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SAGES

12 September 2014

Science and Pseudoscience

Science is Plagued: Can it be Cured?

Often do I find myself perusing an article about the latest development in cancer-fighting technology or how modern physics will soon get us to a distant star. The majority of these pieces are produced by a respected member of the field and published by an even more so esteemed service. But rarely do I find myself questioning the methods used in their research. What is to say that the beliefs are misguided and some of science is just mumbo-jumbo? Each member of the scientific community practices their respective field with a set of widely accepted beliefs. These beliefs, backed by painstaking research and detailed experiments, form patterns which the community refers to as science. At times the community can veer off course from the truth and corrupt their trade. It is then that confirmation bias and poorly structured theorems plague science and reverse achievement. Both Karl Popper and Thomas Kuhn express their concerns, in their respective works, against defective science to make known the problems at hand. Karl Popper and Thomas Kuhn call upon the repetitive nature of science to illuminate flaws in the community’s methods as seen by Kuhn’s focus on paradigms, and Popper’s need for precise criterion.

Thomas Kuhn’s *The Structure of Scientific Revolutions* examines all forms of paradigms and their importance for progress. Kuhn explicitly states "no natural history can be interpreted in the absence of at least some implicit body of intertwined theoretical and methodological belief that permits selection, evaluation, and criticism" (Kuhn 1962, 16-17). Patterns are essential to scientific inquiry, but like Kuhn also notes, some research “is directed to the articulation of those phenomena and theories that the paradigm already supplies” (Kuhn 1962, 26). Required to bring about new knowledge to any given paradigm, great ingenuity and effort are put forth. Commonly, many researchers knowingly or unknowingly incorporate confirmation bias to their work and as Popper would agree, damages the community’s advancement as inaccurate results surely do: “Confirmations should count only if… [the researcher is] unenlightened by the theory in question” (Popper 1963, 47). Research is only viable to a paradigm when it is unaffected by personal opinion. Science is, at heart, truth, but as Popper and Kuhn would agree, can easily be twisted.

Karl Popper’s *Conjectures and Refutations* is a philosophical standing on the problems with theoretical science. Popper specifically focuses on the criterion of well-organized theories: falsifiability, testability, and refutability. The combination of the three makes for a well-guided paradigm. However, when lacking a part of the trio, the theory weakens. Popper notes, in his set of guidelines, “every genuine test of a theory is an attempt to falsify it” (Popper 1963, 48). If a theory can be tested, then it can be proven false. Popper brings about the idea of Einstein’s theory of gravitation; even though technology at the time could not allow for precise interpretation of results, the theory could still be proven wrong. Additionally, Popper’s guidelines point out “irrefutably of a theory is not a virtue, but a vice” and “some theories are more testable, more exposed to refutation than others; they take, as it were, greater risks” (Popper 1963, 48). The theories that take greater risks are more precise and specific to the problem at hand and therefore are more so considered to be scientific. Popper challenges astrology to these notions. Astrology could not be proven or better yet falsified by any true means. Moreover, astrology’s prophecies are so amply vague it could easy explain anything that might have refuted the predictions. By escaping falsification, astrology loses its testability and from there, all credibility (Popper 1963, 48-49). Kuhn would agree in part with Popper’s findings because paradigms are truly purposed to prove, but astrology’s “paradigms” (celestial bodies influencing the natural world) cannot do so by being so vague. However, Popper and Kuhn’s differences deal with the changing of a paradigm. As Kuhn believes, changes in a paradigm, or paradigm shifts exist for the advancement in the community. Yet Popper sees some of these changes to incorporate *ad hoc* in such a way that the paradigm can escape refutation, but lower its scientific status.

Thomas Kuhn and Karl Popper believe there has been wrong doings in every field of science. Their writings are means to display these faults through a focus on science’s repetitive nature. The scientific community interprets the repetition into a set of rules such as theories which, in turn, can be interpreted in a variety of ways. Usually only one set is accepted, and at times, these sets can be so poorly structured they cannot be considered scientific. Theories are commonly plagued by personal opinion, and irrefutability. These theories that claim to be scientific, as Kuhn and Popper would say, make a mockery of the community and surely hinder advancement.

Work Cited

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