Book Review – Cathy Becker

Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (Bloomsbury Press, 2010)

In recent years, geophysical scientists such as Michael Mann and Peter Gleick have been taken to task by climate change skeptics for supposedly falsifying data to make global warming appear more certain that it really is. But before them was Benjamin Santer, a climate scientist at Lawrence Livermore National Laboratory who wrote the key chapter on detection and attribution for the second report by the Intergovernmental Panel on Climate Change published in 1995. Santer's chapter was on detection and attribution – in other words, how do we know climate change is really happening, and how do we know it is caused by human activity? He had done crucial research on "climate fingerprinting," showing that the way the atmosphere was warming from below rather than above made it more likely the warming was caused by humans than natural cycles from the sun. For this, he became the subject of an attack in an opinion piece in *The Wall Street Journal* by Frederick Seitz, who claimed Santer had fraudulently altered the IPCC report. Santer had in fact altered the report – but not fraudulently. He had done so in response to comments received during the peer review process, which is how science operates. Yet none of this was mentioned in Seitz's op-ed, which claimed Santer had "worked to remove hints of the skepticism with which many scientists regard claims that human activities are having a major impact on climate in general and on global warming in particular."

So who was Frederick Seitz? In their book *Merchants of Doubt*, Naomi Oreskes and Erik M. Conway tell us not only about Seitz, but also a handful of other high-profile scientists who have worked through think tanks and in the popular press over the past three decades to sow public doubt about not just climate change, but a host of other scientific controversies including acid rain, ozone depletion, secondhand smoke, and even the dangers of DDT. Underlying all these issues, Oreskes and Conway argue, was a philosophy of "free market fundamentalism" in

which these men -- all physicists who had previously built careers designing rocketry and weapons systems to defeat the Soviet Union -- now saw environmentalism as a threat to free-market principles and the American way of life. Their motive was essentially political – to stop government regulations that follow from the conclusions that DDT, acid rain, the ozone hole, secondhand smoke, and climate change damage human health and the environment – but they couched their arguments in scientific terms. In all cases, these "merchants of doubt" used the tactics of manipulating information, cherry-picking data, and personalizing attacks in the popular press to make it appear as if there was less scientific consensus than there really was. And in all cases except for climate change where the jury is still out, they eventually lost the public debate – but not before delaying regulations on important scientific issues for years if not decades.

Seitz himself had been a distinguished physicist who worked on the Manhattan Project, served on the Presidential Science Advisory Committee under Kennedy and Johnson, as president of the National Academy of Sciences from 1965-68, and as president of Rockefeller University from 1968-78. However, his last paid job was different – directing a biomedical research program for RJR Nabisco that paid young underfunded scientists to do research that raised doubt about the links between tobacco and diseases such as lung cancer, atherosclerosis, and emphysema. In return, documents from the Tobacco Legacy initiative show, Reynolds hoped these scientists would testify as expert witnesses in tobacco litigation cases, which for decades the tobacco companies won. In 1984, Seitz co-founded the George C. Marshall Institute with Robert Jastrow, former head of the Goddard Institute for Space Studies, and William Nierenberg, former head of the Scripps Institute of Oceanography. S. Frederick Singer, former chief scientist at the Department of Transportation, also served on the board. The Marshall Institute had a specific purpose – to defend Ronald Reagan's Strategic Defense Imitative, popularly known as "Star Wars," from critics after 6.500 university physicists had signed a pledge not to take funds from the program, which they saw as scientifically untenable and

politically dangerous. The Marshall Institute's tactics were similar to those pioneered by the tobacco industry of raising questions about the science in the popular, not scientific, press and making personal attacks, most notably on research about nuclear winter by Carl Sagan.

By 1989, however, geopolitics changed when the Berlin Wall fell and the Soviet Union broke apart. While Seitz, Jastrow, Nierenberg, and Singer were all adamantly anti-Communist hawks who believed in the necessity of technology to protect America from the Soviet threat, the enemy they had spent their careers working against had now collapsed. So what did they do? Rather than retiring to rest on their laurels, Oreskes and Conway argue, they found a new enemy – environmentalism, which they saw as a new threat to America's free markets because of the regulations required to curtail damage done to human health and biodiversity if corporations were allowed free reign to make a profit. The roots of this view in anti-Communism were clear, as environmentalists were often referred to "watermelons" – green on the outside, red on the inside. Oreskes and Conway argue these men were motivated not by money, but by political ideology. They were true believers who thought the ends justified the means, which is what drove them to attack other scientific research and other scientists. Among the most interesting chapters in the book is one about posthumous attacks on Rachel Carson, author of *Silent Spring*, widely thought to have launched the entire environmental movement. Three decades after Carson's death, another free market think tank, the Competitive Enterprise Institute, began circulating clams that because her book had led to the banning of DDT, Carson was responsible for the deaths of millions of children from malaria in Africa. Not mentioned was the fact that DDT campaigns in Africa had been discontinued within a few years because mosquitoes were already developing resistance, nor the harms of DDT to human health, fish and birds. Oreskes and Conway see the attack on Carson as an attempt to discredit all of environmental science.

Also significant is discussion about the role of mainstream media, both because these "merchants of doubt" used to popular press to raise questions about science, and because

journalists so often aided them in spreading misconceptions and sometimes outright lies. Of particular note for Oreskes and Conway is the notion of balance. Early on the Marshall Institute succeeded in getting public broadcasting stations across the country to pull a documentary critical of the Star Wars program by threatening to sue under the Fairness Doctrine. But even into the present, journalists have given a much larger voice to the tiny cast of doubt mongerers by using them to "balance" the findings of practicing scientists. While this approach works in politics, Oreskes and Conway point out, it doesn't in science, where evidence does not need to be "balanced." Yet even the great Edward R. Murrow, an avowed smoker famous for saying journalists didn't need to balance Churchill with Hitler, fell into this trap by pitting research indicating that cigarettes cause cancer against doubts from industry scientists. This "false balance" throughout even high-prestige outlets such as *The New York Times* may be more responsible than any other single factor for confusing the public and delaying action on the most pressing scientific issues of our time, Oreskes and Conway argue.

Merchants of Doubt is an extremely important book, based on extensive archival research by two historians of science, Oreskes at University of California-San Diego and Conway at NASA's Jet Propulsion Laboratory in Pasadena. Oreskes also had a career as an exploration geologist, and her 2004 essay in *Science*, "The Scientific Consensus on Climate Change," was widely cited by Al Gore in *An Inconvenient Truth*. In interviews, Oreskes and Conway explain that she was doing research for a history of oceanography while he was doing research for a history of atmospheric sciences, when they discovered that both stories involved the same cast of characters engaging in similar tactics about a broad range of scientific controversies, which all had their root in Cold War politics and the tobacco wars. It is a revealing and significant story that explains the origins, tactics, and worldviews behind the global warming controversies of today, and should be read by every scientist and communicator of science in the country.