

RISK: Health, Safety & Environment (1990-2002)

Volume 5 | Number 4

Article 11

September 1994

Review of: Gerald Holton, Science and Anti-Science

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Russell W. Binns, Jr., *Review of: Gerald Holton, Science and Anti-Science*, 5 RISK 359 (1994).

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Gerald Holton, *Science and Anti-Science* (Harvard University Press 1993). LC 92-272; ISBN 0-674-79298-X. Index, notes, preface, sources. [176 pp. Cloth \$24.95. 79 Garden St., Cambridge MA 02138.]

In this book, Holton attempts to predict what lies ahead for science and society through an analysis of the history of science, current approaches to scientific research and anti-science movements. In the first five chapters, he addresses the origins of modern science and attempts to relate them to problems with the current state of scientific progress. In the last chapter, he attempts to explain the growth of anti-science phenomena and suggest ways that science and scientists can respond.

He begins with a lengthy introduction to Ernst Mach and his influence on later scientists, including Einstein and B. F. Skinner. In Chapter 4, he turns to Newton, Bacon and Jefferson. There, the "Newtonian" approach is characterized as the "basic" science or an "attempt to grasp the totality of empirical facts, leaving out not a datum of experience;"¹ The "Baconian" approach is described as "applied" science or "enlarging of the bounds of Human Empire, to the effecting of all things possible."² Only here do we learn that Holton prefers a "Jeffersonian research program," the focus of the chapter.

Holton respects Jefferson as a scientist and says that his style "locates the center of research in an area of basic scientific ignorance that lies at the heart of a social problem."³ Jefferson's approach is portrayed as extending those of Newton and Bacon. Holton thinks that such an approach leads to both the fuller understanding of nature and the freedom and happiness of mankind, or to the search for truth and serving the interests of society — and commends it as neither discipline- nor problem-oriented, but some combination and extension of each.⁴ Then Holton briefly explores alternative fates for science, decay or merger into one coherent body of understanding for all natural phenomena.

1 At 114.

2 At 115 (quoting Francis Bacon).

3 At 115.

4 *Id.*

Finally, Holton turns to anti-science whether engaged in by animal rights activists, environmentalists, feminists or social-constructionists (including those who fear that science threatens to overwhelm the individual) or by Creationists, New Age healers and astrologers. Holton credits the anti-science movement to rampant U.S. scientific illiteracy, referring, e.g., to a Presidential Science Advisor's report that "half the adults questioned did not know that it took one year for the Earth to orbit the Sun."⁵ and notes that "we are currently losing thirteen mathematics and science teachers for each one entering the profession."⁶ He also notes that less than 7% of U.S. adults can be called scientifically literate at a time when the accomplishments of modern science and technology are more spectacular than ever.⁷

Holton sees the anti-science movement as a major cultural challenge and a possible threat to the modern world view.⁸ He believes that many of today's social and cultural problems result from widespread lack of science literacy and that they will increase. He argues that U.S. society must increase its scientific endeavors or fall pray to the decline of civilization as we know it. Even those who do not entirely share this view may find *Science and Anti-Science* of interest.

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⁵ At 147 (quoting D. Allan Bromley).

⁶ *Id.*

⁷ At 148.

⁸ At 184.

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