

*History 191 I*

*Philosophy 191*

**Winter, 2008**

**Genetics and Society: Historical and Philosophical Perspectives**

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***Course description:***

The ethical, legal and social implications of what is often called the 'new genetics' are widely discussed. In this seminar we want to broaden discussions regarding the relations of genetics and society, firstly, by adopting a historical perspective and, secondly, by reflecting on the very distinction between society and genetics and the ways this distinction has been conceptualized and used. Building on current approaches in the history of science and technology we will aim at understanding the degree to which the science of genetics itself is deeply social. We will study how biologists and anthropologists have conceptualized the relations of genes and (social) environment. We will then read works in philosophy that present accounts of human nature, human flourishing and dignity that seem to privilege "nature" as something that can guide ethical thought and action. We will ask whether these accounts would encourage or discourage us from manipulating our genetic inheritance. More generally, we will consider what is new in the 'new genetics' in order to gain a deeper understanding of current discussions of the promises and perils of genetics in their relation to society.

## ***Course Requirements:***

### Prerequisites

While there are no formal prerequisites for the course, we do expect students to have a grasp of basic concepts in genetics. High school level genetics is sufficient. For a very basic overview, see Pilnick, *Genetics and Society: An Introduction*, “A Very Brief Introduction to Genetics,” pp. 7-16. If you feel you need to brush up in a more serious way, we have put *Human Genetics: Concepts and Applications* by Ricki Lewis on reserve in the College library.

### Participation

This course is a seminar, meeting for 3 hours once a week. As such, its success depends on the quality of the discussion and interaction among the participants. This in turn depends on your doing the reading—and doing it carefully—before class.

### Presentations

Each week, students will give presentations and guide a substantial portion of the discussion. In some cases, pairs of students will do these presentations. Presenters will guide us through the reading, and they will assist us in analyzing, interpreting, and framing questions about the texts.

### Written Assignments:

Students will submit one-page reading-response papers weekly.

The final paper will be 10 to 12 pages (3000-3600; within 10% on either side is acceptable). It will be submitted at the end of 10<sup>th</sup> week. Topics will be approved by the instructors in week six.

### Readings:

Readings that are accessible electronically will be available either as pdf files or via links to relevant websites through the course website. Book chapters will be copied and available through the Center for Society and Genetics office for the price of the copying.

## Grading:

<u>Participation:</u>	30%
<u>Presentation:</u>	20%
<u>One-page reading responses:</u>	20%
<u>Final paper:</u>	30%

## ***Weekly Reading Assignments:***

### **January 8- Course introduction**

In the first session we will review different ways in which the relation of genetics and society has been discussed. We will look especially at how the relationship has been conceptualized in the ELSI program that accompanies government-funded genomic research in the US and will consider alternative ways of approaching and understanding the issues involved.

### ***Readings:***

- Francis Collins, et al: 2003, "A Vision for the Future of Genomics Research," *Nature* 422.
- Robert Dingwall: 2002, "Bioethics," Alison Pilnick, *Genetics and Society: An Introduction* (Buckingham: Open University, 2002), chapter 9.
- Selected European and UN documents enunciating ethical principles for genomics. See:  
[http://portal.unesco.org/en/ev.php-URL\\_ID=13177&URL\\_DO=DO\\_PRINTPAGE&URL\\_SECTION=201.html](http://portal.unesco.org/en/ev.php-URL_ID=13177&URL_DO=DO_PRINTPAGE&URL_SECTION=201.html),  
<http://www.ruhr-uni-bochum.de/zme/Barcelona.htm>.
- Adam Schulman: 2005, "Bioethics and Human Dignity," President's Council on Bioethics Staff Working Paper – available online at [http://bioethics.gov/background/human\\_dignity.html](http://bioethics.gov/background/human_dignity.html).

### **January 15- The making of genetics**

In this and the next session we will reflect on the meaning of the term 'genetics'. Similar to the term 'biology' it is used to denote both a body of scientific knowledge and a set of (natural) phenomena. Part of the reason for this conflation is a naturalistic understanding of genetic knowledge. To counterbalance this view we will look at the disciplinary history of genetics and study how both the formation of the

science and its practice are deeply social. We will start by placing the history of genetics into the broader context of hereditary practices and investigate how the naturalization of heredity in the late 19th century opened the way for the formation of genetics as a separate discipline. We will look at the introduction of genetic knowledge in various domains and will discuss how genetics has become an overriding concern of 20th-century Western societies.

