

Darwinism and philosophy of biology – syllabus
Philosophy 4491/5580, Spring 2008
Wednesdays 2.30-5.00, Lucas 325



Instructor: Robert Northcott

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Office hour: after class, or by appointment

Course textbook (required)

Philosophy of Biology, by Elliott Sober (Westview Press, 2000)

Course introduction, objectives

Are we prisoners of our genes? Does evolution provide the key to understanding ourselves? How can we test its ideas? A proper understanding of Darwinism is essential to answering any of these questions. After getting straight on the basics, we shall be taking a critical look at a whole range of fascinating philosophical and scientific issues and their bearing on each other. For instance:

- Weighing the influences of nature and nurture
- Where does morality come from?
- The design argument for the existence of God
- Evolution and human history
- What is the evolutionary role of female orgasm?
- How different are humans from chimpanzees?

By the end of the course, you should have a good introductory knowledge of the philosophical issues surrounding evolutionary biology, and of what philosophy can say about them.

Course outline

Jan 16 1) Introduction

Basics

Jan 23 2) Common ancestry, natural selection, DNA

Jan 30 3) Evidence for evolution, the example of viruses

Feb 6 4) The design argument

Adaptationism

Feb 13 5) What is adaptationism, and how can we test it?

(Feb 20 – no class)

Feb 27 6) The example of female orgasm

Mar 5 7) Evolutionary psychology

Evolution and morality

Mar 12 8) Altruism

Mar 19 9) Human moral sentiments

(Mar 26 – Spring Break)

Apr 2 10) The fact-value distinction

Apr 9 Exam

General topics

Apr 16 11) Nature versus nurture

Apr 23 12) Evolution in human history

Apr 30 13) Humans versus chimpanzees: how smart are they really?

Grading

There will be set readings for each week, as listed below. You are required to read these... At the end of each class I will hand out primers for the following week's reading, plus a few multiple-choice quiz questions on them. You will be required to email me the answers by 12.30 the day of class the following week. The questions will be easy enough – but only if you have actually done the reading. Basically, the quizzes are thus intended to force you to do just that. By doing so, you will get much more out of the course.

Although the readings are picked to be neither unduly long nor technical, nonetheless often the ideas involved may be intricate or unfamiliar. Class will be more interesting for all of us if everyone has some familiarity in advance with what we are talking about.

Overall, class participation will account for 25% of the total grade. Note: performance on the weekly quizzes will form a large part of the class participation score.

One aim of the senior seminar is to help you perfect your writing skills. To this end, three times during the course I will hand out a short mini-essay assignment. This will consist of asking you to express, in your own words, a particular argument from the readings. I will select exactly which argument. The length allowed will be a strict maximum of either one or two pages, depending on the assignment (12-point Times New Roman, double-spaced). The goal will be for you to learn to structure your writing super-clearly, and to avoid all inaccuracies, misunderstandings, digressions, imprecisions and

vagueness. This is easier said than done, but practice and feedback certainly help. These mini-essays will account for 25% of the total grade.

A third element of the grading will be a written in-class exam, approximately three-quarters of the way through the course. I'll give you more details about this nearer the time. The exam will account for 25% of the total grade.

Finally, at the end of the course you will also be required to write a paper, which will account for the remaining 25% of the total grade. This should be between 2500 and 3000 words long (i.e. roughly 10-12 pages double-spaced). The paper must be on material from the course. *You must consult with me beforehand to check that your topic is suitable.* I will tell you exact arrangements and deadline dates nearer the time.

Generally, you'll need to give me a pretty good reason to miss the deadline for the final paper, or for any of the three mini-essays, or for any of the weekly reading quizzes, or to miss the exam. However, of course unfortunate circumstances do arise occasionally. The golden rule in those cases is, if possible, to contact me about it in advance. It's much easier sorting things out ahead of time.

Schedule of readings for each week

Jan 23) Common ancestry, natural selection, DNA

- Sober, section 1.3 (pp7-14)
- Dawkins, *The Selfish Gene* (pp13, 22-7, 36-9)

Primer on the basic structure of Darwinian theory: the ideas of common ancestry, mutable species, and the mechanism of natural selection. We will discuss the factors intimately involved in natural selection: variation, fitness, inheritance, etc. We'll also get up to speed on some necessary basics about DNA, sexual reproduction, and in what sense genes build organisms.

Jan 30) Evidence for evolution, the example of viruses

- Jones, *Darwin's Ghost* (pp 2-15)
- Jones, *Language of the Genes* (pp174-81)

Evolution in action: the first Jones reading uses the evolution of HIV as an illustration of basic Darwinian themes. The second does the same with malaria. We shall also cover the range of evidence for evolution. This class is also an opportunity to raise any other questions you have regarding evolutionary theory. E.g. is there 'progress' in evolution? Is 'survival of the fittest' merely a tautology? What is the role of chance in evolution? How did life begin?

