

**History of Science 180:
Making Meaning in an Evolutionary World
Fall 2009**

M 1:20-2:10 and W 1:20-3:15, Social Science 6109

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Office hours: Tuesdays 1:20-3:15; after class on Mondays; and by appointment.

Darwin's theory of evolution challenged many beliefs when it appeared in 1859. For many of his contemporaries (as for many people since then), a particularly difficult implication of his theory was that nature had to be understood on its own terms, without recourse to godly intervention, and without hope of Christian spiritual redemption. How, then, was the meaning of nature, of life (and death), and of human existence, to be understood anew, if one accepted evolution? This FIG honors seminar considers this problem, especially in the contexts of Britain and Germany, in the century following the publication of the *Origin of Species*.

In this core seminar, we will examine historical efforts to draw meaning from nature when evolution was accepted as a fact. We begin in Unit I by considering Darwin's own intellectual development, including the role of morality in his theory. Unit II covers the implications of evolution for religion, as understood by some prominent scientists of Darwin's day. Unit III examines the late nineteenth-century controversies surrounding idea of a human moral nature based in biology, with special attention to Ernst Haeckel, Friedrich Nietzsche, and T. H. Huxley. Unit IV focuses on responses to evolution with respect to aesthetics, art, poetry, and literature. Unit V considers eugenics movements in Germany, the U.S., and England as continuations of evolutionary thinking in relation to the molding of humanity's future.

Grading:

Darwin correspondence analysis (2 pages), due 9/23 in class: 10%

Mid-semester paper (4-5 pages), due 10/21 in class: 20%

Analytical paper on evolutionary art and literature (4-6 pages), due 11/25 in class: 20%

Final paper (4-6 pages), due 12/22 at NOON in my mailbox: 20%

Class participation, including attendance, active participation in discussion, informal written commentaries on readings, and FIG reflections: 30%

Required readings:

For purchase at University Book Store:

Jane Maienschein and Michael Ruse, *Biology and the Foundation of Ethics* (Cambridge U. Press, 1999) (M&R)

Charles Darwin, *On Evolution: The Development of the Theory of Natural Selection*, ed. Thomas F. Glick and David Kohn. (Indianapolis: Hackett Pub., 1996) (G&K)

H. G. Wells, *The Time Machine*, ed. Nicholas Ruddick (Peterborough, Ontario: Broadview Press) THIS EDITION ONLY

For purchase at Social Science Copy Center, 6120 Social Science, 1180 Observatory Drive:
History of Science 180: Making Meaning in an Evolutionary World (Nyhart) Course Reader. (Course readers are NOT RETURNABLE. Once you buy one, it's yours.)
A copy of each of the above is on reserve at College Library. Note that some readings (not otherwise available) are on reserve at Kohler Art Library.

Schedule of Topics:

*Readings marked with * are in the reader. Italicized questions form the general basis for discussion and reading responses.

W 9/2: Course Introductions; view (at least part of) "The Devil's Chaplain"

I. Darwin's Theory

M 9/7: Labor Day: no class

W 9/9: The Development of Darwin's theory

What issues was Darwin trying to work out in his early writings? What is the role of humans and of morality in his intellectual probing? How can we see his evolutionism developing? How does this connect with what you've been learning in Geol 110?

All readings in G&K:

Introduction, xi-xvii; Journal of Researches, 11-20; Lamarck Marginalia, 82-86;

Notebooks: Intro, 46-49, Notebook B, 51-62[top], [169] on p. 63; Notebook M, 76-81;

1844 Essay: intro, 87-89.

M 9/14: The Argument of the *Origin*: Introduction

What is the principle of divergence? Pay particular attention to the branching tree diagram and the discussion surrounding it. What part does it play in Darwin's argument?

G&K, 127-130, 150-155, 156-215

W 9/16: Discussion of *Origin* as an argument

*How did Darwin write the **Origin** to persuade his audience of the truth of his theory? What argumentative strategies and rhetorical devices can you find that might have made the theory plausible—and perhaps even palatable—to his audience?*

Further discussion of reading assigned for Monday

Receive assignment on *Re: Design* and correspondence in class.

