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## SCIENCE ON A MISSION

Naomi Oreskes

Reviewed by Aja Watkins & Miguel Ohnesorge

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*Science on a Mission: How Military Funding Shaped What We Do and Don't Know about the Ocean*

Naomi Oreskes

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In *Science on a Mission*, Naomi Oreskes aims to document how US Navy funding shaped research in oceanography from the twentieth century through to the present. The book seeks 'to determine whether Navy patronage affected the content of the scientific work that was done and, if so, how' (p. 9). Oreskes's short answer to this question is 'yes'. Her long answer consists of meticulous case studies on how the Navy's interests came to shape the priorities and practices of American oceanography.

Oreskes presents a compelling and careful case for the particular—and sometimes unexpected—ways that military funding has shaped and continues to shape oceanography. Although the scope of the book is primarily historical, we think it contains several points of interest for philosophers of science. Here, we focus on Oreskes's analysis of how scientists' research can be influenced by the interests of a dominant funding institution. We taxonomize these effects, and thereby also provide a rough summary of the main

points of interest in Oreskes's book. We close by discussing how the history of oceanography can inform the philosophical literature on warranted and unwarranted roles for values in science.

Each chapter of *Science on a Mission* details a specific episode in which the US Navy provided significant financial and material support to scientists at a variety of oceanographic research institutions (for example, the Scripps Institute of Oceanography, the Woods Hole Oceanographic Institution (WHOI), and the Lamont-Doherty Earth Observatory at Columbia University), and Oreskes traces the real or perceived impact that the funding source had on the scientists' work. Abstracting away from some of the historical details, we can use Oreskes's analysis of these cases to propose a preliminary taxonomy of different ways that material dependence on a particular funding body can have downstream consequences in scientific practice. Her study thus allows us to trace the effects of an institutional funding monopoly.

First, and perhaps most intuitively, Oreskes illustrates how dependence on a particular funding body can affect which research goals and questions are prioritized. Such effects are studied in three historical episodes. In one case, Oreskes documents what is known as the 'Woods Hole Palace Revolt' (chapter 3), when scientists at WHOI 'were troubled by what they saw as excessive influence of the Navy on institutional priorities and a drift away from the basic science commitment that had inspired Woods Hole's creation' (p. 98). There was internal disagreement over the appropriate place for 'applied' versus 'basic' science at the institution, with at least the perception that Navy funding was pulling in the direction of the former at the expense of the latter. Similarly, Oreskes recounts how deep sea research was expected to fit the Navy's 'mission profile' (chapter 7); specifically, 'prosaic problems' like 'the transmission of underwater sound in submarine warfare and the salvage of materials lost at sea' (p. 339) were prioritized, and although the science pursued towards these ends did lead to important discoveries—like the discovery of hydrothermal vents—the priorities set by the Navy continue to have downstream consequences for oceanography and oceanographic methods. Finally, in chapter 9, Oreskes discusses attempts made by physical oceanographers to use what they had learned about sound propagation in the ocean to measure its temperature (of increasing importance with the growing recognition of climate change and its associated risks). Public and political pressure required that the scientists first investigate the possible negative impacts of the so-called Acoustic Thermometry of Ocean Climate (ATOC) project, especially its possible impacts on marine mammals. Similar marine-biological studies had previously been side-lined almost entirely, owing to their lack of relevance to the Navy's mission profile. As Oreskes notes in her concluding chapter, the neglect of marine biology is particularly striking because it disincentivized research on the adverse consequences that Navy technology had for underwater life.

Second, the kinds of problems thus prioritized might change how scientists conceptualize their objects of study. In chapter 2, Oreskes traces early incentives for studying sonar communication, noting that 'focusing attention on operational problems might lead [researchers], for better or worse, to view the ocean in a different way' (p. 58). A particular problem for effective sonar communication was posed by rapid changes in ocean temperature along the so-called thermocline, which prompted the Navy to fund oceanographic research on this topic. One major development was the Stommel-Arons model of abyssal circulation, prompted not just by financial support but a particular conceptual focus on the thermocline induced by the operational problems at hand. Oreskes's take on this case is that the military did not merely fund research on ocean circulation, but, via their operational concerns, directed 'attention to an aspect of the ocean that just about everyone else had ignored' (p. 94).

