



BELLEVUE LITERARY PRESS

TEACHER'S GUIDE

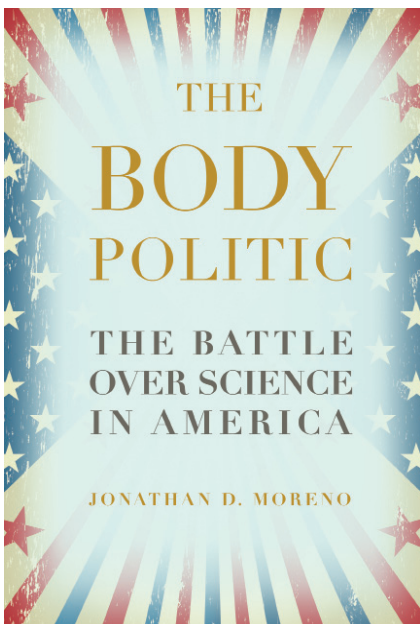
The Body Politic:
The Battle Over Science in America
by
Jonathan D. Moreno

“Articulate, timely and impassioned . . . [an] important book.”—*Times Higher Education*

“*The Body Politic* is required reading for anyone who wants to understand the history of American political thought about science, the dynamics of current controversies such as the stem cell debate, and the battle between those who see science as the route to a better future and those who can see within science the potential for a loss of human distinctiveness and dignity.”—**PAUL WOLPE, Ph.D.**, Director, Center for Ethics, Emory University, and Chief of Bioethics for the National Aeronautics and Space Administration (NASA)

“I can’t think of a better text for introducing students to the complex interplay of religious, economic, political, ethical, and scientific concerns that swirl around issues such as genetic engineering and stem cell research.”
—**CRAIG B. MEROW**, Germantown Academy

Note to the Teacher



The Body Politic will be of interest to classes that deal with the intersections between biology, ethics, and public policy, particularly classes in science policy, bioethics, biotechnology, or the philosophy, history, and sociology of science. This teacher’s guide includes key terms and comprehension questions for each chapter, thematic discussion questions, as well as questions that require students to apply concepts from *The Body Politic* to real-life examples.

This guide was prepared with the assistance of Michelle Spektor

About the Book

In *The Body Politic*, Jonathan D. Moreno explores the cultural, political and societal underpinnings of biotechnology by tracing the role of science in America, from the vision of the founding fathers to our modern culture wars. Moreno argues that Americans' conflicting attitudes about science are new to the nation's political life, and that they are rooted in worries about where biotechnology is taking our society. These concerns are shared across the political spectrum, but so are views that support scientific innovation. The book considers the intersection of society and biotechnology in areas such as genetics, embryonic stem cell research, reproductive cloning, and synthetic biology, demonstrating how these innovations are shaping a new "biopolitics."

Biopolitics, the way society attempts to gain control of and reconcile the power of the life sciences, has become an integral part of scientific progress, especially as scientific advances raise new moral questions and push the boundaries of nature farther than ever before. Moreno explains the historical, social, and political forces that dictate the direction of biopolitical discourse, and shows that the motivations and concerns held by all players involved are often more similar than they are different. Moreno argues that diverse stakeholders can uphold morality and human dignity while pursuing the path of scientific progress.

About the Author

Jonathan D. Moreno served on three presidential advisory commissions and on the Bill and Melinda Gates Foundation Bioethics Advisory Board for the Grand Challenges in Global Health Initiative. Author and editor of many seminal books and articles on science and science policy (including *Science Next*, *Mind Wars: Brain Science and the Military in the 21st Century*, and *Undue Risk: Secret State Experiments on Humans*), he is the David and Lyn Silfen University Professor at the University of Pennsylvania where he has appointments in the Departments of Medical Ethics and Health Policy, History and Sociology of Science, and Philosophy. He is a senior fellow at the Center for American Progress and is editor-in-chief of its online magazine *Science Progress*. He divides his time between Philadelphia and Washington, DC. Visit his web site at www.jonathandmoreno.com

Comprehension

Introduction: Who Owns Science?

