

The usage and translation of foreign terms is, generally, very careful. However, on p. 74 the term “ontology” is said to derive from Greek “ontos” and “logos”. This is true. However, in etymology one usually uses the nominative singular case or the stem of the words involved, which should be “on” or “ont-” respectively, not the genitive singular form “ontos”. Frege’s German neologism “Begriffsschrift” is translated as “conceptual notation” on p. 123 and as “concept-script” on p. 159 – which could be a nice example of the notorious incompatibility of translational beauty on one hand (the former translation) and translational faithfulness on the other (the latter translation). The mentioned bits of the book do not contribute much to avoiding misunderstandings. However they do not cause great misunderstandings either. Perhaps they could be revised in the next edition.

Speaking about things which have to be amended in the editions to come: in the biographical part, although the entries on Bernard Bolzano (p. 115), Alonzo Church (p. 120) and Richard Jeffrey (p. 129) do contain most of what the reader expects to find, one misses these philosophers’ dates of birth and death – in opposition to all the remaining biographical entries, that is. In the expression “Relativized Hilbert programmes” (p. 32), either the capital “R” must be substituted by the minuscule, or the first letter of “programmes” must be capitalized. The condition (4) of epistemic logic in the corresponding entry (p. 48) is, of course, not $\Box\varphi \rightarrow \Box\varphi$, but $\Box\varphi \rightarrow \Box\Box\varphi$.

All in all, *Key Terms in Logic* can be highly recommended. It is a reasonable investment for undergraduate students, but it could also serve as a handy quick reference for graduate students and researchers who do not want to refresh their memory on certain topics in logic by trusting the hits of their PCs browser.

Stamatios Gerogiorgakis

Feyerabend, Paul K. *The Tyranny of Science*. Edited, and with an Introduction, by Eric Oberheim. Cambridge: Polity Press 2011 (165 pages, ISBN 978-0-7456-5190-3; £ 12.95 (paperback))

Paul Feyerabend’s *The Tyranny of Science* is based on a series of five lectures he gave in 1992 – two years before his death – at the University of Trent, Italy. In these lectures Feyerabend posed a couple of questions and presented some arguments which every scientist, philosopher and fan of them should consider at least once in a lifetime. Videotapes of these lectures were transcribed and edited by Feyerabend. Already in 1996, the book was published in Italian (Feyerabend 1996) and two years later in German (Feyerabend 1998). Nineteen years after Feyerabend had held these lectures in Trent, the book appeared in 2011 finally in English.

The Tyranny of Science is divided into four chapters: “Conflict and Harmony”, “The Disunity of Science”, “The Abundance of Nature” and “Dehumanizing Humans”. Every chapter has two parts: The first parts contain Feyerabend’s presentations and the second parts are discussions between him and the audience. Feyerabend’s central ideas can nearly all be found in his presentations, the most parts of the discussions are merely of an explanatory nature and do not really lead to additional insights into his theory.

Feyerabend does not give a systematic argumentation in his lectures, but “fairytales woven around events that are vaguely historical” (p. 13). Protagonists of these fairytales are scientists and philosophers, like Platon, Xenophanes, Galilei, Pauli, and their theories. By telling these fairytales Feyerabend tries to convince his audience that basic assumptions about science are wrong and the insistence upon the right of academic freedom “[...] is a silly attitude” (p. 89), which has to be suspended.

One of the first and also most important questions in Feyerabend’s book is if there is a connection between the so called “great discoveries in science” and everyday life. It

seems that scientists deal with everything there is. They analyze reality and our everyday life happens in this reality, so the work that is done on behalf of science and what happens outside of laboratories and lecture halls should be connected. But that is not the case: “[...] science is quite exclusive” (p. 6). Feyerabend claims that there is no such connection, e.g. is it quite difficult to see what should connect the Big Bang theory and the Rodney King riots or the Yugoslav Wars. Beside this scientists do not concentrate on meanings or hope, that is left to religion and philosophy. The problem is that there are quite a lot of different religions and philosophical trends with their own world views which contradict each other. How can we decide which world view is the right one to choose? This is surely the wrong question, in Feyerabend’s eyes. The plurality of world views is not a disadvantage, on the contrary it is a necessity for science: “[...] the result is good news for scientists, for it turns out that it is a presupposition of scientific progress” (p. 38). If scientists would strictly refute every other world view except their own, they could not reach their goal. Contemporaries of Copernicus, if they were strict empiricists, could e.g. never have agreed with his theory because experience did not give them enough evidence to accept it.

