

History of Science 343: The Darwinian Revolution

Fall Semester 2011

Monday/Wednesday 2:30-3:45PM—224 Ingraham

Dr. Erik L. Peterson / epeterson6@wisc.edu

Office: Room 207, Bradley Memorial / Office hours: Tues. 1-4:30p plus online

Course Description Once upon a time, a guy came up to me and said, with a scowl on his face, "You're a Darwinian, aren't you?!" I realized I had no idea how to answer his question. Should I be a Darwinian? Should you? What does that question even mean? And once you figure out what it means, how should you go about answering it?

I have two goals for us in this class. The first is that by the end of the course, you will be able to give a good beginning of an answer to the question "**What is/was The Darwinian Revolution?**" My second goal is that you might have an answer for the scowling "**You're a Darwinian, aren't you?!**" These two questions, in fact, will be on your final exam. No, I'm not kidding.

To get at these questions, we will look at the genesis and development of evolution in general, and the theory of Natural Selection in particular, over the last three centuries. Charles Darwin's mid-19th century works will comprise the core of the course, as you might expect. But the course will not begin and end with Darwin or Darwinism. Our discussions may in fact touch on topics such as: the origins of life, reductionism, determinism, teleology, mechanism, fitness, adaptation, species-concepts, units of selection, what does it mean to be a "theory," evolutionary psychology, naturalism, eugenics, creationism, intelligent design, race, class, gender, and ethics.

Texts you will need to purchase (in the order you'll need them)

1. John Dupré, *Darwin's Legacy: What Evolution Means Today*. Oxford Univ. Press, 2003 ISBN 978-0199-284214
2. Peter J. Bowler, *Evolution: the History of an Idea*. 3rd edition. Univ. of California Press, 2003. ISBN 978-0520-236936
3. Philip Appleman, *Darwin, A Norton Critical Edition*. 3rd edition. W.W. Norton, 2001. ISBN 0393-95849-3
4. Charles Darwin, *On the Origin of Species*. Facsimile of the 1st edition, E. Mayr ed. Harvard Univ. Press, 1964/2001. ISBN 0674637526
5. Diane Paul, *Controlling Human Heredity: 1865 to the Present*. Humanity Books, 1995. ISBN 978-1573-923439

[recommended for graduate students only] #Jean Gayon, *Darwinism's Struggle for Survival: Heredity and the Hypothesis of Natural Selection*. Cambridge Univ. Press, 1998. ISBN 978-0521-039673 <--Note that this book is now very expensive, even used. Before shelling out the big bucks, we should talk about alternatives.

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Assessments

All assessments will exist on Google Docs; you MUST have a Google Docs account for this class

Undergrad

- Week 2: "Are you a Darwinian?" 500-1000 word essay (5%)
- Weeks 3, 5, 9, 13, 15: Reading response essays (500 words; 10% each essay= 50% total)
- Week 11: Darwin exam (20%)
- Finals week: Final essays (20%)
- Participation and classroom activities (5%)

Grad

- Three book reviews (500-1000 words)
- Final "exam prep" essay (2500 words)
- Reading everything, participating in classroom discussion, occasionally leading discussions (This is an especially important factor in your overall grade)

You should expect me to

1. Treat you with respect, even if I disagree with you
2. Give you the grade that you work for and earn
3. Listen and be available in person (as much as possible) and remotely
4. Be flexible and work with and around your interests and your other school-related stresses

My expectations of you

1. You will treat me and your other classmates with respect, even if you disagree
2. Work for (not assume or ask for) your grade
3. Do the readings, participate in both mind and body in class [this impacts your use of non-essential devices in class], ask questions when you are confused, and put thought and effort into your writing/responses.
4. Be flexible and work toward understanding my interests and stresses

Extremely important note: I reserve the right to change the course calendar, assignments, etc., as I see fit, usually—but not always—consulting with students ahead of time. If I change something, I will let you know as soon as it is possible and usually via email and/or course website.

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Course Calendar

[e] indicates an electronic source either located through a link, through a web search, or emailed to you, as indicated.
indicates assignment or reading is for graduate students only

Week 1

Wed. 9.7 Intros

Read: Dupré, 12-26 (read right after class)

Week 2

Mon. 9.12 "In the Beginning"

Read: Gould, "Fall in the House of Ussher" [e] and Bowler, ch 2.

Write: "Am I a Darwinian?" essay

W 9.14 Evolution 18th century style

Read: Bowler, ch 3 to pg. 84; Buffon, "On the Ass" (1753) [e]; and Kant, *Critique of Judgment* selection [e]. #Playfair, Illustrations of a Huttonian Theory, 114-131.

Week 3

M 9.19 Cuvier & Geoffroy

Read: Sloan, "Cuvier & Geoffroy debate & selections" [e] and Rudwick, *Cuvier and Fossil Bones*, chs 1-2 [e].

Write: Reading response 1

W 9.21 Lamarck & Chambers

Read: Lamarck, *Zoological Philosophy* in Appleman, 44-49; and Bowler, pg. 84-95, 134-140.

Week 4

M 9.26 Charles Darwin's immediate influences

Read: Erasmus Darwin, *Zoonomia* (1794), section 4, 492-509 [search Google Books]; Malthus in Appleman, 39-40; and Lyell *Principles of Geology* in Appleman, 49-52; Ricardo, "The Iron Law of Wages," [e]; Mayr, "Who is Darwin?" in Appleman, 23-29; and Keynes, "Pterodactyl Pie" [e].

