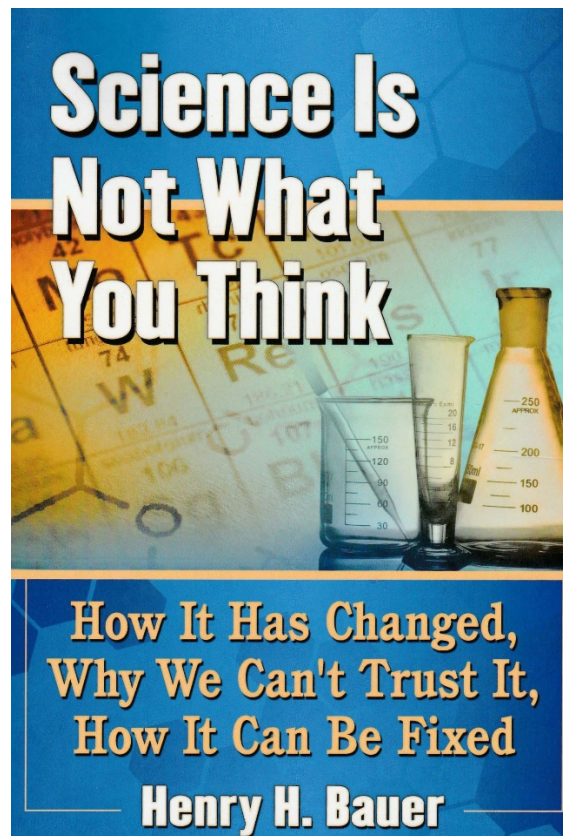


BOOK REVIEW



This is Professor Bauer's second valuable book on the transgressions of Science and its participants¹, this time broadening his canvas. The book is divided into twelve numbered chapters dealing with

- How it (science) has changed
- Why we can't trust it
- How it can be fixed

The author provides a brief history of science, dividing it into three eras: mid-17th Century to the 19th Century, when it was basically an amateur enterprise; 19th Century to mid-20th Century, when it was run by middle class professionals and was neither lucrative nor prestigious and when deliberate fraud was rare. The third phase began after World War 2, when science became a corporate enterprise and subject to powerful and political interests which began to harness science their own benefits. In this last stage, grants became prolific during the 1960s and were often used to improve the recipients' lifestyles as well as support research. As this phase continued scientists became celebrities and this generated the tendency for some to cut corners. Sometimes it led to outright dishonesty. During these years, the media and the policy makers began to speak of "the scientific method" and take it for granted that a contemporary scientific consensus meant "the truth". Unfortunately, the author points out that history teaches us a good lesson: that any contemporary scientific consensus is likely to be superseded at some later time. Indeed, invoking a consensus is typically an implicit admission that disagreement exists and Michael Crichton's Caltech Michelin lecture (January 2003) is quoted on this. "Invoking a consensus is an implicit admission that disagreement exists. Overwhelming consensus have typically been found wrong just before very scientific revolution. Historically, the claim of consensus has been the first refuge of scoundrels."

The author also takes to task the commonly held belief that science is done by what is referred to as the "scientific method", whereas much of it relies on observations that are not subject to human changes –

¹ The first being *Dogmatism in Science and Medicine* (2012), also by McFarland Publishers, North Carolina.

which separates the maths/physics end of science from the medical and psychological end. In this way, advances are often made by individuals sticking to an idea, despite undergoing criticisms from colleagues and peer reviewers.

The author analyses the use of statistics in developing scientific hypotheses, particularly in the social and medical areas. Select groups can benefit from such an approach by the methods of publishing their interpretations of statistical data. Moreover, the same select groups are apt to justify their beliefs by resistance to questioning. The problem with this is that, when dissenters are given no hearing, society has no guidance and no way to assess relative merits. This can be most damaging on issues of social or political significance.

One could take this a step further, and the author does that. Science, he points out, is run by humans and therefore has human weaknesses. That is, scientists are typically no more capable of objectivity than any other humans and are therefore prone to ignoring evidence that shows one (or more) of their beliefs happens to be wrong. Indeed, many papers that have been rejected by prestigious journals such as *Nature* have later been found worthy of Nobel Prizes.

Only in one instance did I personally find myself disagreeing with the author's philosophy, which was when the mobile plate tectonics model appeared to be taken as proven. This model is, however, still justified by the use of a "consensus". Moreover, the mobile plate tectonics model is based on statistics, an approach that the author also reveals as malleable. For instance, the Apparent Polar Wander tracks that form the basis of the model are derived from the statistical evaluation of palaeomagnetic data obtained from rock samples on different land masses. These are often termed as contemporary but could well be tens of millions of years out of synch. But Professor Bauer is right in stating that one has little chance of getting a critical paper published in mainstream journals on this or any other item of "consensus". This is why we have the NCGT journal. Say no more.

The breadth of the author's peregrinations in this world of science and in its outer limits is both impressive and didactic as well as being highly readable.

One last comment: the author concludes that the clear lesson of history is that science has progressed not by standing fast but by continually modifying, superceding and replacing its erstwhile consensus.

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