II. Darwinism and Religious Belief among Scientists

M 9/21: Religious Scientists Respond to Darwin

*How did Asa Gray's and Adam Sedgwick's religious and philosophical views affect their responses to the **Origin**?*

**Re: Design*. Adaptation of the Correspondence of Charles Darwin, Asa Gray, and others, by Craig Baxter, as performed 25 March 2007. (Read all.)

*Asa Gray, "Darwin and his Reviewers: Natural Selection and Natural Theology, Part III: Natural Selection not Inconsistent with natural Theology." *Atlantic Monthly*, October 1860,

pp. 412-419. Reprinted in Asa Gray, *Darwiniana*, ed. A. Hunter Dupree (Cambridge: Harvard/Belknap, 1963), pp. 118-123.

*Adam Sedgwick, "Objections to Mr. Darwin's Theory of the Origin of Species," *The Spectator*, March 24/April 7, 1860. Reprinted in *Darwin and his Critics*, ed. David Hull (Chicago: University of Chicago Press, 1973), 159-70.

W 9/23: Further Discussion of Darwin Correspondence and Reception of the *Origin*

***Exercise on *Re-Design* and correspondence **due in class**. ***

Play Reading and Dessert at 7:30 pm, Prof. Nyhart's house, 16 N. Roby Rd.

M 9/28: Ernst Haeckel and German Darwinism

How was Haeckel's evolutionism like Darwin's? How was it different?

*Robert J. Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* (Chicago: University of Chicago Press, 2008), 94-111, 124-8, 135-156, 168-70

*Ernst Haeckel, *The History of Creation*, (orig. 1868), trans. E. Ray Lankester (New York: Appleton, 1874/1887), 1-23.

W 9/30: Haeckel's Evolutionary Monism

What are the basic elements of Haeckel's monism? What sort of moral order might be derived from it?

*Ernst Haeckel, *Monism as Connecting Religion and Science: The Confession of Faith of a Man of Science* (tr. J. Gilchrist), (London: Adam and Charles Black, 1894, digitized by Lee Dawei, Thomas Berger and Distributed Proofreaders).

THURSDAY Oct 1: Lecture by Prof. Peter Sprengel, "Darwinism and Literary Modernism," Pyle Center, 4-5:30 pm.

*Please attend if possible, and submit an analytical comment and question to L@UW by 1 pm Friday, Oct. 2. I will collate comments and questions and forward them to Prof. Sprengel so he can be prepared to discuss them with you on Monday.

III. The Basis of Morality

M 10/5: Discussion of Professor Sprengel's Lecture

(Background Reading: Nietzsche and Darwin)

Friedrich Nietzsche seems to have hated Darwin's work. Yet he is often considered, along with Darwin, to be one of those who brought about (or at least represented) a fundamental change in European ideas of morality in directions deeply compatible with Darwin's work. What elements of Nietzsche's writing might have reinforced "Darwinian" ideas? What took him in a different direction?

Jean Gayon, "Nietzsche and Darwin," 154-197 in M&R

*Friedrich Nietzsche, *The Will to Power*, §647-658, 684-687, tr. Walter Kaufmann and R. J. Hollingdale, ed. Walter Kaufmann (New York: Random House, 1967), 343-347, 361-366

W 10/7: Nietzsche and Moral Relativism

What did Nietzsche advocate? Why might the idea of going "beyond good and evil"

have been viewed as liberating by some and dangerous by others? What is Weikart's take on this?

*Nietzsche, *Beyond Good and Evil*, ed. Rolf-Peter Horstmann and Judith Norman (Cambridge: Cambridge University Press, 2002), §186-200: 75-87.

Nietzsche, *Beyond Good and Evil*, in Feinberg and Shafer-Landau, *Reason & Responsibility*, §201-203: 547-550 (top).

*Richard Weikart, *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany*, (New York: Palgrave Macmillan, 2004), 43-57, 245.

