

**David Papineau**  
**Philosophy of Biology**

This course will look at a range of topics in the philosophy of biology. No great prior expertise in biology will be assumed, but students who have little acquaintance with the subject would do well to read an introduction to evolutionary biology: Richard Dawkins' The Blind Watchmaker would serve, as would John Maynard Smith's The Theory of Evolution (1993 edition) or Mark Ridley's Evolution.

The course will not follow a textbook as such, but if you get one book the best is Sterelny and Griffiths' Sex and Death. Alternatives are Rosenberg and McShea's Philosophy of Biology and Sober's Philosophy of Biology. Two excellent but advanced recent books are Okasha's Evolution and the Levels of Selection and Godfrey-Smith's Darwinian Populations.

The course will cover the following topics. Reading is indicated below.

**1 Natural Selection and Adaptationism**

Sterelny and Griffiths' Sex and Death ch 2

Dawkins The Blind Watchmaker chs. 1-6

Dennett Darwin's Dangerous Idea pp 39-52

Godfrey-Smith Darwinian Populations ch 2

Gould and Lewontin 'The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme' Proc Roy Soc 1979 [link](#)

Godfrey-Smith 'Three Kinds of Adaptationism' in Orzack and Sober (eds) Adaptationism and Optimality CUP 2001

Essay Suggestions

What conditions are required for evolution by natural selection?

'Natural selection ensures that all traits are optimally designed.' Discuss.

**2 Teleology and Biological Functions**

Allen 'Teleological Notions in Biology' Stanford Encyclopedia of Philosophy [link](#)

Wright 'Functions' Phil Review 1973

Cummins 'Functional Analysis' J Phil 1975

Bigelow and Pargetter 'Functions' J Phil 1987

Godfrey-Smith 'Functions: consensus without unity' Pacific Philosophical Quarterly 1993, reprinted in Hull and Ruse (eds) Philosophy of Biology [link](#)

Millikan, 'In Defense of Proper Functions' Philosophy of Science 1989

Essay Suggestions

When, if at all, can we explain some item by citing an effect it produces?

'Different notions of function are needed for different theoretical purposes.' Discuss.

**3 Altruism**

Okasha 'Biological Altruism' Stanford Encyclopedia of Philosophy [link](#)

Dawkins The Selfish Gene

Sober 'What is Evolutionary Altruism?' Canadian Journal of Philosophy 1988, reprinted in Hull and Ruse (eds) Philosophy of Biology

Sober and Wilson Unto Others: The Evolution and Psychology of Unselfish Behavior

### Essay Suggestions

What is the definition of biological altruism? How might it be explained within a Darwinian perspective?

Explain how kin selection works.

## **4 The Gene's-Eye View**

Dawkins The Selfish Gene

Dawkins The Extended Phenotype ch 1 and chs 5-6

Sterelny and Griffiths' Sex and Death chs 3 and 4

Godfrey-Smith Darwinian Populations ch 7

Okasha Evolution and the Levels of Selection ch 5 [link](#)

### Essay Suggestions

What is the gene's-eye perspective? Does it help us to understand biological evolution?

'Dawkins conflates competition between strands of DNA and competition between genetically typed biological individuals.' Discuss.

## **5 Levels of Selection**

Lloyd 'Units and Levels of Selection' Stanford Encyclopedia of Philosophy [link](#)

Okasha Evolution and the Levels of Selection OUP 2006

Griffiths and Sterelny Sex and Death ch 8

Sterelny 'The Return of the Group' Philosophy of Science 1996 63 (4): 562–584

### Essay Suggestions

What is group selection?

Is group selection a significant force in biological evolution?

## **6 Non-Genetic Inheritance**

Lamm 'Inheritance Systems' Stanford Encyclopedia of Philosophy [link](#)

Griffiths and Sterelny Sex and Death ch 5

Griffiths and Gray 'Developmental systems and evolutionary explanation' Journal of Philosophy 1994 91, 277–304

Avital and Jablonka 2000 Animal traditions: Behavioural inheritance in evolution

Mameli 'Nongenetic Selection and Nongenetic Inheritance' Brit Jour Phil Sci 2004 55, 1, p. 35 - 71

Shea, Pen and Uller 'Three epigenetic information channels and their different roles in evolution' Journal of Evolutionary Biology 2011 24: 1178–1187

### Essay Suggestions

'As Waismann realized, parental phenotypes cannot affect offspring genotypes. So natural selection can only operate on genotypes.' Discuss.

