HOW NOT TO FEYERABEND: NAIVETY AND THE PRESENT ATTACK ON SCIENCE BY DEMOCRACY

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Paul Feyerabend is famous for attempting to make science subject to democratic revision. How shall we assess this in the light of the present attacks on science? Is he naive, or is he merely wrong? Can epistemological dadaism of the kind that he offers resist subversion by the will of the majority?

In this talk I will attempt to show three things. First, the basis for Feyerabend's claims are based on a liberal epistemic individualism, and ultimately a kind of rationalism. Second, that there are some fairly specific conditions under which his dadaist non-program might flourish, outside of which it can offer nothing to prevent antiscientific movements based on corporate interests that subvert the democratic process from gaining ground. Third, that the present state of science in society is, so far from being anything like an ideology, more like an embattled movement of resistance fighters against irrationality. PKF himself may have come out now on the side of scientific rationality rather than on the side, as he did, of encouraging astrology, creationism and so-called alternative medicine, in the light of this situation.

Attacking science

Feyerabend's personal history, as outlined in his autobiography Killing Time, is crucial to understanding much of his later thought. He was an uncritical member of the Nazi Arbeitsdienst, and on his own admission showed no real concern for social issues like the disappearance of Jews. In the army, he acted in a manner that was construed as brave, but which he interpreted as excitement.

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Upon being injured (earning an Iron Cross), temporarily paralysed, and made permanently impotent, he passed the rest of the war at home, attempting to become an operatic singer, and accidentally entering philosophy from the study of science, in particular quantum mechanics.

As a contrarian by nature, Feyerabend often tried to state his case in an over-the-top manner, making it hard to interpret him without an appreciation of his wider program. In fact, although he called his anarchist epistemology "medicine for epistemology, and for the philosophy of science" (AM 17), he also, in several footnotes, claimed that he had no program as such, and that he was more like a dadaist:

> "*A Dadaist would not hurt a fly ? let alone a human being. A Dadaist is utterly unimpressed by any serious enterprise, and he smells a rat whenever people stop smiling and assume that attitude and those facial expressions which indicate that something important is about to be said. A Dadaist is convinced that a worthwhile life will arise only when we start talking about taking things lightly and when we remove from our speech the profound but already putrid meanings it has accumulated over the centuries ('search for truth'; 'defence of justice'; 'passionate concern'; etc., etc.) A Dadaist is prepared to initiate joyful experiments even in those domains where change and experimentation seem to be out of the question (example: the basic functions of language). I hope that having read the pamphlet the reader will remember me as a flippant Dadaist and not as a serious anarchist.*

He need not have worried. Although people do refer to him as an anarchist, it is clearly not of the bomb-throwing kind, unless you count Against Method as a bomb, which he did, or more clearly as a "stinkbomb".

What motivates this approach to science? Feyerabend was a passionate liberal, in the Millian sense – the individual ought not to be constrained in the things they may think, espouse or act upon, and just as Mill in on Liberty had argued that truth comes from a plurality of opinions, so Feyerabend holds that if only one view is permitted by education and consensus in science, science becomes an ideology. To oppose this is a humanitarian act. Anarchism or dadaism opposes any kind of restriction whatsoever on the individual's freedom to think.

So far, this is laudable. One might not want people to be restricted in what they believe. But does this apply in discourses that are at best meritocratic and more generally a community of experts? Shouldn't an expert's opinion carry more weight than the opinions of the local astrologer? Feyerabend, in both statement and action, thinks not. He himself said that creationism, geocentrism, traditional folk remedies and the like should be granted equal epistemic status by the anarchist epistemologist, and this view is still promoted today, for example by Steven Fuller when he testified for the plaintiff creationists in the Dover trial, and in subsequent books. Moreover, Feyerabend, when he was diagnosed with an inoperable brain tumour, attended sessions with faith healers, as he had previously

for his other conditions. He repeatedly praised the introduction of Chinese medicine by the Mao regime in China in the 1970s, arguing from the efficacy of acupuncture that folk medicine had truth that western medicine did not. In a sense, that success seemed to license all non-science alternatives for him.