Key Terms

Modernity

Biopolitics

Disease communities

Questions:

1. American public opinions toward embryo-related research include many contradictions, as the surveys on page 17 note. What does this say about American moral frameworks and values?
2. How does Michel Foucault's idea of biopolitics differ from the "new biopolitics?"
3. How has the relationship between science and technology changed over the past two hundred years?
4. What is the difference between invention and innovation?
5. Was Thomas Edison a scientist? A technologist? An inventor? An innovator? Why or why not?
6. What kinds of philosophies have emerged from the new biopolitics?
7. How has the new biopolitics shaped the formation of social movements and communities? Use two examples in your response.
8. The statement "Politics will increasingly become biopolitics" can be found on page 26. What does this mean?

Chapter One: Science in America

Key Terms

Epistemology

Pragmatism

Natural Philosophy

Empiricism

Axiom

Frontier thesis

Peircean philosophy of science

Progressivism

Populism

Questions:

1. How does the American pragmatism of the founders of the United States relate to political liberalism and Enlightenment epistemology?
2. What are some of the ways in which the Founding Fathers exhibited an appreciation of science?
3. How did the “moral treatment” movement show that empiricism can promote social goals?
4. How did attitudes toward state autonomy affect innovation in the United States?
5. Name and describe two important innovations of pre-Civil War America. Why did their widespread implementation take so long to occur?
6. What is the Peircean view of knowledge and truth? How does this relate to American sensibilities of progress and pragmatism?
7. When did the Progressive movement start? What did Progressives agree on? What did they disagree on?
8. How did the Progressive movement influence education?
9. According to President Franklin D. Roosevelt’s adviser, Vannevar Bush, what is the role of basic science in relation to innovation and progress? How did this perspective shape science policies during World War II and afterward? What are some examples of scientific accomplishments that have emerged from these policies?

Chapter Two: The Politics of Heredity

Key Terms

Governmentality

Eugenics

Enlightenment science

Romantic science

Social Darwinism

Buck v. Bell

Liberal eugenics

Reprogenetics

Preimplantation Genetic Diagnosis (PGD)

“Designer Babies”

Commodification

Questions:

1. How did governmentality arise and what is its purpose? What sorts of institutions emerged as a result?
2. How is Plato's philosophy an example of biopolitics?
3. How was Nazi Germany an example of biopolitics? How were their biopolitics different from that described by Plato? What was traditional about Nazi public health philosophy, and what was modern?
4. How is Mary Shelley's *Frankenstein* an example of Romantic Science?
5. In what way did eugenics tie together scientific ideas with social ideas?
6. How did Darwin's theory of evolution influence eugenics? What other scientific theories or discoveries contributed?
7. Who was Harry Laughlin? What US policies were inspired by his "Model Eugenical Sterilization Law?"
8. Garland Allen wrote: "Eugenics fits perfectly with Progressive ideology" (p. 68). What did Allen mean by this?
9. What do eugenics movements teach us about the relationship between science and society?
10. What are the prevailing criticisms of liberal eugenics and reproductives? What are the main defenses?
11. Where are the gaps concerning scientific complexities in the philosophical arguments about reproductive genetics?
12. Why might the personal genomics services offered by companies like 23andMe be useful? Why might they not be useful?
13. What are some ethical concerns that arise from the "new genetics?"
14. How do moral attitudes differ between therapy and enhancement? How does the "new genetics" blur this line?

Chapter Three: Dangerous Ideas

Key Terms

Embryonic stem cell research

Age of biology

Situation ethics

Predictive wisdom

Legitimation crisis

Invisible college

World polity

Information revolution

Questions:

1. What is the difference between the “old biology” and the “new biology?” What important discovery marked the transition between them? Which three research areas characterize the “new biology,” and what is their potential?
2. What are some examples of perceptual categories constructed by humans?
3. How do the possibilities of the “new biology” disrupt these categories?
4. Compare Joseph Fletcher’s and Paul Ramsey’s ethical perspectives on genetic manipulation.
5. What were Hans Jonas’ views of genetic manipulation? What is “predictive wisdom?”
6. What ideas embodied Leon Kass’ opposition to human cloning?
7. What was Steven Pinker’s criticism of the concept of “dignity?”
8. What is a “legitimation crisis?” How might current biopolitics embody a legitimation crisis?
9. What scientific, social, industrial, and political factors propel the “new biology?”
10. How did Sir Francis Bacon’s depiction of scientists differ from the way scientists are perceived today?
11. What is an “invisible college?” How does modern science proceed as a “world polity?”
12. How might education—of both the public and of scientists—mitigate popular mistrust of science?
13. How has the information revolution affected the way scientists do their work?

