Published in final edited form as:

Bioethics. 2016 October ; 30(8): 649–652. doi:10.1111/bioe.12261.

Bioethics and Climate Change: A Response to Macpherson and Valles

David B. Resnik, JD, PhD

Two articles published in *Bioethics* recently have explored the ways that bioethics can contribute to the climate change debate. Cheryl Cox Macpherson argues that bioethicists can play an important role in the climate change debate by helping the public to better understand the values at stake and the trade-offs that must be made in individual and social choices, and Sean Valles claims that bioethicists can contribute to the debate by framing the issues in terms of the public health impacts of climate change.¹ While Macpherson and Valles make valid points concerning a potential role for bioethics in the climate change debate, it is important to recognize that much more than ethical analysis and reflection will be needed to significantly impact public attitudes and government policies.

Most major social and political developments concerning bioethical issues have come about largely as a result of events or trends with significant impacts on the public consciousness, such as media coverage of egregious incidents (e.g. the Tuskegee Study), grassroots efforts (e.g. the patient's right movement), influential legal cases (e.g. the Karen Ann Quinlan), legislation (e.g. the National Research Act), regulation (e.g. the Common Rule), or social innovation (e.g. hospital ethics committees). Bioethics has played an important ancillary role in these changes but, for the most part, it has not instigated them.²

For example, the first international ethical guideline for research with human subjects, the Nuremberg Code, was adopted in 1947 in response to heinous experiments conducted by Nazi physicians and scientists on concentration camp prisoners.³ However, the U.S. did not develop a comprehensive system of ethical oversight of research involving human subjects until 1972, when the national media reported on the Tuskegee Syphilis study. Public outcry over the study led to Congressional hearings on research involving human subjects and passage of the National Research Act, a bill that authorized federal agencies to develop human research regulations and created a National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. In 1979, the National Commission published the *Belmont Report*, which articulated principles of ethical research involving human subjects, which provided a conceptual foundation for major revisions of the human research regulations in 1981 and 1991.⁴

Bioethical scholarship helped to inform the deliberations of the National Commission, as well as subsequent modifications and interpretations of federal regulations, but did not instigate the major social and political changes that led these developments.⁵ Indeed, in 1966

Henry Beecher had published an article in the *New England Journal of Medicine* that described 22 unethical experiments involving human subjects, including the Tuskegee Study,⁶ and just days before the *New York Times* broke the Tuskegee study, Jay Katz had published a landmark book on human experimentation.⁷ Though physicians, scientists, and scholars took note of the findings in these academic publications, the adverse publicity surrounding the Tuskegee Study was largely responsible for policy changes that occurred.⁸ Of course, once the public consciousness was raised and comprehensive regulations were in place, bioethicists contributed significantly to the ethical oversight of research with human subjects by serving on institutional review boards and presidential commissions, publishing articles and books, consulting with researchers, and teaching classes at academic institutions.

In the early 1970s, Paul Berg and other molecular biologists developed methods, known as recombinant DNA technology, for genetically engineering microorganisms. The scientists working in this field soon realized the dangers of accidental contamination if genetically engineered organisms were to escape from the laboratory and infect human beings or other life forms. Maxine Singer and Dieter Soll published a letter in *Science* expressing concern about the safety risks associated with the new genetic engineering techniques.⁹ The public also became aware of these concerns through stories reported in the media and science fiction books and movies. Scientists held a meeting at Asilomar, CA in 1974 to discuss the benefits and risks of genetic engineering and consider procedures for ensuring laboratory safety. They agreed to a self-imposed moratorium on such experiments until the safety and risk issues could be adequately resolved. The same year, the National Institutes of Health (NIH) created the Recombinant DNA Advisory Committee (RAC) to oversee genetic engineering research funded by the agency.¹⁰ The RAC developed guidelines for recombinant DNA research and reviewed proposed experiments. The NIH also required institutions that receive funding for genetic engineering research to appoint biosafety committees to oversee such experiments and protect research staff and the public from risks. In 1982, the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research released a report on the ethical issues surrounding genetic engineering. The Commission decided to write this report after receiving a letter from Jewish, Catholic, and Protestant church associations urging the commission to investigate the ethics of genetic engineering.¹¹ In the 1990s, scientist began genetically engineering plants and animals and by the end of the decade they had initiated the first human gene therapy experiments.¹²