Third, the interests of funding bodies are often encoded in particular rules governing the ownership and management of data: who has access to them, when and whether they are available (and for what), and how they are circulated. In chapter 4, Oreskes discusses a case in which confidentiality of oceanographic data and the Navy's structure of clearance granting (for example, only US citizens are eligible; see chapter 1) served as a barrier to the acceptance of plate tectonics, since the data could not be discussed in the wider scientific community. Hence, circulation and access rules restrict who is able to perform science and what information they have available to them, which, in turn, will affect how the science is performed and how it progresses. This is a consequence of material dependence on funding bodies that is well documented for the case of pharmaceutical drug trials, whose results are often deliberately left unpublished by pharmaceutical companies (for example, Stegenga [2018]); this problem is frequently cited in support of 'open science' (for example, Leonelli [2023]). Oreskes shows that oceanographers themselves argued about the scientific benefits of declassification and proposed schemes for weighing it against the military benefits of classification. Furthermore, in chapter 5, Oreskes details some of the ways that scientists learned how to work around the Navy's strict classification policies. For example, in order to circulate these data to uncleared scientists, oceanographers mapping the ocean floor 'degraded' classified data, presenting it at a coarser resolution 'so that an overall picture emerged but the details on which it was based did not' (p. 207). But, from a scientific perspective, this kind of information loss is less than ideal. Overall, Oreskes notes that if scientific issues 'are known only to select individuals—or the pertinent data are sequestered—important questions may be left not merely unanswered but also unaddressed' (p. 245).

Fourth, dependence on a particular funding body can influence which among several possible scientific instruments are designed and built, as well as how these instruments are used. For example, Oreskes tracks the motivation behind Navy funding for designing, building, and deploying deep-sea submersible Alvin (chapter 6). Oreskes shows that Alvin was developed with military underwater warfare and rescue capabilities in mind, and only subsequently used for 'basic science'—despite the fact that popular histories of Alvin (for instance, presented to WHOI visitors) de-emphasizes the Navy's role in Alvin's development (see also point 6 below).

Fifth, if funding is tied to a selected set of real-world applications, scientists might actively search out advisory roles to loosen the legal constraints on such applications. For example, in chapter 8 Oreskes details a case in which an upper administrator at WHOI tried to keep his research programme relevant by advocating for seabed disposal of nuclear waste, actively disputing or disregarding evidence that such a disposal tactic would be unsafe due to seafloor motion or at least that it involved major uncertainties. If he had succeeded, government funding for his research would presumably have followed.

Sixth and finally, the interests of funders can affect how scientists reconstruct the values embedded in their institutions as well as the values directly motivating their own practice. Oreskes develops this point in detail in chapter 7, where she argues against the common narrative that oceanographers 'painted their projects blue', that is, pretended that they had military significance just to acquire necessary resources from the Navy. Instead, oceanographers 'painted their projects white', retrospectively pretending that they were not motivated or shaped by military interests. Oreskes discusses several plausible reasons in her concluding chapter, including self-delusion in light of personal beliefs about 'basic science' or a need to signal trustworthiness. Most interestingly, perhaps, these reasons also include scientists' personal

belief at that time in the anti-communist ideology embraced by the Navy, which made them take certain priorities and rules for granted.