Chapter Four: The Stem Cell Debate

Key Terms

Pluripotent cells

Clones

Dickey-Wicker Amendment

Human dignity

Genetic fallacy

Induced pluripotent stem cells

Category mistake

Hubris

Dolly the sheep

Questions:

1. How did the controversy surrounding embryonic stem cell research differ from previous human reproduction controversies? What are some examples of these controversies?
2. What were Joseph Fletcher's and Paul Ramsey's views on cloning?
3. How well has legislation on cloning taken into account the presence of naturally occurring clones (twins)?
4. What are the two ways to obtain embryonic stem cells?
5. How did the bioethics of embryonic stem cell research transform into biopolitics?
6. How were President Bush's and Clinton's embryonic stem cell policies alike? How were they different?
7. What were the main points of the National Academies' guidelines for embryonic stem cell research?
8. What were the ideological and political divides evident in the Bush administration's Council on Bioethics?
9. What were Michael Sandel's arguments against the idea that embryos have the same moral status as persons? What was the conservative response?
10. How did the development of induced pluripotent stem cells shape the nature of the embryonic stem cell debate? How important was embryonic stem cell research to the development of induced pluripotent stem cells?
11. What were the concerns held by conservatives, libertarians, liberals, and progressives regarding embryonic stem cell research?

12. How do stem cell policies differ in Israel, Iran, the United Kingdom, and Germany? How did these differences arise?
13. What stakes do the government, scientific community, and corporate sector have in embryonic stem cell research?

Chapter Five: Valuing Humanity

Key Terms

Commodification

Alienation

Neoconservatism

Technological/Scientific World View

Capitalism

Precautionary principle

Risk

Questions:

1. What are the differences between bioconservatives on the right and on the left? What do they have in common?
2. How did neoconservatism arise from Marxist thought? How did neoconservatives “turn Marx on his head?” How is neoconservatism similar to Marxist thought?
3. What is the neoconservative perspective on science and technology? What are their concerns? How do they use Marxist conceptions of alienation and commodification in these perspectives?
4. How did the German philosophical tradition differ from Enlightenment and post-Enlightenment thought?
5. How did Heidegger’s and Nietzsche’s philosophies differ from the technological/scientific world view?
6. How is neoconservative thought similar to the European “precautionary principle?”
7. How does neoconservative thought compare with that of the “greens” and transhumanists?

Chapter Six: Crossing Lines

Key Terms

Boundaries

Roe v. Wade

Right to life

Right to privacy

Biomarkers

Chimera

Hybrids

Human-Animal Hybrid Prohibition Act

Species boundary

Synthetic biology

Questions:

1. Why does the U.S. prioritize biopolitical issues differently from Europe?
2. What is Daniel Callahan's position on abortion? How does his position bridge both anti-abortion and pro-choice ideologies?
3. What events punctuated the evolution of current traditions in end-of-life decision making, starting in 1976?
4. What is the difference between permanent and persistent vegetative states? How is technology blurring the boundary between them?
5. What are the arguments for and against the use of predictive tests for conditions like Alzheimer's disease? What are the implications?
6. What are the differences between chimeras and hybrids? What ethical concerns surround each of these entities? How have confusions between the two manifested in legislation?
7. How do species boundaries and conceptions of human uniqueness play into the discourse on hybrids and chimeras?
8. What are the extrinsic concerns about synthetic biology? What are the intrinsic concerns?

9. What links concerns about disorders of consciousness, predictive disease testing, chimeras, and synthetic biology?
10. How does “naturalness” play into questions about enhancement?
11. What kinds of problems arise from the blurring of human-machine boundaries? Why do these concerns receive less attention than issues of biopolitics?

Chapter Seven: In Defense of Progress

Key Terms

Progress

Science

Procedural liberalism

War on science

Crisis mentality

Postmodernism

Questions:

1. How did Edgar Allan Poe’s and Benjamin Franklin’s views on science differ?
2. What is procedural liberalism? What is substantive liberalism? How do they each relate to bioproggressives?
3. What is the neoconservative argument against science?
4. Who is Cody Unser? What is her relationship to technology and the new biopolitics?
5. Who were the Havasupai? Why were they of interest to researchers? Why did the tribe sue the researchers?
6. How did the scientists’ findings conflict with Havasupai cultural traditions?
7. How does the story of the Havasupai represent the key to the new biopolitics?
8. What is the postmodernist argument against science?
9. What is the old conservative view toward science?
10. What is experimentation’s place in the American tradition?