M 10/12: Human Evolution and Morality in Britain

According to Darwin, what is the basis of morality? What constitutes morality?

*Richards, "Darwin's Romantic Biology," in M&R, 135-145

Darwin, *Descent of Man*, editorial intro and excerpts, G&K, 240-256

*Richard Weikart, *From Darwin to Hitler*, 21-29, 240-242.

W 10/14: Against Evolutionary Ethics: T. H. Huxley and A. R. Wallace

According to Huxley and Wallace, what's wrong with a naturalistic morality based in evolution?

*Paul Farber, *The Temptations of Evolutionary Ethics* (Berkeley: University of California Press, 1994), 58-78.

*T. H. Huxley, "Evolution and Ethics: Prolegomena" (1894) in *idem*, *Evolution and Ethics and other Essays* (New York: Appleton, 1896), 30-45 (pts. 11-14).

M 10/19: Does Nature Choose For Us? Freedom and Determinism

Compare how the issues about freedom and determinism with respect to moral action were understood among Germans and Americans.

*Marga Vicedo, "The Laws of Inheritance and the Rules of Morality: Early Geneticists on Evolution and Ethics," 225-257 in M&R.

W 10/21: Mid-term Discussion

Mid-semester paper due. Using specific examples from this unit and the previous one, consider some aspect of the relationship between the evolutionary context, questions about morality, and their answers. You might ask, how did moral questions—and their answers—differ when framed within evolution from questions based in a religious context, and how not. Or you might compare and contrast two individual thinkers' approaches to moral questions. Alternatively (and more riskily), you might analyze the different approaches to thinking about morality—historical and philosophical—taken in the FIG seminar and in Philosophy 101. How do they differ?

IV. Evolution, Art, and Literature

M 10/26: Darwin, Ruskin, and the Contested Foundations of Aesthetics

How did Darwin naturalize the basis of aesthetics? What were the appeals of this approach to some of his contemporaries? On what grounds did John Ruskin object?

Darwin on sexual selection, from *Descent of Man*, in K&G, 256-276

*Jonathan Smith, *Charles Darwin and Victorian Visual Culture* (Cambridge U. Pr.,

2006), 24-32, 137-43, 160-78

W 10/28: Haeckel's *Art Forms in Nature*

How might Haeckel's understanding of the inherent artistry of nature have been connected to his evolutionary monism? Why might artists of the late 19th century have found his work appealing?

Olaf Breidbach, *Visions of Nature: The Art and Science of Ernst Haeckel*, [Kohler Art Library Reserves], 229-243; 253-275

In class: View and discuss *Proteus*

M 11/2: Nietzsche's Physiological Aesthetics

Where does the sense of beauty come from, according to Nietzsche? How do his views resemble or differ from what we've seen in the British context?

*Gregory Moore, "Art and Evolution: Nietzsche's Physiological Aesthetics," *British Journal for the History of Philosophy*, February 2002, 10(1): 109-126

W 11/4: Mathilde Blind's Rapturous Evolutionism

What makes Blind's poem evolutionary? How should we understand her view of religion? Do you see resemblances between her views and those of Nietzsche and Haeckel?

*Jason Rudy, "Rapturous Forms: Mathilde Blind's Darwinian Poetics," *Victorian Literature and Culture*, 34:2, 2006, 443-59: selection, pp. 443-50.

-read *Oxford Dictionary of National Biography* article on Blind (online-go to E-Resources, find *Oxford Dictionary of National Biography*, enter "Mathilde Blind" in person box.)

*Mathilde Blind, "The Ascent of Man" (1889), Part I, "Chaunts of Life," sections I-V. E-Resource from Victorian Women Writers Project, Indiana University.

M 11/9: Blind, "Ascent of Man," cont.

How does Blind use poetry to bring meaning to her modern world? What were Blind's contributions to the cultural interpretation and development of evolution? What difference might it have made that she was a woman?

*Mathilde Blind, "Ascent of Man," finish "Chaunts" and read Part III, "The Leading of Sorrow."

W 11/11: Wrap-up on Blind; introduction to H. G. Wells' *The Time Machine*.