In summary, Oreskes's historical analysis lends itself to the following (preliminary and non-exhaustive) taxonomy of distinct ways that dependence on a dominant funding institution might affect scientific practice:

- Institutional interests can influence which scientific research areas are prioritized and pursued (chapters 3, 7, and 9).
- Institutional interests can influence how scientists conceptualize a particular object of study (chapter 2).
- Institutional interests can affect how data are managed and to whom they are made accessible (chapters 1, 4, and 5).
- Institutional interests can affect which scientific instruments are designed or built and how they are used (see chapter 6).
- Institutional interests can influence which policies scientists advocate for (chapter 8).
- Institutional interests can affect the ways that scientists reconstruct the aims and constraints of their own practice (chapter 7).

As a historian, Oreskes does not attempt to judge whether the Navy's interests legitimately affected oceanographic research (or how we could tell if they did). Nonetheless, her account can help us illuminate such philosophical questions. Recent work on values in science illustrates that we need to know how institutional interests *de facto* motivate and justify research in order to meaningfully judge when they do so legitimately (for example, Elabbar [[unpublished](#)]). Situations like Cold War oceanography—where funding decisions are closely aligned with the interests of specific institutions—are sufficiently widespread to deserve particular attention in this regard. Given the vast resources at the hands of military administrators worldwide, relevance to warfare capability remains a dominant interest governing science funding in many fields. At the same time, the increasing influence that large private companies (with shared interests in profitability) wield over funding decisions in, say, particular areas of pharmaceutical research is well documented.

We will close by calling attention to an interesting problem that Oreskes's findings introduce for distinguishing legitimate from illegitimate roles for values in science, namely, a problem further complicating what Holman and Wilholt ([\[2022\]](#)), drawing on decades of feminist scholarship, call 'the new demarcation problem'. Several philosophers have argued that scientists' values legitimately motivate or justify decisions during research if these values are sufficiently transparent and aligned with stakeholder values—be it specific stakeholders, the general public, or democratic representatives (for example, Douglas [\[2005\]](#); Elliott [\[2013\]](#); Schroeder [\[2021\]](#)). However, such accounts presume that values can be made transparent via testimony, and Oreskes's study seriously challenges this presumption. She illustrates that institutional funding monopolies not only affect scientific decisions (for better or for worse)

but significantly alter scientists' testimonies about such decisions, be it due to ideological commitment or simple self-delusion. This problem, which keeps us from determining which values affect scientists' decisions, suggests that approaches that focus on (mis)alignment of values face serious obstacles when applied to the many fields of science in which funding is monopolized by dominant institutions. If we are unwilling to dismiss military-funded or overwhelmingly industry-funded research out of hand, we need new strategies for distinguishing legitimate from illegitimate roles for value and biased from unbiased findings.

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## References

Douglas, H. [2005]: 'Inserting the Public into Science', in S. Maasen and P. Weingart (eds), *Democratization of Expertise? Exploring Novel Forms of Scientific Advice in Political Decision-Making*, Dordrecht: Springer, pp. 153–69.

Elabbar, A. [unpublished]: 'The Curatorial View of Assessment and the Ethics of Scientific Advice: Beyond Decisional Autonomy towards Distributive Epistemic Justice', available at [iuhpst.org/media/pdf/Elabbar\\_IUHPST\\_Prize\\_2023.pdf](http://iuhpst.org/media/pdf/Elabbar_IUHPST_Prize_2023.pdf).

Elliott, K. C. [2013]: 'Douglas on Values: From Indirect Roles to Multiple Goals', *Studies in History and Philosophy of Science Part A*, **44**, pp. 375–83.

Holman, B. and Wilholt, T. [2022]: 'The New Demarcation Problem', *Studies in History and Philosophy of Science*, **91**, pp. 211–20.

Leonelli, S. [2023]: *The Philosophy of Open Science*, Cambridge: Cambridge University Press.

Schroeder, S. A. [2021]: 'Democratic Values: A Better Foundation for Public Trust in Science', *British Journal for the Philosophy of Science*, **72**, pp. 545–62.

Stegenga, J. [2018]: *Medical Nihilism*, Oxford: Oxford University Press.