CLIMATE CHANGE

Addressing the Ethical Dimension

Jeremy Moss

A Perfect Moral Storm
The Ethical Tragedy of Climate Change
by Stephen M. Gardiner
Oxford University Press, New York, 2011. 507 pp. $35, £22.50. ISBN 9780195379440. Environmental Ethics and Science Policy.

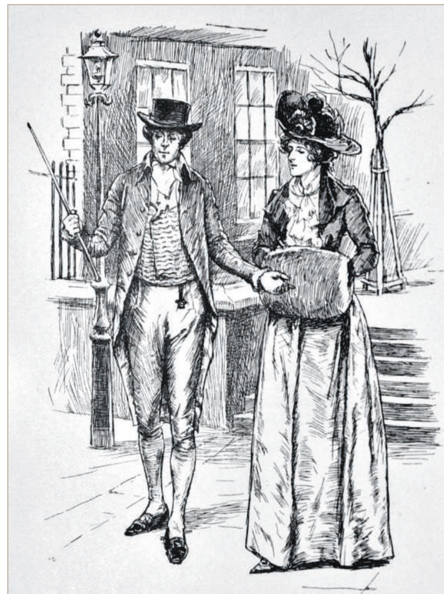
In *A Perfect Moral Storm*, Stephen Gardiner argues that the deepest challenge posed by climate change is an ethical one. The book diagnoses the nature of this ethical challenge and contends that part of the reason why progress in addressing climate change has been so dismal is that climate change constitutes what Gardiner (a philosopher at the University of Washington) calls a "perfect moral storm." This is an interesting way of approaching the topic. Gardiner claims that climate change is such a difficult issue because it involves the convergence of three separate "storms": the global nature of the problem, its intergenerational dimension, and the inadequacy of our theoretical models. The conjunction of these elements seriously impedes our ability to make ethical decisions about climate change.

One of the obvious impediments to responding adequately to climate change is the lack of a cohesive political methodology for resolving global problems. The diffusion of greenhouse gases around the world and the complex causal chain involved in their production raise substantial difficulties for our already weak system of global cooperation. Gardiner argues that the negotiating that goes on among nation states is not well captured by current bargaining theories, which leaves them seriously incomplete. For example, standard game theoretical models such as the prisoner's dilemma and the tragedy of the commons do not neatly fit the problems caused by climate change because they ignore considerations of fairness. For instance, in the tragedy of the commons model (a situation in which it is collectively rational to cooperate but individually rational not to do so) only future costs and benefits are considered. That neglects the historical responsibility that some countries have for the problem of climate change due to their heavy past emissions.

Moreover, using these models makes it easy to assume that the costs and benefits from cooperation are very similar, whereas poor countries (and poor people in rich countries) are much more vulnerable to the impacts of climate change than the rich. This is more than just a claim about the failure of recent climate negotiations. Here and throughout the book, Gardiner links the analysis of theoretical models to the real-world situations that they attempt to describe.

But perhaps the most diabolical problem is that of intergenerational justice. While spatial dispersal of the effects of climate change creates obstacles for international negotiations, the effects of climate change also register in the temporal dimension. Because of the delayed effects of climate change, effective mitigation will need to occur over a long period. It may be hard to gauge the effects of this "back loading," which in turn may call into question the ability of our standard institutions to adequately respond to the problem because of their inherently short time horizons (e.g., electoral cycles).

Gardiner understands passing the buck from one generation to the next as the most difficult of the various ethical dimensions of climate change. Many of the assumptions that hold in standard bargaining models will not work with the generational problem because we do not have future agents with whom to bargain and because there is no reciprocity in the bargaining situation. He also addresses the formidable issue of whether the possibility of abrupt climate change in the immediate future will make it more or less likely that we will discover the motivation to act.



A case with many parallels. In Jane Austen's first published novel, John Dashwood reneges on his promise to support his half-sisters Elinor and Marianne and their mother.

According to Gardiner, not only are our institutions and moral theories unable to cope with the challenge of climate change, many of our general theoretical tools are inadequate as well. Indeed, he proposes that if a theory or institution fails to address a serious global threat, then it should be judged inadequate and must be rejected. Too many theories exhibit the vices of being oblivious to or complicit in problems. Utilitarianism and cost-benefit analysis come in for particular criticism here.

In one way, this is where the book is at its best—analyzing the key theoretical tools that are used in the climate change debate and pointing out either their inescapable faults or what modifications would have to be made in order for them to be useful. For instance, Gardiner argues that devising an adequate understanding of discounting (determining the dollar value now of costs and benefits in the future) is fraught with difficulty: if, for example, a standard discount rate of 5% is applied, it would mean that 200 years from now the value of our economic output would be reduced to a few hundred thousand dollars. Such a view undervalues the benefit of sacrificing now for the gains for future generations. Although most applicable to approaches such as utilitarianism, these well-founded criticisms highlight the work that must be done to modify (or abandon) existing theories.

All this might sound very pessimistic, and in a way it is. But the book's strength lies in Gardiner's success at understanding and clarifying the types of moral issues that climate change raises, which is an important first step toward solutions. He argues that failure to appreciate the convergence of the three components of his perfect storm leads us into a kind of moral corruption where we let ourselves be persuaded by weak or deceptive arguments, with disastrous consequences for our ability to act on climate change.

