

Reading Darwin in the 21st century

Fall, 2017

1 Course Description

The seminar is dedicated to a close and critical reading of the major texts by Charles Darwin, and focuses on recent work concerning his seminal publications. We will deal both with the scientific aspects of the texts, and how the concepts Darwin introduced have changed and evolved since, and on Darwin the writer, his style, his choice of metaphor, his influence on literature and so on.

2 Prerequisites

None required. Prior exposure to evolutionary theory is a plus.

3 Course outline

3.1 Introduction

- Darwin, Autobiography

3.2 Variation Under Domestication

- Darwin, The Origin, Introduction, Chapter I [WEB]
- Mark W. Kirschner and John C. Gerhardt, The Plausibility of Life, Chapters II+VII.

3.3 Mutual Affinities of Organic Beings

- Darwin, The Origin, Chapter XIII (focus on 'Morphology' and 'Embryology') [WEB]

- Sean Carroll, *Endless Forms Most Beautiful*, pp. 37-79

3.4 Development, continued

- Sean Carroll, *Endless Forms Most Beautiful*, pp. 197-219; 221-247
- Amy Litt, “Origins of Floral Diversity,” *Natural History* June 2006, pp. 34-40
- Neil H. Shubin, “This Old Body,” *Scientific American*, January 2009, pp. 50-53

3.5 Struggle for Existence

- Darwin, *The Origin*, Chapter III [WEB]
- Robert McIntosh, “Competition: Historical Perspectives,” in Fox-Keller and Lloyd, *Keywords*, pp. 61-67

3.6 Natural Selection

- Darwin, *The Origin*, Chapter IV [WEB]
- Nathalie Gontier, “Darwin’s Legacy,” *Theory of Bioscience* 129, 2010, pp. 77-87
- John Endler, *Natural Selection in the Wild*, pp. 3-26
- H. Allen Orr, “Testing Natural Selection,” *Scientific American*, January 2009, pp. 30-36

3.7 Adaptation

- Gould & Lewontin (1979), *The Spandrels of San Marco*
- Lewens (2007), discussion of Intelligent Design
- Plutynski (2008), *Adaptive Landscape*

Maybe:

- Burian, R., “Adaptation: Historical Perspectives,” in Fox-Keller and Lloyd, *Keywords*, pp. 7-12

- West-Eberhard, M.J., “Adaptation: Current Usages,” in *Keywords*, pp. 13-18
- Pigliucci, M., and Kaplan, J., “The Fall and Rise of Dr. Pangloss: Adaptationism and the Spandrels Paper Twenty Years Later,” *Tree* 15 (2000), pp. 67-70 (e-mail)
- H. Allen Orr, “The Genetic Theory of Adaptation: A Brief History”, *Nature Reviews Genetics* 6 (2), 2005, pp. 119-127
- Andrea Gawrylewski, “Does Adaption to an Environment Act as a Speed Bump for Evolutionary Change?”, *The Scientist*, January 2009, 26-31 [WEB]

3.8 Sexual Selection

- Darwin, *The Descent of Man*, Chapter 8, (“Principles of Sexual Selection”) [WEB]-
- Roughgarden, *The Genial Gene: Deconstructing section*.

3.9 Pangenesis (heredity)

- Darwin, variation under domestication, chp. XXVII (vol. 2)
- Richards (2009), *Darwin on Mind*. In: *Cambridge Companion Darwin*.

3.10 Human origin

- Darwin. *The Descent of Man*, Chapters 6 and 7 (“On the Affinities and Genealogy of Man”, “On the Races of Man”). Also: chap. 2 & 3 & 19 (second volume) - not mandatory.

3.11 Sociobiology

- From Losos & Lenski.

3.12 Cultural Evolution

- Darwin
- Henrich, *The Secrete of Our Success*
- Mesoudi (2001), *Cultural Evolution*, chp. 2.

3.13 Convergent evolution

- McGhee, Convergent Evolution
- Gould/Conway-Morris Debate
- (possible): Convergent evolution and cognition (Proc Roy Soc issue)

3.14 Darwin the writer

3.14.1 *The Origin*

- Sober, Did Darwin write the Origin backward?
- Reply by Lewens

3.14.2 Darwin the writer

- Gillian Beer
- George Levine

3.15 Summing up

4 Recommended texts

I particularly recommend the following, for background reading:

- Tim Lewens (2007), *Darwin*. Routledge.
- Jonathan Hodge & Gregory Radick (2003), *The Cambridge Companion to Darwin*. CUP.
- Michael Ruse & Robert Richards (2009), *The Cambridge Companion to The Origin of Species*. CUP.

Other useful readings:

1. Charles Darwin, *The Voyage of the Beagle* (1845); *The Origin of Species* (1859); *Plants and Animals Under Domestication* (1868); *The Descent of Man* (1871); *The Expression of Emotions in Man and Animals* (1872); *Autobiography* (1878)
2. Adrian Desmond and James Moore, *Darwin's Sacred Cause* (Houghton Mifflin Harcourt, 2009)