**Readings:**

- Staffan Mueller-Wille and Hans-Joerg Rheinberger, “Heredity - the formation of an epistemic space,” in Staffan Mueller-Wille and Hans-Joerg Rheinberger (eds), *Heredity Produced: At the Crossroads of Biology, Politics, and Culture, 1500-1870* (Cambridge, MA: MIT Press, 2007), pp. 3-34.
- Peter J. Bowler, *The Mendelian Revolution: The Emergence of Hereditary Concepts in Modern Science and Society* (Baltimore: Johns Hopkins University Press, 1989), chapter 1, pp. 1-12.
- Jan Sapp, “The struggle for authority in the field of heredity, 1900-1932: new perspectives on the rise of genetics,” *Journal of the History of Biology* 16 (1983), 311-342.

**January 22-Geneticists at work**

Continuing the discussion of the previous session we will look at historical works that reconstruct how genetic knowledge is produced in the laboratory making use of technical and linguistic tools that are deeply embedded in broader cultural practices and are reflected in the moral economy of the science. According to this view genetics (as scientific knowledge more generally) and society are co-produced or deeply intertwined from the beginning.

**Readings:**

- Robert Kohler, *Lords of the Fly: Drosophila Genetics and the Experimental Life* (Chicago: Chicago University Press, 1994), introduction and chapters 3 and chapter 5.
- Lily Kay, “A Book of Life? How the Genome Became an Information System and DNA a Language,” *Perspectives in Biology and Medicine*, 41 (1998), 504-528.

**January 29-Philosophical concepts of human nature, individual flourishing and society I**

In the next two sessions, we read the work of philosophers whose understandings of human nature, individual flourishing and society underpin elements of current bioethical discourse while at the same time challenging or expanding contemporary debates. We read selections from Aristotle’s *Politics* and *Ethics* to consider his central claim that things (including humans and cities) have a nature, and that this is crucial to ethics and politics. We will then explore the implications of Aristotle’s blurring the boundary

that moderns would draw between nature and society. Aristotle claims that humans are “by nature” political animals, suggesting that for him, there can be no neat division between the natural and social aspects of human life and experience. He further develops an account of human happiness or flourishing—the attainment of which is the proper end of the city—based on his conception of the human function and virtue, an account that insists on the importance of both nature and nurture.

**Readings:**

- Aristotle, *The Politics*, Book I in *The Basic Works of Aristotle*, (McKeon, transl.) New York: Random House, pp. 1127-1146.
- Aristotle, *Nicomachean Ethics*, Book I chaps 1-7, 13 and Book II chaps 1-6 in *The Basic Works of Aristotle*, (McKeon, transl.) New York: Random House, pp. 935-964.

**February 5-Philosophical concepts of human nature, individual flourishing and society II**

Rousseau and Marx, like Aristotle, defend the view that specific social arrangements promote (or distort) the full expression of human nature, which itself can’t be fully understood apart from its social context. And yet, like Aristotle, their view of what counts as “nature” is complex and ambiguous.

Rousseau paints a dark portrait of modernity dominated by social inequality, alienation and radical dependency. The power of this portrait depends for its force on contrasting this condition with an earlier “natural” (and in important respects more attractive) alternative. Nonetheless, Rousseau does not advocate a “return to nature.” Instead, he seems to want to persuade us that freedom is our true nature, a claim that can then motivate us to try to achieve what he thinks is both an appealing and recognizably human existence.

Marx’s early writings develop another account of alienation, one that, like Rousseau’s, treats the institution of private property as central to the problem. Marx also offers an account of our human essence (“species-being”) that points the way out of alienation to a condition that promotes human flourishing and dignity through specific social arrangements.

**Readings:**

- Jean-Jacques Rousseau, “Discourse on Inequality” in *The Basic Political Writings* (Indianapolis and Cambridge: Hackett Publishing).
- Karl Marx, selections from “1844 Manuscripts” (Alienated Labor; Private Property and Communism) and from “The German Ideology,” in *Karl Marx: Selected Writings*, L. H. Simon (ed), (Indianapolis and Cambridge: Hackett Publishing, 1994).

## February 12-The human genome as inherently social

Various people have argued that post-genomic science is moving beyond the distinction of ‘nature’ and ‘culture’ by placing the interactions of genomes and environments (including human cultural environments) at the very heart of their investigations. One key example that is often cited in this connection is the high lactose digestion capacity in adults of populations that for millennia have lived on livestock in contrast to other populations with different diets. Some biological anthropologists have moved one step further arguing that our cultural choices are hard-wired in the evolution of our brains. Genetic evidence is also increasingly used by anthropologists, historians and linguists to reconstruct aspects of human history. We will look at a range of these investigations, paying particular attention to the notions of ‘nature’ and ‘culture’ that are used.