He repeatedly compared science to church dogma (AM 46), claiming that when a science has reached unanimity of opinion, it is like a church dogma

> *for the frightened or greedy victims of some (ancient, or modern) myth for the weak and willing followers of some tyrant. Variety of opinion is necessary for objective knowledge. And a method that encourages variety is also the only method that is compatible with a humanitarian outlook.*

More on method in a bit. The footnote to this passage is so striking that it deserves an extended quotation:

> *It is interesting to see that the platitudes that directed Protestantism to the Bible are often almost identical with the platitudes which direct empiricists and other fundamentalists (italics added) to their foundation, viz. experience. Thus, in his Novum Organum Bacon demands that all preconceived notions (aphorism 36), opinions (aphorisms 42ff), even words (aphorisms 59, 121), 'be abjured and renounced with firm and solid resolution, and the understanding must be completely freed and cleared of them, so that the access to the kingdom of man, which is founded on the sciences, may resemble that to the kingdom of heaven, where no admission is conceded, except to children' (aphorism 68). In both cases 'disputation' (which is the consideration of alternatives) is criticized, in both cases we are invited to dispense with it, and in both cases we are promised an 'immediate perception', here, of God, there, of Nature.*

I think Feyerabend is being a little ahistorical here, ironically since his claim is itself a historical claim. Bacon writes at a time when theology and classical education did arrogate to themselves all possible avenues of enquiry. His move, no less than Feyerabend's, is a dialectic move in a different context. That Feyerabend's prescriptions are themselves contextual will become obvious in a little while.

Feyerabend was greatly influenced by Adolph Harnack's magisterial seven-volume history of church dogma, published in the latter nineteenth century, between 1886 and 1890. He recounts in his autobiography how he taught the subject at Berkeley in 1974, reading a week ahead of the undergraduates (over which we sympathise with him), and decided that dogma in religion and dogma in science were the same thing. He concluded that dogma is a bad thing. Many who know the subject matter in fact think the analogy goes the other way ? that church dogma is a living tradition, just as, yes, science also is. In any case, I think that he had a poor foundation for thinking that a single unitary view must be ossified; it is not merely interaction with other opinions that makes traditions change, as any

reader of Marx, Lenin and Kropotkin ought to have known. Traditions also change from a change in the socioeconomic and physical environment to which they must adapt, also just as science does. In fact, one might say that a ruling theory in fact does not need opposition, more than any other kind of tradition, in order to change.

Feyerabend would have rejected that claim, because for him, following Hansen's "theory-dependence of observation" thesis, held that observation and facts were themselves "ideational" and hence excluded contrary evidence, but this strikes me as historically untenable, and formally unnecessary. He wrote:

> *On closer analysis we even find that science knows no 'bare facts' at all but that the 'facts' that enter our knowledge are already viewed in a certain way and are, therefore, essentially ideational. [AM 19]*

This claim may have been tenable in the mid-70s. I think that, especially in the light of the work of Ian Hacking and the other "new experimentalists" it is less so these days. Is Feyerabend really saying that if I know there is a table there in the room, that is "essentially ideational"? What about if I never attend to it, express it in language, but nevertheless manage to navigate around it without banging my hip? The over-extension of the observational theory-dependence claim is rife in the literature, and Feyerabend is at least partially to blame for this.

On or against method

Feyerabend is particularly criticised for the way he treated method, but this is often based on a misunderstanding from the way he made his bon mots. He says

> *The idea of a method that contains firm, unchanging, and absolutely binding principles for conducting the business of science meets considerable difficulty when confronted with the results of historical research. We find then, that there is not a single rule, however plausible, and however firmly grounded in epistemology, that is not violated at one time or another. [AM 23]*

He is here following his teacher Popper in one way ? there is no logic of discovery, at least in the sense that all scientists must use it all the time. And he is correct in the sense that there are things we would want to include as "good science" that break some or other rules of epistemology or methodology (including falsificationist methods, contra Popper). It is against this background that his famous or infamous quote is made:

