

## Pseudoscience

### Introduction:

Pseudoscience is differentiated from science because-although it usually claims to be science-pseudoscience does not adhere to scientific standards, such as the scientific method, falsifiability of claims, and Mertonian norms.

### Alter definition:

“From philosophers of silvio funtowicz and Jerome R.Ravetz”.

pseudo-science may be defined as one where the uncertainty of its inputs must be suppressed, lest they render its outputs totally indeterminate.

**Pseudoscience** consists of statements, beliefs, or practices that claim to be both scientific and factual but are incompatible with the scientific method. Pseudoscience is often characterized by contradictory, exaggerated or unfalsifiable claims; reliance on confirmation bias rather than rigorous attempts at refutation; lack of openness to evaluation by other experts; absence of systematic practices when developing hypotheses; and continued adherence long after the pseudoscientific hypotheses have been experimentally discredited.

The demarcation between science and pseudoscience has philosophical, political, and scientific implications. Differentiating science from pseudoscience has practical implications in the case of health care, expert testimony, environmental policies, and science education. Distinguishing scientific facts and theories from pseudoscientific beliefs, such as those found in climate change denial, astrology, alchemy, alternative medicine, occult beliefs, and creation science, is part of science education and literacy.

Pseudoscience can have dangerous effects. For example, pseudoscientific anti-vaccine activism and promotion of homeopathic remedies as alternative disease treatments can result in people forgoing important medical treatments with demonstrable health benefits, leading to deaths and ill-health. Furthermore, people who refuse legitimate medical treatments to contagious diseases may put others at risk. Pseudoscientific theories about racial and ethnic classifications have led to racism and genocide.

The term *pseudoscience* is often considered pejorative particularly by purveyors of it, because it suggests something is being presented as science inaccurately or even deceptively. Those practicing or advocating pseudoscience therefore frequently dispute the characterization.

### Criticism of pseudoscience:

Philosophers of science such as Paul Feyerabend argued that a distinction between science and nonscience is neither possible nor desirable. Among the issues which can make the distinction difficult is variable rates of evolution among the theories and methods of science in response to new data.

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Larry Laudan has suggested pseudoscience has no scientific meaning and is mostly used to describe our emotions: "If we would stand up and be counted on the side of reason, we ought to drop terms like 'pseudo-science' and 'unscientific' from our vocabulary; they are just hollow phrases which do only emotive work for us". Likewise, Richard McNally states,

"The term 'pseudoscience' has become little more than an inflammatory buzzword for quickly dismissing one's opponents in media sound-bites" and "When therapeutic entrepreneurs make claims on behalf of their interventions, we should not waste our time trying to determine whether their interventions qualify as pseudoscientific. Rather, we should ask them: How do you know that your intervention works? What is your evidence?"