Bioethicists played an important role in the public debate concerning genetic engineering and the oversight this research, even though it is unlikely that bioethical scholarship initiated the major changes that took place. Before the public became aware of the ethical issues related to genetic engineering, bioethicists had held conferences on eugenics and prenatal genetic testing. In 1969, philosopher Daniel Callahan and psychiatrist Willard Gaylin formed a group, which later would become the Hastings Center, to study the social and ethical issues concerning biomedicine and biomedical research. The group included scientists, physicians, philosophers, and theologians. In 1970, members of the group participated in an NIH conference on the ethics of prenatal genetic testing and diagnosis, and in 1971 the Hastings Center and NIH co-sponsored a conference on ethical issues in genetic

counseling.¹³ While the activities of the Hastings Center raised awareness about ethical issues related to human genetics, they did not have as much of an impact on the public consciousness as actions taken by scientists involved in recombinant DNA research. Once the public consciousness was raised, bioethicists contributed a great deal to the national discussion of the ethics of genetic engineering by serving on oversight committees and government commissions, publishing articles and books, and teaching courses at academic institutions.

If the public debate about climate change is similar to the public debate about other bioethical issues, it is likely that bioethics will play only indirect and perhaps marginal role in changing public perceptions and social policies. Since the 1980s, scientists have accumulated evidence that greenhouse gas production, deforestation, agriculture, and other human activities have increased global temperatures since the Industrial Revolution. According to the Intergovernmental Panel on Climate Change, global temperatures are expected to rise between 1.8°C and 4.0°C by 2100. Major reductions in greenhouse gas emissions may be able to mitigate, but not stop, expected global temperature increases because it can take decades for plants to remove carbon dioxide from the atmosphere.¹⁴ Global warming is likely to have numerous adverse impacts on the environment, public health, agriculture and the economy, such as rising sea levels; increased rates of flooding, droughts, heat waves, tropical storm activity, and respiratory and infectious diseases; decreased agricultural production; and loss of biodiversity and habitats.¹⁵ Although scientists disagree about the degree of the expected rise in global temperatures and extent of the adverse effects of climate change, an overwhelming majority accept the hypothesis that human activities are largely responsible for a rise in global temperatures during the last 150 years.

Despite warnings from scientists and environmentalists, the global community has not taken effective action to mitigate or adapt to climate change, although some countries have begun to reduce their greenhouse gas emissions and some have started preparing for increasing temperatures and rising sea levels. Countries have negotiated international treaties, such as the Kyoto Protocol, but the U.S. did not ratify this agreement and China and India did not participate in it. The Kyoto Protocol expired in 2012. 195 countries recently reached a climate change accord in Paris, but it remains to be seen whether the parties follow up on this agreement.¹⁶ Ongoing issues include the obligations of developing nations to reduce their greenhouse gas emissions and the financial obligations of developed nations to help developing nations adapt to climate change.¹⁷

Scientists and scholars have identified numerous obstacles to taking effective action on climate change, such as:¹⁸

- Skepticism about climate change among members of public and politicians;
- The complexity of the issue and potential solutions;
- The abstract nature of climate change;
- The need to global cooperation to take effective action;

- The temporal and spatial disconnect between causes of climate change and effects;
- Problems with traditional notions of moral responsibility as applied to climate change;
- Difficult trade-offs between short-term economic interests and long-term adverse effects;
- The unwillingness of people with opposing ideological commitments to seek pragmatic solutions;
- The availability of inexpensive and convenient fossil fuels;
- Lack of private or public investment in alternatives to fossil fuels;
- The failure of the market to account for the environmental costs (or externalities) of climate change; and
- Increasing demands for energy and food, driven by population growth and economic development.

While climate change raises a number of ethical issues worthy of academic discussion, it is not at all clear that bioethics will play an instrumental role in prompting the social, political, economic, and technological changes that need to occur to deal with climate change effectively, although it may play an important ancillary role once these change are underway. For example, members of environmental or public health groups, politicians, government officials, attorneys or others with an influence on policy may appeal to arguments published in journal articles to motivate effective responses to climate change. Students who take classes at academic institutions may form opinions and draw inspiration from reading bioethical scholarship. Journalists may report on articles published in the bioethics literature and conduct interviews with bioethicists. It is quite possible that insights and analyses in the academic literature could trickle down to down to the public and influence attitudes, beliefs, and choices. While I do not wish to discourage bioethicists from writing about climate change ethics and policy—I have also written on this topic¹⁹—I think it is important to be realistic about what academic scholarship can and cannot do.

