

Book Reviews

Mark Battersby. 2010. *Is That a Fact?* Peterborough, ON: Broadview Press. Pp. viii, 1-232. Paperback. ISBN: 978-1-55111-587-0. US\$ 24.95.

In September 1995 Mark Battersby's sister-in-law received a diagnosis of multiple-site lung cancer. The specialist said that the cancer had obviously metastasized, that an operation was useless, and that chemotherapy would be painful and futile. "Go home and die." Not content to accept the bleak diagnosis and prognosis on the specialist's say-so, Mark along with his wife and sister-in-law did some investigation, discovering among other things that with multiple-site brain and colon cancers DNA testing was being done to determine if the cancers were the same. No such DNA testing had been done on Mark's sister-in-law. When it was, it turned out that the cancers at different sites were different. None of them had spread, and an operation to remove them was justified. The operation was performed, and Mark's sister-in-law remains cancer free.

So begins *Is That a Fact?* The story illustrates vividly the potential benefits of investigating for oneself the credentials of scientific and statistical information coming directly or indirectly from supposedly reputable sources. *Is That a Fact?* tells the reader how to do so. It is conceived as an updating for the Internet age of Darrell Huff's immensely popular 1954 classic, *How to Lie with Statistics*, with a somewhat broader focus.

Battersby uses a set of four "critical questions" as a framework for critical thinking about scientific and statistical information: (1) What is being claimed? (2) How good is the evidence? (3) What other information is relevant? (4) Are relevant fallacies avoided? The second question about the quality of the evidence in turn breaks down into three sub-questions: (2a) What is the evidence? (2b) Assuming the evidence is true, how strong is its support for the conclusion? (2c) Is the evidence credible? The third question about other relevant information also breaks down into three sub-questions: (3a) What is the history of the issue? (3b) Does the argument meet the burden of proof? (3c) Is there relevant information that is missing? The book then applies this framework to specific topics, generally summarizing specific versions of the critical questions in a useful table (polling 52-53, graphs 97, correlations 118, causal research 138, causal claims 155-156,

Websites 174-175, judgements of probability 194, using statistical information to make reasonable decisions 222). There are however no tables for the chapters on data and on data characterization.

The book is studded with extensive discussions of real-life examples that touch on matters of concern to everyone, such as the health risks of second-hand smoke and cell-phone use. It is amply illustrated with figures, charts and cartoons that bring home key points vividly. Technical terms like 'case-controlled study' and 'relative risk' are bold-faced and explained in a glossary as well as on their first introduction. There is no index, and there are no suggestions for further reading. There are also no exercises.

Any reasonably intelligent person should be able to read this book, understand it, and use its apparatus to understand and evaluate the sorts of information that it addresses. The book is clearly written, without presuming any technical knowledge and with a fine appreciation of the likely reaction of the untutored reader. The examples and cartoons make it very engaging. The theoretical approach is elementary, without mathematical details, but generally sound. Battersby makes particularly good use of theoretical work in epidemiology in his treatment of causal research and causal claims. He discusses his many examples intelligently, and provides valuable advice on how to search the Web for the peer-reviewed summary articles and research reports that lie behind the catchy headlines. There are occasional flaws. In his treatment of confidence intervals and margins of error, Battersby is too ready to transform an inference from population frequency to sample frequency into a corresponding inference from sample frequency to population frequency. The chapter on data characterization curiously omits any mention of standard deviation. And there are weaknesses in his explanation of how the Consumer Price Index is used to calculate the annual rate of inflation (which reports the U.S. method as if it were universal without noting the different method used in Canada) and in his argument that insurance is never worthwhile (which does not take into account the disproportionate negative value of a catastrophic loss).

Although the four critical questions could be used as a general framework for all critical thinking, *Is That a Fact?* is not a comprehensive critical thinking textbook. There is for example no discussion of deductive validity, of formal logic, of inductive generalization, of scientific theories, of reasoning by analogy, of pros and cons reasoning, of moral reasoning, of evaluating observation reports, of definition, or of classification. The book could be used as a text in a course specifically devoted to critical thinking about scientific and statistical information. It could also be used as a supplementary text or recommended reading in a general course in critical thinking, since its treatment of its chosen topics is

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far more sophisticated and thorough than that of comprehensive critical thinking textbooks.

Huff's book has sold more than a million copies. *Is That a Fact?* deserves a similarly large readership. The publisher already makes some of its titles available at a lower price as e-books, and should do so with this one.

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