

The Purpose of Demarcation, from the Stanford Encyclopedia of Philosophy

Demarcations of science from pseudoscience can be made for both theoretical and practical reasons (Mahner 2007, 516). From a theoretical point of view, the demarcation issue is an illuminating perspective that contributes to the philosophy of science in the same way that the study of fallacies contributes to the study of informal logic and rational argumentation. From a practical point of view, the distinction is important for decision guidance in both private and public life. Since science is our most reliable source of knowledge in a wide variety of areas, we need to distinguish scientific knowledge from its look-alikes. Due to the high status of science in present-day society, attempts to exaggerate the scientific status of various claims, teachings, and products are common enough to make the demarcation issue pressing in many areas. The demarcation issue is therefore important in practical applications such as the following:

Healthcare: Medical science develops and evaluates treatments according to evidence of their effectiveness. Pseudoscientific activities in this area give rise to ineffective and sometimes dangerous interventions. Healthcare providers, insurers, government authorities and – most importantly – patients need guidance on how to distinguish between medical science and medical pseudoscience.

Expert testimony: It is essential for the rule of law that courts get the facts right. The reliability of different types of evidence must be correctly determined, and expert testimony must be based on the best available knowledge. Sometimes it is in the interest of litigants to present non-scientific claims as solid science. Therefore courts must be able to distinguish between science and pseudoscience. Philosophers have often had prominent roles in the defence of science against pseudoscience in such contexts. (Hansson 2011)

Environmental policies: In order to be on the safe side against potential disasters it may be legitimate to take preventive measures when there is valid but yet insufficient evidence of an environmental hazard. This must be distinguished from taking measures against an alleged hazard for which there is no valid evidence at all. Therefore, decision-makers in environmental policy must be able to distinguish between scientific and pseudoscientific claims.

Science education: The promoters of some pseudosciences (notably creationism) try to introduce their teachings in school curricula. Teachers and school authorities need to have clear criteria of inclusion that protect students against unreliable and disproved teachings.

Journalism: When there is scientific uncertainty, or relevant disagreement in the scientific community, this should be covered and explained in media reports on the issues in question. Equally importantly, differences of opinion between on the one hand legitimate scientific experts and on the other hand proponents of scientifically unsubstantiated claims should be described as what they are. Public understanding of topics such as climate change and vaccination has been considerably hampered by organised campaigns that succeeded in making media portray standpoints that have been thoroughly disproved in science as legitimate scientific standpoints (Boykoff and Boykoff 2004; Boykoff 2008). The media need tools and practices to distinguish between legitimate scientific controversies and attempts to peddle pseudoscientific claims as science.

(Accessed on 8.17.17 at <https://plato.stanford.edu/entries/pseudo-science/>)

I shall certainly admit a system as empirical or scientific only if it is capable of being tested by experience. These considerations suggest that not the *verifiability* but the *falsifiability* of a system is to be taken as a criterion of demarcation. In other words: I shall not require of a scientific system that it shall be capable of being singled out, once and for all, in a positive sense; but I shall require that its logical form shall be such that it can be singled out, by means of empirical tests, in a negative sense: *it must be possible for an empirical scientific system to be refuted by experience.*

--Karl Popper, *The Logic of Scientific Discovery*, p. 18