*What assumptions about the current state of society and the nature of progress emerge in the first seven chapters of **The Time Machine**? Consider (at least!) the following aspects of progress: biological, cultural, technological, temporal. How does Wells play with these?*

H. G. Wells, *The Time Machine*, 57-99

M 11/16: Overcivilization and Degeneration in *The Time Machine*

*How, specifically, does degeneration manifest itself in *The Time Machine*? How does the narrator account for what he finds in the future? What other themes raised by Janet Browne appear in the pages of *The Time Machine*? (Spoiler alert: read Wells before reading Browne.)*

Wells, *The Time Machine* -143, 158-167, 202-203

*Janet Browne, "Constructing Darwinism in Literary Culture," in *Unmapped Countries: Biological Visions in Nineteenth Century Literature and Culture*, ed. Anne-Julia Zwierlein (London: Anthem Press, 2005), 55-70

W 11/18: Extinction: Imagining an Apocalyptic Future

How do the possible futures imagined by Wells in the 1890s compare with the possible futures foreseen by Niles Eldridge? How should we act in the face of our potential extinction? What should we do?

Wells, *The Time Machine*, 143-156; 173-183, 210-211; optional: Appendix E

Niles Eldridge, "The Sixth Extinction,"

<<http://www.actionbioscience.org/newfrontiers/eldredge2.html>>

Optional: view online program, "The Sixth Extinction,"

<<http://www.joost.com/0660004/t/The-sixth-extinction#id=0660004>>

Note: Prof. Nyhart is out of town today, so this discussion will either be guest-led, self-directed, or conducted online. We will discuss this closer to the time.

M 11/23: Progress, Extinction, and the Human Future, as imagined ca. 1890 (and today)

Compare the trajectories of evolution as imagined by Blind and Wells. What hope do they offer in the face of the violence of evolution?

No new reading; work on Unit IV paper.

W 11/25: Discussion of Unit IV papers

Unit IV paper due. Write an analytical essay comparing at least two authors on some aspect of evolutionary aesthetics or literature that we have discussed in this unit. (Detailed suggestions forthcoming).

[Thanksgiving 11/26]

V. Evolution, Ethics, and Aesthetics in Action: Eugenics

M 11/30: German Eugenics

According to Weikart, how did Darwinism contribute to eugenics in Germany? According to Weingart, how did eugenicists adapt themselves to the changing political situation in 1930s Germany? What links might we draw between their two arguments?

*Richard Weikart, *From Darwin to Hitler*, pp. 1-17, 235-240

*Peter Weingart, "German Eugenics between Science and Politics," *Osiris*, 2nd ser., 1989, 5: 260-282

*Sander Gliboff. Review of Weikart, Richard, *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany*. H-German, H-Net Reviews. September, 2004. URL: <http://www.h-net.org/reviews/showrev.php?id=9837>

W 12/2: International Eugenics

What were the problems to which eugenics provided the solutions in the early twentieth century? Do similar social, political, and moral issues exist now, in an age of greater genetic control? What's the same now, what's different?

*Diane Paul, "Eugenic Solutions" in her *Controlling Human Heredity: 1865 to the Present* (Atlantic Highlands, NJ: Humanities Press, 1995), 72-96

Alan Sverdlik, "Modern Eugenics: The Elimination of a People" (The Beacon/beaconcast, April 22, 2008), <<http://beaconcast.live.subhub.com/articles/20080422>>
View *Homo Sapiens 1900* (in class)

M 12/7: Julian Huxley and Reform Eugenics

How was reform eugenics different from earlier kinds of eugenics?

*Garland Allen, "Julian Huxley and the Eugenical View of Human Evolution," in *Julian Huxley: Biologist and Statesman of Science*, ed. C. Kenneth Waters and Albert Van Helden (Houston: Rice University Press, 1992), 193-222

*Julian Huxley, "Man and his heredity," pp. 76-124 in idem, *What Dare I Think? The Challenge of Modern Science to Human Action and Belief* (New York: Harper, 1931)

W 12/9: Julian Huxley, Progressive Evolution, and Evolutionary Humanism

How were Huxley's progressive evolutionary ideas and evolutionary humanism intertwined?