W 9.28 Paley & the Bridgewater Treatises

Read: Paley, *Natural Theology* in Appleman, 41-44; Whewell *Astronomy* in Appleman, 57-61; Brooke, "Darwin and Victorian Christianity" in CCD, 192-202 [e]. #Brougham, "Discourse of Natural Theology," *Edin. Rev.* 64 (1837): 264-300.

#Write: Book review 1#

Week 5

M 10.3 Beagle and Notebooks

Take a look at Darwin's notebooks! Beagle research (skim a couple) and Post-Beagle. Read: Notebook B through pg 62; Notebook M, pp. 57, 61, 72-74, 84, 150-154; AND *Voyage of the Beagle* in Appleman, 67-81. #Sloan, "Making of a Philosophical Naturalist" [e]

Write: Reading response 2

W 10.5 Herbert Spencer & Alfred R. Wallace: "proto-Darwinians?"

Read: Wallace, "On the Tendency of Varieties to Depart..." in Appleman, 61-64 and [recommended] pre-Origin letters between Darwin, Lyell, Wallace, and Hooker 1856-59 in Appleman (1st ed.), pp. 63-70 [e]; Darwin & Wallace, Linnean Society letter (1858) [e]; and Bowler, 173-76; #Millhauser, "In the Air" [e].

Week 6

M 10.10 *The Origin*: opening analogies

Read: *Origin*, chs. 1-2. #Depew & Weber, "Evolution and the Crisis in NeoClassical Biology" [e].

W 10.12 *The Origin*: central mechanisms

Read: *Origin*, chs. 3-4

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M 10.17 *The Origin*: problems, solutions, and poetics

Read: *Origin*, chs. 9, 13, 14

W 10.19 Hooker & Huxley: the first "Darwinians"

Read: Hooker, "Flora Tasmaniae" in Appleman, 276-80; Huxley, "Relations of Man to Lower Animals" in Appleman, 280-85; Huxley, "Review of *Origin of Species*"[e]; and Bowler, 177-96.

Week 8

M 10.24 Scientific reactions to *Origin*

Read: Sedgwick, "Objections" in Appleman, 265-67; Owen, "Darwin" in Appleman, 267-71; Henry Fleeming Jenkin, "Review" in Appleman, 271-75; and Bowler, 196-211. #Hopkins, "Review of *Origin*" (1860)[e]

W 10.26 *The Descent of Man*

Read: *Descent* in Appleman, 175-229.

#Write: Book review 2#

Week 9

M 10.31 *The Descent of Man*

Read: *Descent* in Appleman, 230-54. #Dupré, ch 5

W 11.2 Anthropology, evolution, and the persistent race question

Read: John L. O'Sullivan, "Manifest Destiny" in Appleman, 509-12; and Teddy Roosevelt, "Biological Analogies in History" in Appleman, 512-19; A. R. Wallace, "Origin of Human Races and the Antiquity of Man Deduced From the Theory of 'Natural Selection', 158-70 [e]; and Bowler, 211-23, and 292-307.

Write: Reading response 3

Week 10

M 11.7 Religious reception 1

*Pick from a variety of readings & present.

Also read: Brooke, "Darwin and Victorian Christianity" in CCD, 202-13 [e].

W 11.9 Religious reception 2

*Pick & present

Also read: Dupré, ch 4.

Week 11

M 11.14 EXAM THE BIG DARWIN EXAM (covering weeks 4-10)

W 11.16 The "Eclipse" 1880-1925: neolamarckism

Read: Kellogg, "Other Theories of Species-Forming and Descent" in *Darwinism To-Day*, 262-90 [Google Books]; Cope, *The Primary Factors of Organic Evolution*, 518-28 [Google Books]; and Bowler, ch 7 to p. 250.

Week 12

M 11.21 The "Eclipse" 1895-1925: Bateson & Mendelism

Read: William Bateson, "Evolutionary Faith and Modern Doubts," *Science* 55, no. 1412 (1922): 55-61 [e]; Gillham, "Evolution by Jumps" [e]; and Bowler, ch 7, 250-end.

W 11.23 Eugenics 1

*Pick & present

Also read: Paul, 40-84 [pp. 84-91 on Germany and Scandinavia is interesting, but not required].

#Write: Book review 3#

Week 13

M 11.28 "New" Darwinism 1920-30s

Read: Haldane, *Causes of Evolution*, 46-60; and Bowler, ch 9 to pg 333.

Write: Reading response 4

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W 11.30 Eugenics 2

*Pick & present

Also read: Paul, 91-121 (pp. 121-35 on modern genetic counseling is interesting, but not required).

Week 14

M 12.5 *Scopes*, 1925

Read: Primary sources to be distributed. See photos of trial (links online). Larson, *Summer for the Gods* (selections) [e]

W 12.7 "New" Darwinism 1930-50s

Read: Julian Huxley's 1959 Convocation "Sermon" [e]; and Bowler, ch 9, 333-46. #Smocovitis, "Chicago Symposium 1959" [e].

Week 15

M 12.12 Modern debates 1: Scientific Creationism and/or Intelligent Design

Readings TBD based on class interest

W 12.14 Modern debates 2: Punctuated Equilibrium and/or Evo-Devo

Read: S. Gilbert, J. Opitz, R. Raff, "Resynthesizing evolutionary and developmental biology," *Dev. Bio.*, 173 (1996), 357-372; other readings TBD based on class interest.

Write: Final response essay

Final week: FINAL EXAM, Thursday, Dec. 22nd, 12:45-2:45p; Format TBA; #Final essay due