> *It is clear, then, that the idea of a fixed method, or of a fixed theory of rationality, rests on too naive a view of man and his social surroundings. To those who look at the rich material provided by history, and who are not intent upon impoverishing it in order to please their lower instincts, their craving for intellectual security in the form of clarity, precision, 'objectivity', 'truth', it will become clear that there is only one principle that can be defended under all circumstances and*

in all stages of human development. It is the principle: anything goes. [AM 27f]

This is not, despite the popular interpretation, a claim that one can do anything one likes at all times, only that at various times, all methodological rules have been fruitfully broken, and this is true enough. But Feyerabend, who had studied Wittgenstein's views with the master, should have realised that science is very much like the discussion in the Investigations of the concept of a "game" – there are similarities, that crisscross disciplines and periods, and it is not true that every science has any method it likes. And indeed, history shows us that methods, protocols and techniques do change relatively slowly. The lack of universality is interesting, sure, but only if you think there is an essential definition for scientific method. It doesn't mean that sciences are in historical or sociological fact anarchistic.

Feyerabend did address the worry that a lack of unitary universal method might leave science in a mess:

> *There is no need to fear that the diminished concern for law and order in science and society that characterizes an anarchism of this kind will lead to chaos. The human nervous system is too well organized for that. [AM 21f]*

Was he right? That is the topic of our next section.

Science under attack

In the 1970s, science was attacked in ways based on or very similar to Feyerabend's critique ? science was authoritarian, elitist, hegemonic, or exclusivist. It was criticised by feminist philosophers, socialist philosophers and scientists themselves, such as Gould, Lewontin, Levins and the people's movements at Harvard, Berkeley, and of course Paris and the rest of Europe.

About this time, too, there were nascent attacks on science by special interest groups, which over the past thirty or forty years have grown to a chorus of denialism. At first it was the tobacco industry funding "junk science" to prove that tobacco is unrelated to lung cancer, but later it was the oil industry funding anti-environmentalist "research". But the worst move happened when the Republicans gained control of Congress in 1994.

One of the very first things that Newt Gingrich's Republicans passed was to wind back, almost to the point of non-existence, the Office of Technology Assessment (OTA), which had been set up to provide non-partisan scientific advice to the Congress. This then enabled them to start a campaign of science denial. Issues that they ran this line included the etiology of AIDS, denying that HIV was the cause in favour of claiming that the bad lifestyle of gays' use of drugs caused AIDS; and opposition to the increasing consensus on global warming, claiming that, first, it wasn't happening, and then when it became obvious that it was, that this was just a "normal" fluctuation rather than being caused by human

industry, and then, when it became clear that it was caused by human activities, denying that it could be stopped now.

These democratically elected officials managed to undercut environmental causes such as the protection of endangered species threatened by development; and issues in disaster management, including the forecast danger from a hurricane in the Mexican Gulf. A book published several years ago entitled The Republican War on Science by Chris Mooney details the culture of mendacity, special interest, and censorship of real science by Congress under the Republicans, over the past 15 years or so, at the state and federal level in the United States. Similar moves have been made elsewhere in the world, including Australia, where our federal government has ignored or even suppressed reports by competent scientists working on the government payroll. Moreover, funding for science that is unpopular with the government has been reduced in the US and here. There have been cases in the US where political appointees have censored press releases from NASA, the Center for Disease Control, the Corp of Engineers, the Environmental Protection Agency, and so on. The list is extremely long.

The role of science in public policy making in a democratic system is, it seems, tenuous at best. The use of "think tanks" and public relations to spin the debate the way that suits the government is ubiquitous, and in many cases the same organisations are involved in these moves for over forty years. The people denying oil spill effects were the same people who denied tobacco's role in disease, and they are the same people now denying global warming. Often, they are funded by the same corporate giants. Is democracy a hedge against this abuse of science? I think not. Not, at any rate, if the will is there to ignore conventions and information that is unsuitable to those elected officials.

Medical research is presently undergoing what has been called "ghost management", where studies are done, mostly for pharmaceutical products, with the funding of the pharmaceutical industry at one or two removes, by trained scientists who fail to properly carry out double blinds, follow up studies, longitudinal studies, and control for side effects. These studies often fail to mention that they are done with this funding and management, by not declaring competing interests, despite laws requiring them to do so. It has been estimated that most medical research is methodologically and experimentally invalid.

