiliary hypotheses, and, in general, flies so much against the facts of the world that it can be said to be decisively falsified.

The upshot of this is that the apparently nice and clear distinction between science and pseudo-science made by Popper turns out, on inspection, to be rather unclear. We might say that his distinction itself, while not being decisively falsified, does look a bit unconvincing in the light of the facts.

Progress in Science: Kuhn and Feyerabend

Kuhn and Feyerabend are so often cited as examples of people who don't believe in progress in scientific truth that I think it is worth assembling some reminders of the extent to which they both *do* believe in it. Kuhn, for instance, believes in progress in scientific truth not just within a paradigm ('normal science') but also *between* paradigms ('revolutionary science'). It is just that he thinks we have a false picture of what 'progress in scientific truth' actually is. He says:

> "Later scientific theories are better than early ones for solving puzzles in the often quite different environments to which they are applied. This is not a relativist position, and it displays the sense in which I am a convinced believer in scientific progress.
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> "Compared with the notion of progress most prevalent among both philosophers of science and laymen, however, this position lacks an essential element. A scientific theory is usually felt to be better than its predecessors not only in the sense that it is a better instrument for discovering and solving puzzles but also because it is somehow a better representation of what nature is really like…
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> "I do not doubt … that Newton's mechanics improves on Aristotle's and that Einstein's improves on Newton's as instruments for puzzlesolving. But I can see in their succession no coherent direction of ontological development. On the contrary, in some important respects, though by no means in all, Einstein's general theory of relativity is closer to Aristotle's than either of them is to Newton's. Though the temptation to describe that position as relativistic is understandable, the description seems to me wrong. Conversely, if the position be relativism, I cannot see that the relativist loses anything needed to account for the nature and development of the sciences." (T.S. Kuhn, *The Structure of Scientific Revolutions*, Univ. of Chicago Press 1970, pp.206-207).

Feyerabend argues for a qualified idea of progress in scientific truth in the following way:

> "There is only *one* task we can legitimately demand of a theory, and it is that it should give us a correct account of the world, i.e., of the totality of facts *as constituted by its own basic concepts*… Is it not reasonable to assume that a point of view, such as the point of view of classical mechanics, that has been found wanting in various respects and that gets into difficulty *with its own facts*… cannot have entirely adequate concepts? Is it not equally reasonable to try to replace its concepts by those of a more successful cosmology?…
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> "Incommensurable theories, then, can be refuted by reference to their own respective kinds of experience; i.e., by discovering the *internal contradictions* from which they are suffering. (In the

> absence of commensurable alternatives these refutations are quite weak, however, as can be seen from the arguments for proliferation in chapters 2 and 3)." (P. Feyerabend, *Against Method*, London, NLB 1975, p.284).

Science and Non-Science

Such qualified views of scientific progress as those expressed above need to be integrated into a wider picture in which the status of scientific truth is compared with the status of truth in other types of human activity. I am thinking of Feyerabend's provocative remarks about voodoo being as legitimate a form of inquiry as particle physics (and, even stronger, Heidegger's Romantic-style views that poetry gives us a *deeper* understanding of the world than science). Such views, I think, point to the following general line of criticism.

Most contemporary defences of scientific realism are *pragmatic* in nature. They follow the lines laid down by philosophers like C.S. Peirce and Karl Popper. The fact that our technologies *work*, they say, is strong evidence that the scientific theories on which they are based are *true* or at least getting ever closer to the truth. What they mean by 'truth' here is correspondence truth - that is, our theories correspond to the way the world really is. Few serious critics would be so irrational as to deny this, but some would want to modify such claims by adding that scientific vocabularies work and provide 'an accurate description of reality' *relative to a certain purpose*. Change the human purposes and you simultaneously change the idea of 'what works' and of what provides 'an accurate description of reality' relative to this different purpose.

This is what enables Richard Rorty to say that for certain purposes a literary vocabulary works better than a scientific one and therefore, relative to those purposes, provides a 'truer description of reality'. In other words, Heidegger was halfright: poetry may be truer than science - for certain purposes.

It is also what enables Paul Feyerabend to engage quite consistently in some of his more bizarre-sounding proposals, such as that we should, if we don't much care for the Theory of Evolution, decide on whether it is true or false by democratic majority vote. Or which leads him to engage in the following classic fulmination against science:

> "Our well-conditioned materialistic contemporaries are liable to burst with excitement over events such as the moonshots, the double helix, nonequilibrium thermodynamics. But let us look at the matter from a different point of view, and it becomes a ridiculous exercise in futility. It needed millions of dollars, thousands of well-trained assistants, years of hard work to enable some inarticulate and rather limited contemporaries to perform a few graceless hops in a place nobody in his right mind would think of visiting – a dried out, airless, hot stone. But mystics, using only their minds, travelled across the celestial spheres to God himself whom they viewed in his splendour receiving strength for continuing their lives and enlightenment for themselves and their fellow men. It is only the illiteracy of the general public and of their stern trainers that makes them reject such comparisons without further ado. A free society does not object to such an attitude but it will not permit it to become a basic ideology either." (P. Feyerabend, Science *In A Free Society*, Verso/NLB 1982, p.31).