### *Readings:*

- Richard C. Lewontin, *Biology as Ideology: the Doctrine of DNA* (HarperCollins 1992); chapter on ‘Science as social action’, pp. 105-123.
- Eva Jablonka and Marion J. Lamb, *Evolution in Four Dimensions* (MIT Press, 2006) pp. 292-298
- Peter J. Richerson and Robert Boyd, *Not by Genes Alone: How Culture Transformed Human Evolution* (Oxford: Oxford University Press, 2006); chapter 1.
- Jonathan Marks, “98% chimpanzee and 35% daffodil: the human genome in evolutionary and cultural context” and Frederika A. Kaestle, “The good, the bad, and the ugly: promise and problems of ancient DNA for anthropology”, both in: Alan H. Goodman, Deborah Health and M. Susan Lindee, *Genetic Nature/ Culture: Anthropology and Science beyond the Two-Culture Divide*, Berkeley and Los Angeles: University of California Press, 2003, pp. 132-152 and 278-296.

## February 19-Eugenicists’ views on genetics and society

With the eugenic movement of the early twentieth century hereditary ideas entered the political and legal arena. Many countries passed eugenic legislations aimed at ‘improving’ the ‘stock’ of their populations and many prominent geneticists supported initiatives in these directions. In this session we will look at the views about genetics and society inherent in these policies and in the critical arguments that, from different quarters and at different times, were leveled against eugenic policies.

### *Readings:*

- Diane B. Paul, *Controlling Human Heredity 1865 to the Present* (New Jersey: Humanities Press, 1995) esp. chapters 3 and 4.
- Francis Crew et al., “Social biology and population improvement [‘The Geneticists’ Manifesto’],” *Nature* 144 (1939), 521-522.
- Diane B. Paul, “Eugenics and the Left,” in *The Politics of Human Heredity: Essays on Eugenics, Biomedicine, and the Nature/Nurture Debate* (Albany: State of New York Press, 1998), pp. 11-35.

## February 26-Eugenics by the backdoor?

Modern genetic and reproductive technologies have in the view of some people led to a resurgence of eugenic practices, even if they present themselves in new guises. Scientists working on the human genome project have taken explicit position against this view distancing themselves from eugenic practices of the past. We will consider the various positions in these debates, studying in particular how new genetic and reproductive practices might make use or, inadvertently, reintroduce concepts of population, race and worthwhile life as well as contributing more generally to the ‘naturalization’ and ‘geneticization’ of human nature.

### Readings:

- Diane B. Paul, *Controlling Human Heredity 1865 to the Present*, New Jersey: Humanities Press, 1995, chapter 7.
- D. Koshland, “Sequences and consequences of the human genome,” [editorial] *Science* 246 (1989), 189.
- S. E. Luria, “Human genome program,” [letter] *Science* 246 (1989), 873.
- James D. Watson, *A Passion for DNA: Genes, Genomes, and Society* (Oxford: Oxford University Press, 2000), pp. 179-208.
- Evelyn Fox Keller, “Nature, nurture, and the human genome project,” in D. J. Kevles, *The Code of Codes. Scientific and Social Issues in the Human Genome Project* (Cambridge, MA: Harvard University Press, 1992), pp. 281-199.
- Troy Duster, “Race and Reification in Science,” *Science* 307 (2005) 1050-1051.

## March 5-Viewing and Discussion of *Gattaca*;

### Guest speaker, Olivia Banner, UCLA Department of English

- Troy Duster, “[Buried alive: the concept of race in science](#),” in: Alan H. Goodman, Deborah Health and M. Susan Lindee, *Genetic Nature/ Culture: Anthropology and Science Beyond the Two-Culture Divide*, Berkeley and Los Angeles: University of California Press, 2003, pp. 258-277.

## March 12-Contemporary Debates about the Genomic Future

Contemporary bioethicists either embrace or deplore the prospects of a “posthuman future,” some claiming that genetic selection or enhancement of offspring violate human nature and dignity and undermine the basis of autonomy, equality and political community, while others claim that such selection or enhancement is a desirable and appropriate way for parents to choose the “best children.” We will look at recent texts on both sides of this issue in the context of the film and previous course readings.

### *Readings:*

- Julian Savulescu: 2001, “[Procreative Beneficence: Why We Should Select the Best Children](#),” *Bioethics* 15: 5.
- Francis Fukuyama, [Our Posthuman Future](#), (New York: Picador, 2002) Chapters 8 and 9.
- Alison Pilnick, [Genetics and Society: An Introduction](#) (Buckingham: Open University, 2002), chapter 10.