All this is done with the knowledge of democratically elected representatives, and it is not restricted to the United States. But the Bush Administration is most blatant and egregious in this endeavour, and it should give us pause before we accept Feyerabend's dadaism uncritically.

Feyerabend believed that merely having the information out there would enable individuals to assess the information for themselves, and increase the critical focus of science. But instead, those who are educationally equipped to do this, for not everybody understands what they are reading, have been silenced or sidelined. Opposition to innoculation has grown, for example, based on what are fundamentally lies about the effects of vaccines on children, causing autism. As a

result, the single most effective and cheapest public health measure ever invented is losing its effect as the herd effect drops below the threshold, and more people are infected with diseases like TB, allowing it to evolve resistance to treatments. The result are diseases we simply no longer have the drugs or skills to treat.

A less malign example, at least in terms of public well being, is the resistance to the teaching of evolutionary biology and the other disciplines that contribute to it, like geology and ecology. From being a crackpot fringe, we now have philosophers like Feyerabend (who explicitly mentions it) and Fuller arguing that it is a democratic right that creationism be taught, or its most recent incarnation, intelligent design. This is occasionally done by elected officials, but it is more often something that is agitated for at the grassroots level, inspired by the literature and PR of well-funded organisations like the Discovery Institute or Answers in Genesis (which, by the way, got started here in Brisbane). Their latest strategy is "teach the controversy", as if the scientific community had any such controversy. Feyerabend believed that a controversy exists if enough citizens believed there was one, but to teach what is effectively a stalking horse for a particular religious position is to necessarily remove actual science from science classes, as class time is a limited resource.

As a result, we have an increasingly less educated population, uncritical in scientific matters and unable to distinguish actual research from technical sounding baloney. This is something that governments like. An uncritical population can be made to think anything that suits the economic, social or special interests agenda of the ruling party. So far from being a democratic and humanitarian benefit, teaching nonscience as science is in fact a way of reducing rights and good social policy. Don't like that your government can't build a dam that will extinguish Queensland lungfish? No matter, just call it "unsound science" and put out your own PR, and people will buy it because they don't know any better.

Feyerabend's agenda has led to the loss of freedom, not increased it. His naivety about how democracy functions, just like his naivety about the policies of the Nazis as a young man, allows tyranny to flourish. How did such a humane individual get to this point?

Science as ideology?

Part of the problem lies, I think, in Feyerabend's belief that scientific theories act like dogmatic ideologies. Under the influence of the theoretical turn of the mid century in the philosophy of science, in which theories were conceptual structures that dictated all behaviour and cognition, and Wittgenstein's view that worldviews were coherent, via Kuhn's conception of global theories as worldviews, Feyerabend fundamentally misunderstood the nature of scientific consensus.

Maybe it is due to the fact that he is basically concerned with early twentieth century physics, and overgeneralising from that, or because he considers Kuhn to

have set the tone with The Copernican Revolution in which dogma and science do conflict, but Feyerabend seems to have a rather skewed notion of scientific consensus.

While it is a good thing to have legitimate concerns raised, heard and followed up about any ruling idea in science, it is not the case that always and every time that science does reach a consensus that this in some way prohibits challenges, or that data cannot make people revisit ideas long buried (Wegener's continental drift theory here is the exemplar). Feyerabend may think that data are theory-relative, but scientific practice does not show this to be the case. Maybe it is in physics. We should not infer from that that it will always be in every science. Often as not, data rely on theories far removed from the theory under test or challenge, as Hacking argued.

There are numerous cases of scientists failing to challenge theories that have embedded themselves unreasonably in a discipline. This is unavoidable, even with dadaism. Not everything can be tested or challenged at a time, and so long as the theory underwrites what Lakatos called "progressive research programmes", there is often little reason to challenge it. Maybe someone will come up with a new theory of the refraction of light, but until someone does, most likely for reasons other than the application of optics, people will continue to use Zeiss coated lenses in their microscopes and back field illumination. Newton's theory of colour was indeed challenged, but not for theoretical reasons, but for practical ones, by Edwin Land, and the result was not a new theory of light, but of perception. So it goes. If there is an epistemic need to challenge a theory, then it gets challenged no matter how broad the consensus.