How were these in turned connected to his reform eugenics? What might be the appeals of "reform eugenics"? What are its down-sides?

*Michael Ruse, "Evolutionary Ethics in the Twentieth Century: Julian Sorrell Huxley and George Gaylord Simpson," in M&R, 198-224

*Julian Huxley, "Man's Place and Role in Nature," in idem, *New Bottles for New Wine* (London: Chatto & Windus, 1959), 41-60

M 12/14: Wrap-up: Collective review of the different ways of making meaning in an evolutionary world.

2-page personal reflections paper due: What approach to "making meaning" in an evolutionary world do you find most appealing, and why? What things that you have learned from this and your other FIG courses would you want to wrap into your personal world-view?

Receive final essay question.

Final essay, due at **noon** on Tuesday, 12/22 (may be handed in earlier).

Academic Performance and Accommodation:

Extensions are only granted if requested before the due date, and only in case of illness or other serious emergency. All extensions will have a definite new due date established. Papers received after the new due date will be subject to late paper penalties.

Late paper policy: any piece of writing that you hand in late without an extension will have the following penalties assessed: a quarter of a grade for every working day late. For example, if the paper on its merits deserves a B, after one day it would receive a B/BC, after two days a BC, after three a BC/C, after four a C. NOTE: LATE FINAL ESSAYS (due May 13) WILL NOT BE ACCEPTED.

Appealing a Grade: If you have questions about a grade, come speak to me. If the problem is not resolved, speak with the Undergraduate Chair, Prof. Michael Shank. He will attempt to

resolve the issue informally and inform you of the Appeals Procedures if no resolution is reached informally.

Access and Accommodation: I will make every effort to honor requests for reasonable accommodations made by individuals with disabilities. (If you think you qualify for accommodation, please contact the McBurney Disability Resource Center [263-2741; <http://jumpgate.acadsvcs.wisc.edu/~mcburney/>] to establish your eligibility for services.) Requests for accommodation can be responded to more effectively if I receive them as far in advance as possible, preferably at the beginning of the semester. Such requests are confidential.

Religious Observance: If religious holidays or observances conflict with your participation in this course, please come talk to me **well in advance** for us to work out alternative arrangements. If any other problems arise, either academic or personal, which might jeopardize your performance in the course, you must try to inform me after class or by the soonest available office hour, by email (lknyhart@wisc.edu), or by leaving a message with the History of Science department administrator (262-1406).

Instructions on Writing Assignments

You will be doing several different kinds of writing in this course. With the exception of the first assignment, which is a research assignment, your writings fall into the categories of informal commentaries on the readings, analytical papers, and reflective writings.

Commentaries on Readings (weekly): Everyone will submit EIGHT commentaries over the course of the semester, due **in class** the day of the discussion on the topic listed for that day. For most class meetings, I have written out discussion prompts on the syllabus. These should be used as a take-off point for your commentaries unless you have some overriding other aspect you wish to write about. They should be about 300 words long (about a full page of hard copy, word-processed, double-spaced). This means you must pick one PART of the prompt to write on, and zero in on one single point. Don't worry if you have more to say; hang on to it, and you'll get a chance in class to say more. Although these are called reading "commentaries," I do not seek to elicit your emotional reaction to the readings ("I hated this selection because. . ."), but your analytical responses ("Darwin makes much use of analogy in his writings. I particularly noticed . . .") Although considered "informal" writing, you are expected to word-process these, using full words, sentences, and paragraphs (no txt-msj writing, and no handwritten papers). Commentaries will be graded on a scale going from + (excellent) through [check] (okay) to - (poor). You must hand in commentaries as follows:

- 1 in Unit I (9/9, 9/14, or 9/16);
- 1 in Unit II (9/21, 9/28, or 9/30);
- 2 in Unit III (10/5, 10/7, 10/12, 10/14, 10/19)
- 3 in Unit IV (one from 10/26, 10/28, and 11/2; 1 from 11/4, 11/9; 1 from 11/11, 11/16, 11/23)
- 1 in Unit V (11/30, 12/2, 12/7, or 12/9)

I have made a spreadsheet of when each one is due for each student, posted on L@UW. Note that

some dates are skipped.

