

**BOOK REVIEW**

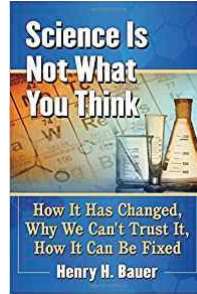
**Science Is Not What You Think: How It Has Changed, Why We Can't Trust It, How It Can Be Fixed** by Henry H. Bauer. Jefferson, NC: McFarland & Company, 2017. 260 pp. \$35 (hardcover), \$18.99 (ebook). ISBN 13: 978-1-4766-6910-6

DOI: <https://doi.org/10.31275/2018.1298>

The author of the book under review, Henry Bauer, can look back on two long scientific careers. Born in Vienna in 1931, he emigrated with his family in 1939 to Australia, after the annexation of Austria into the German Third Reich. There, he studied chemistry and taught at the University of Sydney. During the 1970s, he applied himself to science studies and began to teach history of science, sociology of science, and philosophy of science. This happened not least because of his then-beginning occupation with issues of anomalistics—when he was confronted with the unscientific manner with which academic science dealt with such research efforts. In 1982, he became a founding member of the Society for Scientific Exploration. These two careers provided him an internal point of view, as a scientist in research and academic teaching, as well as an external one, as a professor of science studies at the Virginia Polytechnic Institute & State University. Thus, he is well-qualified to write a book about what science is.

His book *Science Is Not What You Think: How It Has Changed, Why We Can't Trust It, How It Can Be Fixed*, published last year, presents a kind of summary of his insights gained in the context of science studies. Its title well-describes the contents, and the author systematically handles the material, providing many empirical examples. After describing the development and changes in the 'world of modern science,' he presents a comprehensive critical analysis of the status quo characterized by serious malfunctions and deficits. Thereby, he contrasts its ideal and public image with the seriously differing reality of scientific practice. Finally, he suggests a solution to the most obvious and biggest problems: the installation of a 'Science Court,' independent and free from conflicts of interests, would assess scientific controversies after a thorough examination, following an ideological neutral attitude. Bauer does not present this concept as his own invention—the first approaches go back as far as 50 years, with a vague and not very specific future vision, whose implementation other people have not bothered with, but which he makes practical suggestions for.

His analysis of the current state of science includes all relevant aspects: 1) the increasing economization and politicization of science which diverged from the ideal of a search for knowledge, with insights from protagonists in research fields characterized by sportsmanlike behavior, to a career choice dominated by economic pressure and conflicts of interests; 2) the differing scientific cultures of the natural sciences and the social sciences/humanities as well as the important but often-neglected distinction between facts and theories; 3) issues of research funding, career-building, publication policy, statistics and their so often insufficiently reflected application and interpretation; 4) the public misconception of what science is, and what it is able to do, and, finally, 5) how it deals with ‘deviating’ scientific positions concerning for example issues from the area of anomalistics research.



This is not the place to give a detailed overview of the individual chapters—the chapter headings and subheadings are explicit in this regard, and, furthermore, the author provides a synopsis of the content (pp. 7–11) in his Introduction. In addition, one can find a listing of the most significant insights in Chapter 11. However, I cannot resist reporting at least a selection of some of his important points (pp. 189–190):

Scientific knowledge is never guaranteed to be absolute truth.

Science is a human activity. It is as competent and also as fallible as the human beings who do science. (. . .)

Science is not done by the scientific method. Neither that method nor anything else makes research objective, value-free, or unbiased. (. . .)

Luck, good and bad, plays a big part in every aspect of science. (. . .)

The acclaimed successes of science can be largely credited to the fact that the natural sciences have studied predominantly phenomena whose characteristics are reproducible. That obtains only with not-too-complex systems of inanimate objects. Therefore, medical science and the social and behavioral sciences, since they deal with animate subjects and complex systems, cannot attain universal laws the way the natural sciences can. In place of definitive, true-or-false knowledge, the social and behavioral sciences and the medical sciences have to make do with probabilistic understanding and an irreducible degree of uncertainty.

What religion is for some people, science is for others: the ultimate source of certainty. (. . .)

This easy-to-read book is of the type where I can hardly stop making notes. Thus, in my copy, in some places every second sentence is underlined in order to be quickly retrieved for example for quotation. There is

much information presented in a clear and reasonable manner. The huge experience of a long life as a scientist is perceptible in the text, and every conclusion is underpinned with illustrative and plausible examples. This provides astonishing insights into the history of science, which is rich in errors and odd developments.

It is obvious that Bauer himself makes scientific statements that are not completely neutral and unaffected by his own individual research history and agenda. Many of his examples are from the fields of chemistry, pharmaceutical research, and modern medicine, in which fields he has published some critical papers. Further topics, of concern to him for quite some time, are the theories on the causes of global warming (the main cause: human-made CO<sub>2</sub> emission) and AIDS (cause: HIV) that are advocated by mainstream science. He challenges these theories because there is no conclusive evidence in both cases. Furthermore, there are sound counterarguments that are not considered for various (non-scientific) reasons. This is quite interesting, but Bauer—and this is, in my opinion, the only negative aspect of the book—dwells on these two examples a bit excessively and comes up with them again and again in different contexts. He does it not inappropriately but it becomes a bit tiring. However, this is only a small limitation that in no way diminishes the merits of the book. Bauer has enough other examples on hand that are astonishing and thought-stimulating. There is something special about one of them: the theory of gravity waves as a theory that is generally accepted but for which “there are no accepted facts and no proven method of detection.” The first

reported observation in 2014 (. . .) was almost immediately recognized as flawed. It remains to be seen whether the more recent reported detection of gravity waves from two pairs of colliding black holes will become or remain accepted. (p. 112)

Last year, the leading scientists in this field of research, Rainer Weiss, Barry Barish, and Kip Thorne, were awarded the Nobel Prize for physics. Here we are confronted with an unusually short period of time between the obtaining of the first seemingly secure data basis and appreciation of the research with the most renowned science award, which indeed indicates an official acceptance of the data and especially the theory.

This book should become basic reading for every person interested in science, and certainly for students and active scientists. Bauer touches on anomalistics rather marginally, but the volume would not have been written without his interest and involvement in this field of research. Many problems and shortcomings in science can be more easily identified when viewed from a position in the ‘border areas,’ giving an outside perspective on the centers of activity.

—Gerhard Mayer