

To prove or not to prove

For this essay, I intend to defend through the works of Popper, Latour and Woolgar, and Schwab, among others, that science is not the search to prove and discover things, and uncovering (noticeable or not) truths and laws.

Firstly, I believe that Latour and Woolgar (1986) put it very well when they mention in their *Laboratory Life* book, where they challenge the idea that facts are discovered, that facts are rather *constructed* through the “slow, practical craftwork by which inscriptions are superimposed and accounts backed up or dismissed” (p.236).

On the other hand, Popper (1959) focuses on the notion of “proving” things. According to him, scientific theories can never be “truths” or things to be proven, but only “conjectures and refutations”. Further, he believes that “our propensity to look out for regularities, and to impose laws upon nature, leads to the psychological phenomenon of *dogmatic thinking*” which make us “stick to our first impressions” (p. 64) rather than use our critical thinking and be ready to modify or dismiss theories. Scientific theories, in order to be determined as such, must follow the criterion of the scientific status of a theory: its falsifiability, refutability or testability. This includes: that a ‘good’ scientific theory is a prohibition, i.e. forbids certain things to happen; a theory that cannot be refuted by any conceivable event is non-scientific; and that a genuine attempt to test a theory is to *falsify* it (Popper, 1959, p. 48). Further, theories (or more specifically theorists) that hold on to their “truthfulness” run the risk of applying the soothsayer’s trick and “predicting things so vaguely that the predictions can hardly fail”, as Popper exemplifies with the followers of Marx and their re-interpretation of theory and evidence in order to make them agree: they “rescued” the theory from refutation, but in doing so they used a stratagem that “destroyed its much advertised claim of scientific status” (p. 49).

Regarding the second part of this statement “with or *without* our notice”, Popper also denies it when he quotes Hume and that induction cannot be logically justified. As per Popper and Hume’s words, there can be “no valid logical arguments allowing us to establish that those instances of which we have had no experience, resemble those, of which we have had experience. Consequently, even after the observation of the frequent or constant conjunction of objects, we have no reason to draw any inference concerning any object beyond those of which we have had experience” (p. 55).

Going back to science being “laws and truths”, Schwab (1975) argues that these views, i.e. no questionable hypothesis, no tentative formulations resting on indirect and remote verification, would mean that all teaching should be dogmatic, rejecting all explorations that would not fit “objective” or “positive” (p. 255), and in his other words, a simplification of “the fruits of disciplines where it appeared self-evident that they could be correctly understood without reference to the structure which produced them (p. 242).”

For the aforementioned reasons, science is not discovered but rather constructed and transformed, cannot be proven but rather refuted and strive towards testability, and shouldn’t be composed of truths and laws that would reduce it to a dogma that must be followed at all costs, but rather seen as a collection of ever-developing theories that allow us to progress and understand the world we live in.

References

Latour and Woolgar (1986). *Laboratory Life*. Princeton University Press

Popper, K. (1959). *Conjectures and Refutations: The Growth of Scientific Knowledge*. Routledge Publishers

J.J. Schwab (1975). “Education and the Structure of the Disciplines”