It may take a series of major events or trends with significant impacts on the public consciousness, such as prolonged droughts, heat waves, famine, or loss of biodiversity or habitats, to instigate the kind social and political transformation necessary to deal effectively with climate change. Once the momentum shifts toward a more effective response to climate change and major initiatives occur (such as treaties, legislation, taxation, or regulation), bioethical scholarship may play a more significant role by providing a philosophical and ethical rationale for these developments and by helping governments, private organizations, and individuals make well-reasoned decisions that address the values at stake.²⁰ Until then, bioethical scholarship on climate change may generate considerable interest among academics, scientists, and students, but only have a tangential impact on social norms and public policy.

Acknowledgments

I am grateful to Cheryl Cox Macpherson and Sean Valles for helpful comments.

References

1. Valles SA. Bioethics and the framing of climate change's health risks. *Bioethics*. 2015; 29(5):334–341. [PubMed: 25186465]
2. Jonsen, AR. *The Birth of Bioethics*. New York: Oxford University Press; 1998. Ferber, S. *Bioethics in Historical Perspective*. New York: Palgrave Macmillan; 2013.
3. Nuremberg Code. 1949. [Accessed: October 3, 2015] Available at: <http://www.hhs.gov/ohrp/archive/nurcode.html>
4. National Commission for the Protection of Human Subjects of Biomedical or Behavioral Research. *The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research*. Washington, DC: Department of Health, Education, and Welfare; 1979.
5. Ferber, 2013, note 3.
6. Beecher H. Ethics and clinical research. *New England Journal of Medicine*. 1966; 274(24):1354–1360. [PubMed: 5327352]
7. Katz, J. *Experimentation with Human Beings*. New York: Russell Sage; 1972.
8. Ferber, 2013, note 3.
9. Singer M, Soll D. Guidelines for DNA hybrid molecules. *Science*. 1973; 181(4105):1114. [PubMed: 11663279]
10. Jonsen, 1998, note 3.
11. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research. *Splicing Life: A Report on the Social and Ethical Issues of Genetic Engineering with Human Beings*. Washington, DC: President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research; 1982.
12. Ferber, 2013, note 3.
13. Jonsen, 1998, note 3.
14. Intergovernmental Panel on Climate Change. *Climate Change 2013: The Physical Basis*. Geneva: Intergovernmental Panel on Climate Change; 2014.
15. Intergovernmental Panel on Climate Change. *Climate Change 2014: Synthesis Report*. Geneva: Intergovernmental Panel on Climate Change; 2014.
16. Davenport C. A climate deal, 6 fateful years in the making. *New York Times*. Dec 14.2015 :A1.
17. Removed for blind review.
18. Gardiner, SM. *A Perfect Moral Storm: The Ethical Tragedy of Climate Change*. New York: Oxford University Press; 2011. Scruton, R. *How to Think Seriously about the Planet*. New York: Oxford University Press; 2012. note 17
19. Note 17. Many other scholars have written about the ethics of climate change. See, for example: Jamieson D. Ethics, public policy, and global warming. *Science, Technology, and Human Values*. 1992; 17(2):139–153. Gardiner SM. Ethics and global climate change. *Ethics*. 2004; 114:555–560. Gardiner SM, Caney S, Jamieson D, Shue H. *Climate Ethics: Essential Readings*. New York: Oxford University Press; 2010. Jamieson D. Climate change, responsibility, and justice. *Sci Eng Ethics*. 2010; 16(3):431–45. [PubMed: 19847671] Gardiner, 2011, note 18. Arnold DG. *The Ethics of Global Climate Change*. Cambridge: Cambridge University Press; 2011. Hayward T. Climate change and ethics. *Nature Climate Change*. 2012; 2:843–848.
20. The momentum may already be shifting. A recent poll conducted by the Pew Foundation found that a large majority of respondents from 40 countries supported placing limits on greenhouse gas emissions and most regarded climate change as a serious problem. See Stoke B, Wike R, Carle J. *Global concern about climate change, broad support for limiting emissions*. Pew Research Center Nov 5.2015 Accessed: November 6, 2015 Available at: <http://www.pewglobal.org/2015/11/05/global-concern-about-climate-change-broad-support-for-limiting-emissions/>

Biography

David B. Resnik, JD, PhD, is a Bioethicist and IRB Chair at the National Institute of Environmental Health Science, National Institutes of Health. He has published 8 books and 200 articles on ethical, social, philosophical, and legal issues in science, technology, and medicine.