

Problems of Empiricism by Paul Feyerabend

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Nov 8, 2022

“Much of contemporary empiricism is the unreasonable end result of [this] philosophical spring cleaning. It is a *fragment* which cannot stand on its own feat.”

Problem of theoretical monism

- An established theory (in a certain domain) must be retained unless it is refuted or there is some evidence of its limitations. Until it is refuted or limitations have been revealed, the construction and development of new theories in that domain must be postponed.
- Thus, radical empiricism is *monistic* doctrine. Only a single set of mutually consistent theories should be adopted. It deters *theoretical pluralism* since we cannot employ mutually inconsistent theories.
- Since theoretical monism disallows any evidence that might contradict the defended theory, it *lowers* the empirical content of the defended theory and may turn it into its own dogmatic metaphysical system.

Predominant theory of explanation under the empiricist framework

Take two scientific theories: T (*Explanans*) & T' (*Explanandum*)

Explanation of T' consists of:

- 1) Derivation of T' from T
- 2) Initial conditions which specify the domain D' in which T' is applicable.

(i) consequences of a satisfactory explanans T inside D' must be compatible with the explanandum T'.

(ii) the main descriptive terms of these consequences must coincide with the main descriptive terms of T'.

Two constraints promoting empiricist dogma

1. *Consistency Condition*: In a given domain, only those theories are admissible which either contain the theories employed in this domain or are at least consistent with the theories in this domain.

E.g., Galileo's law of free fall and Newton's theory.

Violation of the consistency condition:

- Newton's theory is (logically) inconsistent with Galileo's law of free fall.
- The logical consequence of Galileo's law is that acceleration of a free fall is a constant.
- On the other hand, application of Newton's theory to the surface of the Earth gives an acceleration that is not constant but decreases with the distance from the center of the earth.

2. *Condition of Meaning Invariance*: Meanings will have to be invariant with respect to scientific progress; all future theories will have to be framed in such a way that their use in explanations does not affect what is said by the theorists.

E.g.: Classical and relativistic conceptions of mass.

In the special theory of relativity, if $m^1, m^2, \dots, m^i, \dots$ are the masses of the parts $P^1, P^2, \dots, P^i, \dots$, of a closed system S , then we want an explanation of

$$\Sigma m^i = \text{const}$$

for all reactions inside S .

Violation of the meaning invariance condition:

- In classical law, the mass of an aggregate of parts equals the sum of the masses of the parts: $M(\Sigma P^i) = \Sigma M(P^i)$
- This equivalence is not valid in the case of relativity, in which the relative velocities and potential energies contribute to the mass balance.
- The relativistic concept is a *relation* involving relative velocities between an object and a coordinate system.
- The classic concept specifies mass as a property of the object itself and independent of its behaviour in coordinate systems.
- Thus, $(m)_c$ and $(m)_r$ mean different things and $(\Sigma m^i)_c = \text{const}$ and $(\Sigma m^i)_r = \text{const}$ are different assertions.

The most interesting developments of physical theory have violated both the consistency condition and the condition of meaning invariance.

An Empirical Platonism

- *Observational* meanings are eternal and unchanging entities.
- A theory will be satisfactory if it correctly represents the properties of, and the relations between, these entities.
- It will remain satisfactory if the correct mode of representation is preserved in the course of further research, i.e., if the meanings of the key terms of the theory are kept unchanged.

“The One True Body of Knowledge”

“Almost always it was assumed, as being nearly self-evident, that the proper method, sincerely applied, must lead to **the truth**, that **the truth** is one, and that the proper method must therefore result in the establishment of a **single theory** and the perennial elimination of all alternatives.”

Theoretical monism in the history of scientific ideas

- Sciences show *periods of normal development* and *periods of crises*.
- Theoretical monism reflects the normal development and theoretical pluralism is the most decisive feature of a crises.

Towards a non-radical empiricism

- Methodological rules *restrict* the permissible contending rivals to those rivals consistent with already accepted theories as well as deter competing theories to develop.
- Plurality of theories is not a bad sign! Instead, theoretical pluralism is the *essential* feature of all knowledge that claims to be objective.
- Crises are not transitory stages, they are signs of good scientific practice.
- A new methodology must be built in a way which allows the problems purportedly solved by a dominant theory to be treated in a new and more detailed manner.
- Don't hate metaphysics! Metaphysics should be present at every stage of development of knowledge. A science which is free from all metaphysics is on the way to becoming a dogmatic metaphysical system.”

Gems

Some remarkable quotable prose.

Use of examples.

A good HPS paper!