I'd like to return to Feyerabend's use of church dogma in Harnack's volumes. One of the things that Harnack brings out is the liveliness of theological debates. Again and again he talks about the recasting of this or that doctrine as social, political, and philosophical foundations change. There are competing theories, just as in science, and there are resolutions, impositions of dogma, and rebellions against that imposition at every stage and every place. Why then should we think that dogma in science would be any different? We don't need to adopt a dadaist stance to science – science will do that very well on its own. When hegemonic dogmas in religion have occurred, opposition goes underground, but it never disappears. The Gnostics became the Paulicians, became the Bogomirs (who were celibate and hence accused of sodomy, hence the term "buggery"), became the Albigensians, became the modern Theosophists. Despite the occasional burnings, which were more political acts of suppression of dissidents than religious acts (and which we, in our enlightened age, have replaced with black sites and secret torture chambers) theological issues remained diverse throughout their history.

Science, like religion, is an evolutionary process, a historical chain of alternatives that compete for attention and acceptance. When one alternative gains universal acceptance, there will inevitably be those testing it at the edges or the core as opportunity presents itself. It is true that some of these challenges come

from social contexts like ethical considerations, political exigencies and religious objection, but they rarely do much more than harry at the heels of the actual research. Scientists themselves are more often those who challenge scientific agreement than any other group, and occasionally they do so on the basis of things like folk medicine or philosophical ideas.

Feyerabend has a "get out of jail free" card that he dealt himself in Against Method early on. He wrote, in the introduction

> *There may, of course, come a time when it will be necessary to give reason a temporary advantage and when it will be wise to defend its rules to the exclusion of everything else. I do not think we are living in such a time today. [AM 22]*

I do think we are living in such a time today, and what is more I think we were living in such a time in 1975. So far from needing to give a "temporary" advantage to reason, we need to give it a permanent one, or as permanent as anything can be in a historical flux.

Conclusion

Feyerabend was partly right and partly wrong, in my view. He was right that science is not defined by its methodology or a set of prescriptive epistemological rules ? scientists are whores for anything that will work, and advance their research, and when challenged on their epistemological purity they will handwave in the direction of Popper, or Kuhn, or Lakatos, or even Feyerabend after the fact. But there is a descriptive epistemology of science. It is generally a fallibilistic view of knowledge, in which ideas are accepted in instrumentalist and pragmatist ways. You may not be able to assess ahead of time which rules will discover knowledge, but you can tell which ones haven't, and there is a good reason to avoid them. Goethean rationalism may have been deprecated by the science of the 19th century, for example, but it repeatedly pops up anyway. We don't need to nurture that alternative ? it's never been squelched.

Science can learn from folk knowledge. This was never, so far as I know, at issue. Sure, there were times when internalist programs were focussed on because they were paying off, but as they reached the limits of their promise, people turned to anything they could get, and away went the research again. However, the danger of making everything equal before the throne of Nature is that you can waste a lot of time repeating the mistakes of the past. There are no guarantees, but there are rules of thumb.

If we do not seek to constrain the activity of science by prescriptive epistemologies, then we do not have the problem. In this, Feyerabend was right, and those he was attacking, such as Popper and the Vienna Circle, were wrong. But that battle has long been fought and the outcome decided… for now. For someone who quotes the Marxist theorists (no doubt in a playful manner), Feyerabend seems not to have internalised the dialectic nature of historical

movements, in science, religion, or anything else. Perhaps I am being unfair, but his argument seems to rest on some absolutes that aren't, on inspection, that absolute after all.

His naivety about political action, liberalism, and power relations seems to have failed. In a playful, joyous way, I would like to suggest that it is time to abandon his epistemic anarchism, in favour of a reasonable and democratic balance of power arrangement. Science must be given some respect, but it must be held accountable, and not just at the behest of special interests, corporate or religious, but by the entire community in which it operates. This does not mean, however, that the People are entitled to say what is, or what is not, science.