It seems to me that what is going on here is a perfectly consistent drawing out of the implications of a pragmatist theory of truth. If truth is defined as what works relative to human purposes, then the phrase 'true description of reality' must logically be dependent on the phrase 'what works best for a certain purpose'. In short: "The vocabulary that works best for a certain purpose can legitimately be regarded as the truest description of reality for that purpose." And, as Feyerabend suggests, which purposes are best, and therefore which descriptions are to be deemed truest, should, in a free society, be open to debate.

'Making' and 'Finding', 'Scheme' and 'Content', 'Language' and 'World'

Linked to the view above are the arguments variously put forward by Donald Davidson, Richard Rorty, and Hilary Putnam (and, some would say, also by Continental thinkers like Nietzsche, Heidegger, Gadamer, Foucault, Derrida) that it is systematically impossible to state where language ends and the world begins, or to separate 'interpretation' from 'text', or to isolate the timeless, universal facts or 'content' from the changing, particular vocabulary or 'scheme'. As Rorty puts it:

> "It is no truer that 'atoms are what they are because we use 'atom' as we do' than that 'we use 'atom' as we do because atoms are as they are'. *Both* of these claims… are entirely empty, both are pseudo-explanations.
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> "[On the realist account] the reason why physicists have come to use 'atom' as we do is that there really are atoms out there which caused them to be represented more or less accurately… The reason why such explanation meets with more success than, say, astrological explanation, is that there are no planetary influences out there, whereas there really *are* atoms out there…
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> "[But] the representationalist's attempt to explain the success of astrophysics and the failure of astrology is… bound to be an empty compliment unless we can attain to… a God's eye standpoint – one which has somehow broken out of our language and beliefs and tested them against something known without their aid. But we have no idea of what it would be like to be at that standpoint. As Davidson puts it, 'there is no chance that someone can take up a vantage point for comparing conceptual schemes [e.g., the astrologer's and the astrophysicist's] by temporarily shedding their own.' " (R. Rorty, *Objectivity, Relativism and Truth, Cambridge University* Press 1991, pp.5 - 6).

Perhaps a still clearer statement of the point Rorty is making is provided by the following:

> "For example, someone says 'There is a chair' (for a scientific example replace 'chair' with 'electron') - what makes this statement true? Is it not an appeal to our conventions about what we call chairs? As Quine made clear - that there is a chair present would not be true in a culture which defined chairs differently or had no conception of chairs at all.
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> "What does the truth of the statement depend on, then? For one thing it depends on a certain agreement on how we use our language. But is that all? It must also depend on the way the world is. There has to be something that allows us to agree or disagree about the presence of the chair. What is important to the truth or falsity of the statement is both the way in which we use our language and the way the world is - but neither element can be separated from the other. What makes something true or false, there or not there, and this includes scientific discoveries, is how things stand from our human (not an impersonal) perspective." (D. Hutto, 'A Job For Philosophy', *Philosophy Now*, Autumn 1992, p.22).

The overall conclusion seems to be that all forms of knowledge, including scientific knowledge, are 'ideological' in the sense that there is no neutral, objective body of knowledge that is not infected by the purpose-relative concepts of a group of inquirers. This is a meaning of 'ideology' that still retains some vestiges of the original Marxist meaning of 'ideology' as a mask and cover for vested interests.

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Terms

A rather vague term, meaning roughly the same as 'conceptual scheme' or 'framework of ideas' (as in 'The Kantian Paradigm', 'A Christian framework', etc.)

Incommensurable

Two different paradigms are said to be incommensurable when they cannot be *compared* due to radical incompatibility of such things as meaning, truth, or justification. If, for instance, two paradigms are so alien to each other that the meanings of the concepts of the one cannot clearly be translated into the concepts of the other, then the two paradigms cannot even be logically compared to see if they are contradictory or not, since they do not share the same 'universe of discourse'.

Representationalist

Someone who believes that our ideas (or at least some of them) accurately represent or picture or correspond to the way the world really is. Thus a representationalist may believe that the human concept 'electron' is an accurate representation of real things – electrons – in nature. Antirepresentationalists, like Rorty, are dismissive of the notion that concepts and language essentially function as 'pictures' of reality; they prefer the Wittgensteinian model of language as a kind of human 'tool' for interacting with the world.