

Oreskes Naomi (2021) *Science on a Mission: How Military Funding Shaped What We Do and Don't Know about the Ocean*. Chicago and London: University of Chicago Press. 738 pages. ISBN: 978-0-226-73238-1

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In *Science on a Mission*, Naomi Oreskes asks the seemingly simple question of how military funding has shaped what we do and don't know about the oceans and introduces us to the world of oceanography. In the first third of the twentieth century, one very rarely got on huge ships to cross new seas, struggle with ice monsters and nightmares, and discover new continents. In the United States, most have paddled out of California ports in small boats to take water samples, and collected plants and fish for later lab-tests. Few undertook this either, as there were only a few major institutes that dealt with the world of the oceans, and retirement jobs did not exist in these at first; salaries were low, and the outlook was, to put it mildly, bleak.

During World War II, as the Germans became successful at sea and underwater, oceanography became more and more interesting to the infamous Navy of the United States. Biologists, physicists, and mathematicians who previously had an unquestionable pedigree of spending most of their time in small boats and within four walls were now approached by military officers. The Navy promised money and bigger boats, and everyone saw that the military industry had inexhaustible resources. A promise made is a debt unpaid – and the army kept its word. As Oreskes explains (especially in chapters 2-3), leading institutions in American oceanography, such as Scripps and Woods Hole, all enjoyed the unbreak-

able flow of money, though internal resistance did raise its head from time to time.

The Navy promised a variety of goods: stable jobs, more staff and time for research because of the better conditions, advanced technology, and social esteem; all in all, wider access to the oceans. Demand and supply had come together in the free market: the Navy wanted knowledge and information, and the oceanographers needed money and resources for their research. Oreskes grabs the readers' hand on the first page, and then guides them through the intricate world of science and the military industry. Each chapter is based on a chronological case study from the 1930s to the 1970s. In these few decades, American oceanography evolved from the underfunded, local research of some determined scientists into an international, state-funded science enterprise with a well-developed infrastructure. Scientists have enriched our knowledge with a wealth of new results and information, and a significant portion of this has been tied to the use of technological tools and accesses that were essential to the Navy.

When leading oceanographers look back at the history of their discipline after many decades, they tend to deny, or at least undermine, the Navy's role and effect on their research. Oreskes points out, however, that although scientists were free to research many problems, they always had to meet the expectations of the military first. This is why,



for example, a novel deep-sea research submarine called Alvin served military purposes in the 1960s for many years, and it took a long time and several attempts to be able to spend military money on basic scientific research (chapter 6). Oreskes cites several similar examples of how the military industry has limited science along the “need-to-know” principle (p. 106 ff.): many results have been encrypted and not made available to colleagues, so numerous research projects have been wasted or delayed for decades.

Occasionally, the simple disinterest of the Navy made certain topics disappear altogether, and thus changed the course of research. Such was the case with climate change. While some oceanographers recognized the role of the oceans in climate change as early as the mid-1950s and 1960s, the Navy was not particularly interested, and the money continued to be spent on researching and exploring radars, submarines, and deep-sea communication channels. By the time the oceanographers were able to breathe a little fresh air and detach themselves from the Navy, they had only managed to join the climate research community somewhat lately. Something similar happened with regard to fishes: at first the Navy was not interested, and when the fauna of the seas had shown its importance for climate, oceanographers were late once again. As Oreskes presents the story overall, it seems that without the money of the Navy, oceanography would have plunged into a crisis; it got the money in the end, but it was not a free lunch.

Science is always funded, and oceanography is no exception. Earlier it was often paid for by inherited money, later from public offerings or by the private sector, then the Navy arrived as a military actor. The question is not, says Oreskes, who will fund the science, but how it will be funded, what they expect in return, and how honestly one can talk about these issues. And to talk about it, we need to see our subject more clearly, that is, as science embedded in social processes. After World War II, for example, many were happy to join oceanography precisely *because* they conceived it as a way of contributing to the Cold War; they could take up the fight against communism, protect their homeland, and thus they were more interested in the operation

of radars in a submarine than in going out in small boats for seaweed. During this period, the funding of research by the Navy was not identified as a problematic external influence. For this reason, it has not even occurred to many that there are other issues or different approaches than those proposed by the Navy in the decades following the World War: researchers had already been *socialized* in this. This is a very exciting take on the internal/external influences debate by Oreskes; according to the debate – that goes back most prominently to Robert K. Merton, Imre Lakatos, and many sociologists of science from the 1970s and 1980s – there are factors in the development of a field/theory/discipline that are internal to its cognitive aims and goals, and there are issues and factors that are external to its cognitive business. The former often refers to the logic of justification, while external issues include politics, morality, and societal concerns that are deemed irrelevant (thus external) to the truth-seeking business of science. According to Oreskes, however, “military concerns were naturalized, so the extrinsically motivated became the intrinsically interesting” (p. 502), and thus the external-internal take is getting demolished – a conclusion often anticipated or well-supported by STS scholars.

Of course, we can ask the counterfactual question (as Oreskes points out): what would have happened if the Navy were to leave oceanography alone, if oceanography could have followed its own path, free from the military industry after the 1930s? But this counterfactual question already assumes that science has an *essence*, a necessary course that has been overshadowed by the Navy. Oreskes denies the existence of such an essence; science is what it is, by its own cultivating practice over time. This is what oceanography was, it had to cook from these ingredients. Finally, someone has presented the menu in detail, and if you have the patience and time to eat yourself through the starter and the various main courses, you earn the dessert of finding out that although money may be dirty sometimes (with a lot of insight on *how* dirty is it), we can still talk about it honestly.

I highly recommend this book to all those who are interested in the philosophy and history of a special science. Our perspective and appreciation of science will be highly widened by entering the

field of oceans. Oreskes made a huge service to the profession by going over all the details and events. This is one of the strengths, and one of the weaknesses of the book as well. It is unbearably long, five hundred pages with an extra two hundred pages of notes. It is literally too heavy

to pick up and start reading every day. However, especially as oceanography is not the typical choice for philosophers and historians of science as an interest, this book deserves our time and engagement.