3. Kim Sterelny and Paul E. Griffiths, *Sex and Death: An Introduction to the Philosophy of Biology* (Chicago, 1999)
4. Steve Jones, *Almost Like a Whale* (Anchor, 2000)
5. Gabriel Dover, *Dear Mr. Darwin: Letters on the Evolution of Life and Human Nature* (University of California Press, 2000)
6. Evelyn Fox-Keller and Elisabeth Lloyd, *Keywords in Evolutionary Biology* (Harvard University Press, 1992)
7. Judith Hooper, *Of Moths and Men* (Norton, 2002)
8. Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution and Inheritance* (Harvard University Press, 1982)
9. John Endler, *Natural Selection in the Wild* (Princeton University Press, 1986)
10. Richard Dawkins, *The Selfish Gene* (Oxford University Press, 1977); *The Greatest Show on Earth: The Evidence for Evolution* (Bantam, 2009)
11. Matt Ridley, *Genome: The Autobiography of a Species in 23 Chapters* (Fourth estate, 1999); *Nature Via Nurture: Genes, Experience and What Makes Us Human* (Harper Collins, 2003)
12. Eva Jablonka and Marion Lamb, *Evolution in Four Dimensions* (MIT Press, 2005)
13. Frans de Waal, *Good Natured: The Origin of Right and Wrong in Humans and Other Animals* (Harvard University Press, 1996); *Our Inner Ape* (Riverhead Books, 2005); *The Age of Empathy* (Three Rivers Press, 2009)
14. Jonathan Weiner, *The Beak of the Finch* (Vintage, 1994)
15. Sean Carroll, *Endless Forms Most Beautiful: The New Science of Evo Devo and the Making of the Animal Kingdom* (Norton, 2005)
16. Sean Carroll, *The Making of the Fittest: DNA and the Ultimate Forensic Record of Evolution* (W.W. Norton, 2006)
17. Marc Kirschner and John Gerhart, *The Plausibility of Life: Resolving Darwin's Dilemma* (Yale University Press, 2005)

18. Sahotra Sarkar, *Molecular Models of Life: Philosophical Papers on Molecular Biology* (MIT Press, 2005)
19. Peter Hammerstein ed., *Genetic and Cultural Evolution of Cooperation* (MIT Press, 2003)
20. Richard Burkhardt, *Patterns of Behavior: Konrad Lorenz, Niko Tinbergen, and the Founding of Ethology* (University of Chicago Press, 2005)
21. Elaine Morgan, *The Descent of Woman* (Souvenir Press, 1985)
22. Sara Blaffer Hrdy, *The Woman That Never Evolved* (Harvard University Press, 1999)
23. Elliott Sober and David Sloan Wilson, *Unto Others: The Evolution and Psychology of Unselfish Behavior* (Harvard, 1998)
24. Oren Harman, *The Price of Altruism: George Price and the Search for the Origins of Kindness* (W.W. Norton, 2010).
25. Jerry Coyne, *Why Evolution Is True* (Viking, 2009)
26. Jan Sapp, *The New Foundations of Evolution: On the Tree of Life* (Oxford, 2009)
27. Massimo Pigliucci and Gerd B. Mller, eds., *Evolution: The Extended Synthesis* (MIT, 2010)
28. "The Evolution of Evolution", Special Issue, *Scientific American*, January 2009
29. Richard Dawkins, *The God Delusion* (Mariner, 2008)
30. Patricia Churchland, *Touching a Nerve: The Self As Brain* (W.W. Norton, 2013)
31. David N. Reznick, *The Origin Then and Now: An Interpretive Guide to the Origin of Species* (Princeton, 2010)
32. Christopher Boehm, *Moral Origins: The Evolution of Virtue, Altruism, and Shame*, (Basic Books, 2012)
33. E.O. Wilson, *The Social Conquest of Earth* (Liveright, 2012)

34. James A. Shapiro, *Evolution: A View from the 21st Century* (FT Press, 2011)
35. Daniel W. McShea and Robert N. Brandon, *Biology's First Law: The Tendency for Diversity and Complexity to Increase in Evolutionary Systems* (Chicago, 2010)
36. Richard C. Francis, *Epigenetics: The Ultimate Mystery of Inheritance* (W.W. Norton, 2010)
37. John van Whye, "Mind the Gap: Did Darwin Avoid Publishing His Theory for Many Years?", *Notes and Records of the Royal Society* 61, 2007, pp. 177-205
38. Rebecca Stott, *Darwin's Ghosts: The Secret History of Evolution* (Spiegel and Grau, 2013)
39. Erika Milam, *Looking for a Few Good Males: Female Choice in Evolutionary Biology* (Johns Hopkins University Press, 2011)
40. Thomas Suddendorf, *The Gap: The Science of What Separates Us from Other Animals* (Basic Books, 2013)

5 Credit

To receive credit for the seminar you must:

- Prepare two referats. At least one of them must be presented in class.
- If you want to write a seminar paper, you need to prepare a proposal and get it approved (see 6), in *addition* to presenting *one* referat in class.

6 Policies

- Communication: If you need to communicate with me, set up a meeting etc. **please use email**. My email is ehud.lamm@gmail.com . **Do not contact me through the moodle messaging system** - I will not get these messages and will not respond. Likewise trying to call me at the office.

- Attendance: to receive credit you must attend at least 2/3 of the meetings of the seminar (i.e., you can miss at most four meetings). Attendance means being present for the entire meeting.
- You are expected to read the reading materials, think about them, and prepare notes/questions for discussion before class. Evidence that you failed to do this will be considered when determining final grades.
- Participation in class discussions will be considered when determining final grades.
- Presentation in class: for your presentation to count toward credit for the seminar, your written referat (based on template on course website) plus whatever presentation you use (powerpoint etc.) must be submitted to EHUD at least **two full days (48 hours)** prior class presentation. It is recommended you discuss your presentation earlier so you can incorporate feedback on your plan. After approved by EHUD, and prior to class, you must upload your presentation materials to the course website.
- Up to four days after your presentation you must submit to EHUD the final version of referat.
- If you wish to write a seminar paper, your topic + outline + initial bibliography must be approved **by the end of the semester**. Seminar papers that were not thus approved will not be checked.
- Coming in late to class or leaving before the meeting ends is rude to students who are presenting and affects their ability to concentrate. Please do your best to minimize this.
- Guests: Non-participating students are not allowed. If you want to sit in class, whether enrolled or not, you **must** do the assigned readings and participate like any students. There are no exceptions to this rule.