Is the selection of non-genetic traits a significant force in biological evolution?

## **7 Innateness, Genetic Determinism, and Heritability**

Griffiths 'The Distinction Between Innate and Acquired Characteristics' Stanford Encyclopedia of Philosophy [link](#)

Samuels 'Nativism in Cognitive Science' Mind and Language 2006 17(3): 233–265

Mameli and Bateson 'Innateness and the sciences' Biology and Philosophy 22(2): 155–188  
Mameli and Papineau Article review of Gary Marcus's 'The Birth of the Mind' Biology and Philosophy 2006 [link](#)  
Mameli 'On Innateness: The Clutter Hypothesis and the Cluster Hypothesis' Journal of Philosophy 2008 105(12):719-736

#### Essay Suggestions

Can any good sense be given to the notion of an innate biological trait?  
'The notion of innateness does far more harm than good.' Discuss.

### **8 Genetic Information**

Godfrey-Smith and Sterelny 'Biological Information' Stanford Encyclopedia of Philosophy [link](#)  
Maynard Smith 'The Concept of Information in Biology' Philosophy of Science 2000 [link](#)  
Sterelny, 'The 'Genetic Program' Program: a commentary on Maynard Smith' Philosophy of Science 2000 [link](#)  
Godfrey-Smith, 'Information, Arbitrariness and Selection: comments on Maynard Smith' Philosophy of Science 2000 [link](#)  
Shea 'Representation in the Genome, and Other Inheritance Systems' Biology and Philosophy 2007 22: 313-331  
Hofstadter 'The Genetic Code: Arbitrary?' in his Metamagical Themas

#### Essay Suggestions

If the genetic code represents, what does it represent?  
Can the notion of genetic information be understood in teleosemantic terms?

### **9 The Baldwin Effect**

Bateson 'The Active Role of Behaviour in Evolution' Biology and Philosophy 19  
Papineau 'Social Learning and the Baldwin Effect' in Zilhao (ed) Rationality and Evolution <http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/OnlinePapers/SocLearnBald.htm>  
Papineau 'The Cultural Origins of Cognitive Adaptations' in O'Hear (ed) Biology, Evolution and Culture <http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/OnlinePapers/CultOrCogAdptns.htm>  
Godfrey-Smith 'Between Baldwin Skepticism & Baldwin Boosterism' in Weber & Depew (eds) Evolution & Learning  
Dennett 'The Baldwin Effect: A Crane Not a Skyhook' in Weber & Depew op cit  
There is a short review of the Weber/Depew book here <http://human-nature.com/ep/downloads/ep02105107.pdf>  
Watkins 'A Note on the Baldwin Effect' BJPS 50:417-423

#### Essay Suggestions

What is the Baldwin Effect and is it consistent with biological theory?  
Is the Baldwin Effect a significant force in biological evolution?

### **10 Sociobiology and Evolutionary Psychology**

Sterelny and Griffiths Sex and Death ch 13  
Mameli 'Evolution and Psychology in Philosophical Perspective' Handbook of Evolutionary Psychology Dunbar and Barrett (eds) [http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/CourseMats7-8/MAMELI\\_EVOPSYCHO\\_2007.pdf](http://www.kcl.ac.uk/ip/davidpapineau/Staff/Papineau/CourseMats7-8/MAMELI_EVOPSYCHO_2007.pdf)

Wilson Sociobiology especially final chapter.

Kitcher Vaulting Ambition

Dennett Darwin's Dangerous Idea pp 481-92.

Downes 'Evolutionary Psychology' Stanford Encyclopedia of Philosophy [link](#)

Barkow, Cosmides, Tooby (eds) The Adapted Mind Editor's Introduction [link](#)

#### Essay Suggestions

What are the main differences between 'sociobiology' and 'evolutionary psychology'?

What if anything is wrong with evolutionary psychology?