Discussion Questions

1. What are the relationships between biology, politics, bioethics, and biopolitics? How have these relationships changed over time?
2. Who are the players in the challenge for control over the new biology? How have they shaped biopolitics, and how has biopolitics shaped them?
3. Technological advances in the biological sciences tend to raise questions about morality and human dignity. What types of questions arise? Is science morally neutral? Can it answer these types of questions? If not, which fields of inquiry are better equipped to offer answers?
4. How has the place of science in American society changed from the time of the Founding Fathers to the present? How have arguments for and against scientific progress changed?
5. Why is trust important in science? What causes public trust or mistrust in scientists and their work?
6. “The motivating idea of biopolitics has been the fear of biology without humanity. The converse, humanity without biology, might rather be what we should worry about” (Chapter Six). Discuss this relationship between humanity and biology.
7. What is misleading about the characterization of progressives as the “party of science” and conservatives as the “party of morality?” How does biopolitics transect the ideological spectrum?

Beyond the Book

1. The original cover of Thomas Hobbes’ book, *Leviathan*, famously depicts an image of the “body politic.” *Leviathan* was published in 1651 and concerned the structure of society and government. Is the image an accurate depiction of the “old biopolitics?” Is it an accurate depiction of the “new biopolitics?” Why or why not?

Novus potestas Super Terram quae Comparatur ad Job 41. 24.



LEVIATHAN
or the
MATTER, FORM
and POWER of
A COMMON WEALTH
ECCLESIASTICAL
and
CIVIL.

Written by
Tho: Hobbs
1651.

The banner is decorated with various symbols in small panels: a castle, a crown, a cannon, crossed swords, a church, a globe, a ship, and a group of people. The text on the banner is arranged in a central column, with the author's name and date at the bottom.

2. *The Body Politic* notes that leading biopolitical issues and views in one country are not necessarily the same as in another. Do some research on another country's policies and attitudes toward one of the following biopolitical issues: abortion, genetically modified foods, embryonic stem cell research, or end-of-life decision making. Compare them to United States policies and attitudes toward the same issue. How do they differ and how are they similar? Why?

3. Chapter Four mentions the discovery in 2005 that an internationally known South Korean stem cell scientist, Hwang Woo Suk, fabricated results and bought human eggs. Look up accounts of this highly-publicized research scandal online. What sorts of ethical issues were involved? How did these events affect South Korea's stem cell research policies? How did they affect global perceptions of scientists who engage in stem cell research?

4. Chapter Six discusses some of the difficulties that surround end-of-life decision making. Look up accounts of the Nancy Cruzan and Karen Ann Quinlan cases. How did these cases locate patient autonomy and decision-making power? How did the use of technology in these cases blur boundaries between life and death? What other types of boundaries were involved? How does biopolitics inform these questions?

5. Look up Senator Brownback's Human-Animal Hybrid Prohibition Act of 2009 (discussed in Chapter Six). What are some problems with the language of the act and what does that reveal about public perceptions of science?

6. The question of who owns discoveries and inventions in the biosciences is discussed at the end of Chapter Four. A Supreme Court decision in *Diamond v. Chakrabarty* (1980) has made it possible for individuals to patent human genes, yet this has been challenged in the recent *Association for Medical Pathology v. Myriad Genetics* case. Why is it difficult to establish property in biology? What sorts of biopolitical issues arise from the ownership of genes and other biological materials?

Suggestions for Further Reading

Jonathan D. Moreno and Sam Berger, *Progress in Bioethics* (MIT, 2012).

Jonathan D. Moreno and Rick Weiss, *Science Next* (Bellevue Literary Press, 2009).

Sheila Jasinoff, *Designs on Nature* (Princeton University Press, 2007).

Chris Mooney, *The Republican War on Science* (Basic Books, 2006).

Shawn Otto, *Fool Me Twice: Fighting the Assault on Science in America* (Rodale 2011).

Allen Buchanan, *Beyond Humanity: The Ethics of Biomedical Enhancement* (Oxford 2011).

Yuval Levin, *Imagining the Future* (New Atlantis, 2008).

Being Human: Readings from the President's Council on Bioethics (W.W Norton, 2003).