

Book Review by Jeff Share
Naomi Oreskes (2019) *Why Trust Science?*
Princeton, NJ: Princeton University Press

In her latest book, *Why Trust Science?*, history of science professor Naomi Oreskes does a wonderful job discussing the complexity of this question. She takes a difficult task and rather than simplify it, she dives deep into an exploration of the historical and philosophical roots and traditions of Western science, taking the reader along an analysis of case studies where science got it wrong. This is a fascinating and accessible read that considers numerous domains and issues to bring the reader to Oreskes' ultimate point, that trustworthy science depends on consensus, diversity, and methodological openness and flexibility (p. 249). For media literacy educators, this book provides insightful examples of media representations of science with a powerful critique of the myth of objectivity and the value of trustworthy science.

Through examining moments in history when scientists promoted ideas that today we know are false and harmful, Oreskes helps us understand how science works and what we need to assure that science is worthy of our trust. Oreskes' primary point is that "scientific knowledge is fundamentally consensual" (p. 3). While climate change deniers argue that the consensus of scientists who believed in eugenics prove their case that we should not trust current climate science, Oreskes challenges their assertion and promotes the importance of scientific consensus. She reviews the historical record when many scientists and politicians in the US believed in eugenics and used racist scientific ideas to promote sterilization, limit certain immigration, and encourage rampant race and class-based discrimination. Oreskes uses this and other examples to demonstrate that even during that time, there was not consensus about eugenics in the scientific community. Some scientists disputed the genetics, some objected to the claims about the hereditary character of intelligence, and others disputed the links to socio-economic class. Oreskes quotes, Herbert Spencer Jennings who wrote in 1924 about the importance of environment, asserting, "No cultural system is the outgrowth of genetic constitutions alone" (p. 102).

In *Why Trust Science?* numerous examples of science gone awry are analyzed such as: the false connections of vaccines to autism, the rejection of continental drift theory by US scientists, the promotion of the limited energy theory that kept women from higher education, the denial of the effectiveness of dental floss, the manufactured doubts about climate change, the refusal to recognize the linkage of hormonal birth control and depression, and the rejection of the positive value of sunscreen. Each of these examples highlight important aspects of scientific methods and public communication of science. Oreskes unpacks how and why science failed with explanations that we can apply to future issues making us better prepared to know when to trust science. She writes, "Recent work suggests that people's opinion and attitudes can be shifted if you show them—with concrete examples—that this is the case, and explain to them how disinformation works" (p. 218). This idea of pulling back the curtain and revealing the scientific process to demystify science can empower all of us to better evaluate scientific claims and trust the ones that have consensus in the scientific community.

Oreskes rejects the myth of objectivity and provides a path that avoids relativism to guide us to evaluating the credibility of scientific information. She praises the work of feminist scholars like Sandra Harding and Helen Longino, who promoted the concept of “*standpoint epistemology*—the idea that how we view matters depends to a great extent on our social position (or, colloquially, that where we stand depends on where we sit)—to argue that greater diversity could make science stronger” (p. 50). The notion that objectivity should be understood as a continuum and not as an absolute, supports the importance of diverse perspectives and experiences to strengthen objectivity and lessen the blindspots more common in homogenous groups. Oreskes asserts that “greater objectivity in scientific research” could be achieved “or at least made more likely—by greater heterogeneity in the scientific community” (p. 51). The importance of diversity is a theme that runs throughout this book, as a necessary requirement to avoid the mistakes that were made in the past against women and people of color when the only scientists were white males.

Another aspect of diversity that Oreskes supports is the openness to diverse scientific methods for research. The old idea that there was just one valid scientific method has been replaced by a more critical understanding of the need for different tools for different tasks. Oreskes challenges the over-valuing of statistical evidence at the expense of other ways of knowing and explains that just because some research cannot be proven by the “gold standard” of randomized double-blind studies does not mean that we cannot know about causes, mechanisms, and effects. She states, “There is no way to know how a drug makes people feel without asking about their feelings. There is no way to do a double-blind trial of flossing or nutrition. Imperfect information is still information” (p. 134). Oreskes argues for the need to be open to various methods of collecting and evaluating data because “this information is crucial to helping us evaluate claims when our statistical information is noisy, inadequate, or incomplete” (pp. 134-135). There are many ways of observing and making sense of the world that can provide important information that scientists should not ignore.

In 2010, Oreskes and Erik Conway wrote the extensively researched book, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. That book provides an impressive body of research documenting the strategies used by corporations and a few scientists to create false notions of doubt about established scientific knowledge. They warn of the dangers of scientists who have been compromised by funding from corporate interests into selling out the truth for special interests and manipulating the public discourse. Oreskes continues this critique in *Why Trust Science?* to assert the importance of questioning funding sources as well as fake academia that promote predatory journals and conferences funded by industries more interested in profit than public welfare. This new book is an accessible resource to help us make sense of science, especially important in this time when some people label what they don’t like as “fake news” and “alternative facts.” Now more than ever, all people need the skills and critical disposition to think critically about information and trust the science “when scientific results achieve consensus among the expert members of diverse and self-critical scientific communities” (Oreskes, 2019, p. 13). Media literacy educators are likely to find Oreskes’ latest opus an excellent resource for teaching critical thinking about science and media.