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Historical antecedents to the philosophy of Paul Feyerabend

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ABSTRACT

Paul Feyerabend has been considered a very radical philosopher of science for proposing that we may advance hypotheses contrary to well-confirmed experimental results, that observations make theoretical assumptions, that all methodological rules have exceptions, that ordinary citizens may challenge the judgment of experts, and that human happiness should be a key value for science. As radical as these theses may sound, they all have historical antecedents. In defending the Copernican view, Galileo exemplified the first two; Mill, Aristotle and Machiavelli all argued for pluralism; Aristotle gave commonsense reasons for why ordinary citizens may be able to judge the work of experts; and a combination of Plato's and Aristotle's views can offer strong support for the connection between science and happiness.

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1. Introduction

Although, Paul Feyerabend's ideas in philosophy of science are considered revolutionary, he would have been the first to recognize that such ideas had roots in the work of other philosophers who toiled long before the discipline received a name of its own. Some historical antecedents of his arguments for pluralism in science are quite obvious, since Feyerabend himself pointed to Galileo and Mill. Others are perhaps not so obvious. Plato, Aristotle and Machiavelli, I will argue, contribute arguments that could be brought together to support some of the crucial views that Feyerabend made famous, or infamous, depending on one's point of view. In this paper, I will discuss how those thinkers had insightful things to say about one or more of such themes as the need for pluralism (Aristotle, Machiavelli), the evaluation of science by the citizenry (Aristotle), and the relationship between the practice of science and the happiness of the society (Plato, Aristotle).

I will begin by discussing some of the obvious antecedents: the important ways in which Galileo and Mill support Feyerabend's views. This discussion, I trust, will provide some bridges that will allow me to make more plausible the case I intend to provide in the bulk of the paper in support of the notion that the work of Plato, Aristotle, and Machiavelli are valuable historical antecedents to Feyerabend's philosophy. Thus I do not mean to suggest that they directly influenced the development of Feyerabend's ideas. In some instances, I will point out, for example, some clear underpinnings in Aristotle and Machiavelli for Mill's ideas on pluralism, ideas that did influence Feyerabend directly. My intent, however, goes beyond the uncovering of telling similarities of that sort, for I would like to present some ways in which the work of our ancestors can make Feyerabend's arguments stronger. This approach should have been even more to Feyerabend's pleasing, given his emphasis on the worth of looking for wisdom in other cultures and other times. Moreover, that these themes were seen as crucial long before the birth of modern science suggests both the value of trying to place contemporary controversies in a long historical context, as well as the value of Feyerabend's concerns for understanding human experience.

2. Galileo

When Newton spoke of standing on the shoulders of giants surely he had Galileo in mind, for Newton, the physicist, owed him an immense debt of gratitude. But for Newton, the consummate methodologist, the connection to Galileo, the consummate anti-

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methodologist, is at the very least ironic. In the *Principia*, Newton sets down the "Rules for Reasoning in Philosophy," four methodological rules by which experience passes judgment on the worth of our ideas about the world (1989 [1687], 146-48). Had Galileo obeyed Newton's rules, there would have been no shoulders for Newton to stand on.

Let us concentrate on Newton's Rule III and Rule IV, the heart of methodological inductivism. In Rule III, Newton holds that qualities of bodies determined by experiment ought to be considered universal, therefore the good (natural) philosopher does not consider alternative accounts of the phenomena: "We are certainly not to relinquish the evidence of experiments for the sake of dreams and vain fictions of our own devising." (146) This Newtonian view is, of course, in sharp contrast with Feyerabend's urging in Chapter 3 of *Against Method* that science should not only permit the development of hypotheses inconsistent with well-confirmed theories and/or well-confirmed experimental results, but indeed that such development should be encouraged (1975).[1]

Newton would find Feyerabend's position anathema for several reasons. The first reason, not shared by the falsificationists who also object to Feyerabend, was Newton's belief that "hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy," where a hypothesis is "whatever is not deduced from the phenomena." (152) Although, centuries later scientists and philosophers, now separated, would tend to find such an approach much too stringent and narrow, many would also tend to draw the line, against Feyerabend, at the notion that scientists might be encouraged to develop hypotheses inconsistent with well-confirmed experimental results. For Newton, experiments acquire the highest priority in the achievement of knowledge about the world. As he points out,

> …that the divided but contiguous particles of bodies may be separated from one another, is matter of observation; and, in the particles that remain undivided, our minds are able to distinguish yet lesser parts, as is mathematically demonstrated. But whether the parts so distinguished, and yet not divided, may, by the powers of Nature, be actually divided and separated from one another, we cannot certainly determine. Yet, had we the proof of but one experiment that any undivided particle, in breaking a hard and solid body, suffered a division, we might by virtue of this rule conclude that the undivided as well as the divided particles may be actually divided and actually separated to infinity (147).