Feb 6) The design argument

- Sober, sections 2.2 and 2.4-2.8 except for the start of 2.7 (pp30-33, 36-46, 50-7). I.e. all of chapter 2 *except*: sections 2.1, 2.3 and pp46-50 of section 2.7.

Is the often exquisite design of living things an argument in favor of an intelligent designer, e.g. God? Would it be a good argument even in the absence of evolution? Do similar arguments apply to the 'anthropic principle'? The issue is well suited to philosophy, since close analysis of the logic of these arguments is crucial.

Feb 13) What is adaptationism, and how can we test it?

-- Sober, sections 5.1-5.5 (pp121-38)

Is every trait in living organisms an optimal adaptation? Can every trait always be explained by reference to some evolutionary story or other? Must they be? Or is it all too easy to dream up fanciful 'just-so' stories? What are the alternatives to such adaptationism? We'll be tackling this controversial and important debate, and uncovering its nuances. We'll also be focusing on the vital issue of how best to *test* adaptationist hypotheses.

Feb 27) The example of female orgasm

-- extract from introduction to Lloyd, *The Case of the Female Orgasm*

-- edited extracts from Elisabeth Lloyd's website

<http://mypage.iu.edu/%7Eealloyd/Reviews.html#HowCanYouKnowThat>

Here's an application of the ideas from the preceding class – is human female orgasm an adaptation? How could we tell? We'll examine the significance of existing sexological research, such as heritability scores derived from twin studies. As well as being a good case study, you also learn plenty of interesting facts along the way...

Mar 5) Evolutionary psychology

-- Buss, *The Evolution of Happiness*

The burgeoning but controversial program of understanding the human mind as a collection of evolutionary adaptations. Its picture of human psychology is of a 'Stone Age mind in a modern skull'. The emphasis is on explaining human behavior through biology rather than culture. Buss is a very readable example of this. Again, we'll also be keeping in mind the issue of how the relevant hypotheses might be tested. In addition, this will be a chance to get straight on human prehistory (in so far as it is known).

Mar 12) Altruism

-- Dawkins, *The Selfish Gene* (pp125-31, 171-9)

Altruistic behavior is frequently observed in nature, but underneath it all are we still seeing just the action of 'selfish genes'? Dawkins explains how family life can indeed be seen in this way and then outlines a great triumph for selfish gene theory, namely the fascinating story of social insects such as ants and bees. We'll also think about possible alternative explanations of altruistic behavior.

Mar 19) Human moral sentiments

-- Ridley, *The Origins of Virtue* (pp132-47)

-- optional: Dawkins, *The Selfish Gene*, chapter 12 (pp202-33)

Where does our moral sense come from? There are plenty of intriguing adaptationist models of this too, and of co-operation more generally. Ridley outlines one of the main ones. In these theories, human moral sentiments are seen merely as evolved mechanisms for navigating complex social interactions. The Dawkins chapter is a non-technical primer on some relevant evolutionary game theory.

Apr 2) The fact-value distinction

- a short handout from me
- Sober, section 7.4 (pp206-13)

What are the possible implications – if any – of evolutionary theory for our understanding of ethics? Should moral philosophy be transformed? Classic philosophical notions rear their heads here, such as the fact-value distinction and the ‘naturalistic fallacy’.

Apr 16) Nature versus nurture

- Dawkins, *The Selfish Gene* (pp51-5)
- Sober, section 7.1 (pp189-98)
- Jones, *Language of the Genes* (pp182-9)

Are we prisoners of our genes? What does it mean to say that something is caused by genes or by environment? Can nature and nurture ever be disentangled? What does it mean if somebody discovers a ‘gene for’ something? These three readings help navigate an area that’s widely misunderstood.

Apr 23) Evolution in human history

- Diamond, summary of *Guns, Germs and Steel*
http://www.edge.org/3rd_culture/diamond/diamond_p2.html
- Jones, *Language of the Genes* (pp169-74)
- ‘Noble or savage?’, *The Economist* 22 Dec 2007, pp129-131

Biological factors have been rather more significant even in human history than you might think. For example, why was it that Europeans colonized the rest of the world rather than the other way round? Diamond’s book is the essential reading here. Jones gives a quick primer on the history of human disease, as revealed by genetic evidence. The *Economist* piece gives some further background on human prehistory.

Apr 30) Humans versus chimpanzees: how smart are they really?

- Daniel Gilbert (2006), *Stumbling on Happiness*, Harper Collins, pp3-15
- Daniel Povinelli (2004), ‘Of apes and men’, *Daedalus* winter 2004, pp29-41

Gilbert focuses on one important aspect of psychology that seems to be uniquely human. Povinelli examines in detail a related aspect of the behavior of chimpanzees, which sheds an interesting light on how similar (or not) to us they actually are.