A popular objection against what is usually called the scientific world view, i.e. materialism, is that it has been refuted by itself through quantum mechanics. Although Feyerabend thinks that this argument is quite convincing, he wants to “dethrone materialism with far less complicated weapons and using a smaller army” (p. 35).

In general scientists claim that their world view has to be accepted because it has been successful in the past and will be successful in the future. The reason for the victorious history and its promising future is owed to the method of observation and experiment. Feyerabend refers to different causes which speak against these assumptions. First he raises the legitimate plea that “successful” is a relative expression. So we have to ask in how far science has been successful, resp. what are the successes of science? There is still war and poverty in a lot of parts of our world, science was not successful in solving these problems: “Experience and experiment decide, says a modern slogan. And why? [...] Because experience and experiment have been successful. Successful at what? Successful at bringing peace, or at making people more loving? Not a chance!” (p. 95) So maybe the scientific world view was not as successful as scientists want us to believe. Secondly, scientists like to speak as if there were something as *the* scientific world view, one world view which is globally shared by every scientist. But it is definitely not the case that such a world view does exist. Scientists prefer different world views, which may clash with the world view of other scientists, so “[t]he one monster SCIENCE that speaks with a single voice is a paste job constructed by propagandists, reductionists and educators” (p. 56). Furthermore, we are not forced to accept the world view on which science is based only because we accept the results of science. If we distinguish the results from the ideology on which they rest upon, we can accept the former and at the same time refute the latter. Feyerabend illustrates this argument by an analogy: You may honour the performance of counting dogs, but you will not accept a theory that implies the assumption that dogs are able to count. In addition, the scientist’s statement that science was successful because of the use of observation and experiment is not true. A lot of scientific theories were developed although they are not compatible with our observation (e.g. the theories of Xenophanes, Platon, Galilei, et al.). Beside this scientists and philosophers like Galilei, Descartes and Leibniz presuppose that the variety of events we can experience are held together by a unity, a complex of general laws. These basic laws can only be found if we constrain nature to reveal them. This is surely not what can be confirmed by our observation, our senses tell us that *some* things follow laws and others appear quite chaotic: “The behaviour of the stars is lawful; the behaviour of clouds is not. The sun rises everyday but animals occasionally give birth to monsters” (p. 40).

Another basic problem of science is that scientists focus only on quantifiable parameters by trying to establish solutions for certain problems. They are convinced that they are able to analyze certain situations from a distance, because they know the basic laws. This ability of providing remote diagnoses is something that Feyerabend definitively refutes. If science tries to solve a problem, e.g. a problem of agriculture, the first question is what are the relevant variables. These have to be independent from the region and the feelings of the inhabitants of this region, because they make it impossible to get objective results. But that is circular reasoning! “So you use variables you have introduced to be able to stay at home and you stay home because you are using these variables. This circularity occurs in many “scientific” approaches” (p. 47). The next step in solving a problem by scientific methods is the introduction of a model, which gives us the solution for the problem. But life depends on feelings, commitments and traditions, which can not be grasped by variables or models. Feyerabend refers to the work of architects and engineers, who use theoretical *and* practical knowledge by solving problems. This seems to be a very important point in Feyerabend’s argumentation: Humans possess theoretical and practical knowledge. It is important that both are used together, so our practical knowledge corrects theoretical and vice versa. It is this combination of these two sorts of knowledge which we have to use to solve humane problems, not only because it may be more successful, it is also more human. If we use only abstract ideas as guide for our lives and ignore personal relations, we are playing a very dangerous game. “There is no way around it: Reacting to the world is a personal (family, group) matter that cannot be replaced by even the most enchanting world view” (p. 12). But this does not mean that scientists or philosophers are now without a task. Every person, family, group and culture gets its own uniqueness by the contact with the ideas of others and how they react to their own ideas. So scientists and philosophers *can* – like everybody else – create and spread their own theories and world views.