Readers will find much of value in Gardiner's engagements with complex interdisciplinary problems. For instance, his analysis of the limitations of cost-benefit analysis and discounting is likely to appeal to anyone interested in standard economic debates about the costs of adapting to and mitigating

The reviewer is at the Nossal Institute of Global Health, Allan Gilbert Building, University of Melbourne, 161 Barry Street, Parkville, Victoria 3010, Australia. E-mail: jmoss@unimelb.edu.au

CREDIT: CHRIS HAMMOND/FROM A LATER EDITION OF *SENSE AND SENSIBILITY* (GEORGE ALLEN, LONDON, 1899)

Downloaded from www.sciencemag.org on June 29, 2011

Published by AAAS

climate change. The chapter "Jane Austen vs. Climate Economics" draws on the actions of John and Fanny Dashwood in *Sense and Sensibility* to consider moral corruption and how it affects the climate debate. Gardiner also offers extensive discussions of geoengineering, international climate negotiations, population ethics, and climate change skepticism.

A Perfect Moral Storm provides a rich analysis of the ethical challenges that we must tackle in the face of climate change. Gardiner effectively makes the case that while responding to and understanding climate change necessarily involves many disciplines, the effects of climate change on us, on future generations, and on the environment mean that we must determine how to distribute the impacts of climate change fairly and how to weigh present-day sacrifices against future benefits. Once we start thinking about these issues, the problem posed by climate change falls firmly in the domain of ethics. By analyzing the complex "moral storm" created by climate change, Gardiner gives us an insight into whether our theoretical tools are adequate to understanding the ethical reality of climate change, which is an important first step in proposing just solutions. His consideration of whether our theoretical tools are adequate to understanding the ethical challenges of climate change provides an important step toward identifying just solutions.

10.1126/science.1205393

MEDICINE

When Clinical Trials Are Farmed Out

Mark Helfand

Medical Research for Hire
The Political Economy of Pharmaceutical Clinical Trials
by Jill A. Fisher
Rutgers University Press, New Brunswick, NJ, 2009. 271 pp. $65. ISBN 9780813544090. Paper, $25.95. ISBN 9780813544106. Critical Issues in Health and Medicine.

The late 1990s saw a business boom in contract clinical research. The conventional explanation for the growth of contract research organizations (CROs) is that, as the biotechnology industry matured and began producing many more new drugs, pharmaceutical companies saw many advantages in outsourcing clinical research. CROs recruited practices and patients, trained study personnel, and monitored the conduct of the trials faster and arguably better than academic medical centers. They were also deemed more knowledgeable about regulatory requirements and less troubled by confidentiality clauses and other restrictions to scientific independence (*1*).

Jill Fisher sees broader political and economic forces at work in the growth of the commercial clinical trials industry. In *Medical Research for Hire,* she argues that the vulnerability of underinsured and underserved patients in a broken health care system and the political philosophy of neoliberalism (which favors free-market approaches and individual choice over state or societal actions to address social and economic problems) are responsible for the success of the for-profit clinical research industry in the United States:

> Within the political, economic, and cultural contexts of neoliberalism, the offering of pharmaceutical clinical trials is positioned as adding another option for health care consumers.… Clinical research becomes the "responsible choice" for individuals who do not otherwise have access to—but require—medical intervention.

Fisher (a researcher at the Center for Biomedical Ethics and Society, Vanderbilt University) examines the social milieu and ethical implications of for-profit research in private-practice settings at the height of the boom. She interviewed 63 people involved in all aspects of for-profit, contract research: physician-investigators, recruiters, research coordinators, trial monitors, employees of CROs, and patients (that is, the research subjects).

The interviews, fortunately, are not about politics but rather bring out the effects of participating in the clinical trials industry on the doctor-patient relationship. They highlight the poor quality of decision-making about patient participation. Informed consent—and disclosure of the benefits and potential risks of participating—takes place after a patient has decided to enroll in a study. Before then, there is often a mismatch between what participation in short-term, placebo-controlled premarketing drug trials offers and what a patient expects from doctors and nurses: unconflicted advice about what is in the patient's best interest. In many interviews, nurses and other personnel who do the recruiting say they believe participation in research is a good thing and they are helping people by offering it. Fisher shows that these statements are often made when potentially disturbing conflicts of interest come up, making her wonder whether or not her informants really believe what they are saying.

Of course, such conflicts afflict clinical studies conducted in academic settings, too. What is different about the contract research setting? The private-practice physicians Miller interviews get to participate in discovery and science, but they have little say in what research is conducted or how it is conducted. The regulatory and marketing needs of the sponsor determine which questions the research addresses, how long patients are treated, and what data are collected. The needs of the patients play little or no role.

In recent years, there has been broader recognition that clinical research funding needs to be better aligned with the information needs of patients and clinicians and that the infrastructure for research in everyday practice must be strengthened. One cannot help but admire the entrepreneurial physicians who reengineered their practices to conduct contract research efficiently and bring speed to drug development research. One can wish, though, that they had the opportunity to do something more: address research questions that matter to them and to their patients.

Fisher's occasional lapses into sociological jargon seem at odds with her true voice. Throughout most of *Medical Research for Hire*, her skillful presentation of the interviews brings out the complexity and contradictions in her subjects' experience. Thus readers can form their own judgments about the broader question of what patients and physicians have gained or lost from choosing to participate in contract research.

The reviewer is at the Portland VA Medical Center and the Department of Medical Informatics and Clinical Epidemiology, Biomedical Information Communications Center, Oregon Health and Science University, 3181 SW Sam Jackson Park Road, Portland, OR 97239–3098, USA. E-mail: helfand@ohsu.edu

References

1. P. Baird, J. Downie, J. Thompson, *Science* **297**, 2211 (2002).

10.1126/science.1198268

Published by AAAS

Downloaded from www.sciencemag.org on June 29, 2011