When will Newton allow scientists to depart from a path that has been shown to be experimentally fruitful? In Rule IV, he tells us that:

> *In experimental philosophy we are to look upon propositions inferred by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate or liable to exceptions*. This rule we must follow, that the argument of induction may not be evaded by hypotheses (his emphasis, 148).

Clearly, the good philosopher is not to question what has received strong inductive support, and surely not by entertaining hypotheses inconsistent with well-confirmed experimental results, unless in the normal course of doing science he stumbles upon new phenomena that do not quite fit into the knowledge he has accumulated so far and thus force him to consider the need for a change to his approach in explaining the world (we may notice some resemblance to Kuhn's account of how normal science leads to scientific change, 1970). Given this crowning of experiments plus induction in science, what worse sin could a scientist commit against reason than to elaborate hypotheses to justify a claim about the world that experiment has demonstrated to be false? Feyerabend's position is absurd.

Or it seems to be, until we pay close attention to Galileo's defense of Copernicus. In "The Second Day" of his *Dialogues Concerning the Two Chief World Systems*, Galileo acknowledges that the Aristotelians had observation and experiment on their side when they argued that the Earth did not move. "As the strongest reason of all is adduced that of heavy bodies, which, falling down from on high, go by a straight and vertical line to the surface of the earth" (1989 [1623], 72). If the Earth were to rotate and a rock were to be let fall from the top of a tall tower, the tower, being carried by the motion of the Earth, "would travel many hundreds of yards in the east in the time the rock would consume in its fall, and the rock ought to strike the earth that distance from the base of the tower." But the rock strikes the earth next to the tower, which refutes the notion that the Earth rotates. This experiment can be supplemented by many others: shooting a cannon ball straight up (it should fall at a large distance from the cannon, but it does not), or north or south (it should deviate from a straight north/south direction, but it does not), or two equal cannons shooting one west and the other east (if the Earth rotated, the respective cannon balls should travel significantly different distances, but they do not). Indeed, Salviati, who stands for Galileo in the dialogue, makes such a strong case of the experimental support for the immovable Earth that Simplicio, the Aristotelian supporter, in admiration tells him that it would appear to be "an impossible feat to contradict such palpable experiences." If these experiments were false, Simplicio asks, "What true demonstrations were ever more elegant?" (73).

Nevertheless, Galileo does entertain hypotheses contrary to such powerful experimental results (contrary to Rule III) and without having produced any "other phenomena" (as Rule IV requires), i.e. no new observations or experimental results. What did Galileo do instead? He offered a theoretical argument. He begins by asking what may seem to be a silly question: How do we know that the rock falls vertically? We see it, obviously, as Simplicio points out ("by means of the senses"). But what if the Earth did rotate? How would the rock move then? Galileo's move here reminds us of Feyerabend's advice to imagine "*a dream-world in order to discover the features of the world we think we inhabit*" (1993, 32). The Aristotelian Simplicio gives the answer: The rock would move with a compound of two motions, "one with which it measures the tower, and the other with which it follows it." The real motion would thus be a compound of a vertical and a circular motion. Of course, it is implied, we only observe the vertical motion, since we share, with the rock and the tower, the motion of the Earth. A few pages earlier Galileo had pointed out that any motions that may be attributed to the Earth "must necessarily remain imperceptible to us … for as inhabitants of the earth, we consequently participate in the same motions" (69).

It follows, then, that from *seeing* the motion of the stone "you could not say for sure that it described a straight and perpendicular line, *unless you first assumed the earth to stand still*" (77, my italics). But whether the Earth stands still is precisely what is in question. The evidence adduced to show that the earth stands still *assumes* that the earth stands still! Aristotle, the great logician, has committed the fallacy of *petitio principii*.

[1] This reference is to the first edition of *AM*. Page references will be to the enlarged third edition (1993).