The problem of our society is that scientists object entirely every other world view that clashes with their own and that science became a commercial project. Nowadays research is not an activity looking for truth, it follows only the trends which promise them money. “Not “Truth” is taught at our universities, but the opinion of influential schools” (p. 74). This problem can be observed in the whole history of science. Scientific world views become popular when people with influence absorb them. They agree with them or they do not, but the important thing is that they give a feedback – positive or negative – and so these world views become a tradition. That is how influential members of our society control which ideas can be acceptable for the rest of the community. Such a theory or world view may take a long time until it becomes popular, very often they first are simply seen as silly ideas. But they may get results which increase their acceptance and further results may make them even more plausible so they become socially acceptable. Then another scientific trend may become popular and the older world view will be refuted for a period of time until it is established again later on (as it has been the case with the theory of atomism).

There was a time when scientific research and its world view had to be protected by nobles from the church. But there is no more need for it. On the contrary, science became too influential and we have to abandon the *right* of academic freedom: “Academic freedom now is as out of place in society at large as the doctrine of the Virgin Birth of Christ would be in biology classroom” (p. 90). This is according to Feyerabend the only way out of the tyranny of science.

In *The Tyranny of Science* Feyerabend tries to uphold his reputation as the “enfant terrible” (Rothangel 1999, p. 122) of philosophy of science, but in this book he is not the one who shoots with his philosophical machine-gun on the consecrated pictures of scientists (cf. Ravetz 1980, p. 29), what may belie the expectations of some Feyerabendians. He merely

attempts to convince his audience by (more or less) serious arguments, which are scattered over the whole book and may cause that some of his opponents are all ears.

The book presupposes no previous knowledge of Feyerabend's opus – this may be due to the fact that he gave his lecture to a general audience – so it may be a good introduction into his philosophy. Especially his presentations of historical anecdotes – in which he digresses sometimes – simplify the apprehension of Feyerabend's assumptions, so newcomers to philosophy can easily follow his thoughts. It is undoubtedly that Feyerabend gives some very plausible arguments against scientism, but I think Feyerabend sketches the position of his opponents not in a fair manner. Sometimes he does not consider very obvious counterarguments. One such objection is that he can not condemn science because it did not lead to global peace and wealth for everyone. First of all I doubt that this is the task of science and the scientific world view could for this reason be rejected. Moreover I consider that *if* peace and wealth would be the aims of science, scientists will agree with Feyerabend that science may *not yet* have achieved these goals. But they will reply that this is not an argument against the scientific world view, it will just need more time and then the scientific world view will meet with success. Feyerabend's reproach against the existence of one scientific world view can be invalidated by arguing that the development of the one and only scientific world view is still in progress and will be presented later on.

The justification Feyerabend gives for an additional contribution to the discussion of world views is not really convincing. By presenting the trivial fact – that world views are what they are because of their past experiences with other world views – as the only reason why the discussion on world views has to go on, it seems that Feyerabend is rather looking for an easy excuse for what he is doing than a serious argument.

I think Feyerabend presents in *The Tyranny of Science* some ideas which deserve the consideration of the international research community even if not all his arguments against scientism are convincing. His criticism against some very basic conceptions of science seem to me to be important because scientists have to reconsider a lot of their own presuppositions, which appear to be taken for granted without even thinking about them. But I guess most philosophers of science are already familiar with the central arguments of the book, so it does not create a large number of new problems for them.

Overall I can say that Munevar's summary of Feyerabend's philosophy can also be used to give a short description of *The Tyranny of Science* when he writes that Feyerabend is "[...] unmasking bad arguments, unwarranted assumptions, and intellectual complacency. As usual, he has gone too far" (Munevar 1998, p. 216).

Manuel Lechthaler

References

- Feyerabend, P. K. 1996. *Ambiguità e armonia. Lezioni Trentine*. Rome: Laterza.
- Feyerabend, P. K. 1998. *Widerstreit und Harmonie. Trentiner Vorlesungen*. Vienna: Passagen.
- Munevar, G. 1998. *Evolution and the Naked Truth: A Darwinian Approach to Philosophy*. Farnham: Ashgate.
- Ravetz, J. R. 1980. *Ideologische Überzeugungen in der Wissenschaftstheorie*. In: Duerr, H. P. (ed.). *Versuchungen. Aufsätze zur Philosophie Paul Feyerabends, 1. Band*. Frankfurt a.M.: Suhrkamp.
- Rothgangel, M. 1999. *Naturwissenschaft und Theologie. Wissenschaftstheoretische Gesichtspunkte im Horizont religionspädagogischer Überlegungen*. Göttingen: Vandenhoeck & Ruprecht.