Analytical papers (due 10/21, 11/25, and 12/22): These are to be arguments supporting a thesis that you make about some aspect of the readings in this course. You need to make a claim, and then seek to persuade your reader, using evidence and argumentation, of the reasonableness of your position. A claim might be made, for example, that evolution was more important in influencing forms of visual art and poetry than as a subject of these genres; you would then need to draw on your readings from this course to support that claim, and to tease out the ways in which this worked. **General hints for writing a successful essay:** Define your terms. Decide on the point you want to make and stick to it. Use specific examples. Put things in logical order. Disarm possible opposing views. Be succinct (but not telegraphic). For further general advice on writing, see the Writing Center's Writer's Handbook: <http://www.wisc.edu/writing/Handbook/index/html>. (Link also available from the course website under "Links.") Grading is based on overall persuasiveness of your position, including quality of writing. See grading scale on p. 2 for details.

FIG Reflections (due 12/14): This assignment (like some commentary questions) asks you to think synthetically across your courses about your learning. Since I don't have direct access to what you are learning in your other courses, I cannot grade you on the "correctness" of what you tell me about them, and that's not the main point of the exercises anyway. Grading is based on the thoughtfulness of your essay, your ability to think synthetically and comparatively across the courses, and quality of writing.

A Note on Plagiarism: plagiarism is a serious breach of academic integrity and may be grounds for failure on the assignment plagiarized (take-home exam or paper). If you use 3 or more words in a row from another source, it must be placed in quotation marks and footnoted. Otherwise, it is plagiarism. For more on what constitutes plagiarism and how to avoid it, see the UW Writing Center's handout "Quoting, Paraphrasing, and Acknowledging Sources" (online at: <http://www.wisc.edu/students/plagiarism.pdf>). It would also be wise to review the UW's student guide on academic misconduct (at: <http://www.wisc.edu/students/amsum.htm>).

GRADING SCALE FOR TAKE-HOME ESSAYS:

- A For outstanding essays only. Thesis and argument are clear, thought-provoking, and based on correctly understood facts; material used to support the argument synthesizes ideas from different parts of the course (readings, lectures, discussions from different weeks); relationships drawn between facts and ideas are sophisticated, subtle, and/or original. Writing is grammatically correct and succinct. The argument flows well from point to point, without any puffery or wasted words.
- AB: For very good essays that for some reason fall short of the criteria listed above. For example, the argument may be murky in one place; information may be presented that doesn't directly or clearly contribute to the argument; writing style may be awkward here and there, or flawed by one or two consistent (if minor) grammatical errors.
- B: Your basic okay grade. The essay may pursue a straightforward but not especially deep or sophisticated argument; it is okay as far as it goes, but doesn't penetrate the material very far. It may have a flash of brilliance that is unfulfilled, counterbalanced by minor grammatical problems, a weakness in argumentation, and/or a significant misunderstanding of events or chronology.
- BC: The essay shows some of the basics of the ideal essay, but is weakened by a lack of serious think-work or writing problems. It may make superficial connections without offering sufficient evidence to make the connections plausible or persuasive, or it may have what is in principle a good argument supported by incorrect facts or chronology. Alternatively, it may provide a fairly solid argument with minor flaws, from which the reader is repeatedly distracted by awkward or ungrammatical prose.
- C: A grade signifying some serious problem in essay-writing. It may deliver facts without a recognizable thesis or argument; it may wander away from the point; or it may be a thoughtful attempt so weakened by writing problems (grammar, punctuation, word choice) that it is difficult for the reader to understand a crucial point you are trying to make.
- D: A marginal grade. There may be enough in here to show you have attended a few lectures and/or done some of the reading, but the essay indicates no effort at synthesis or thinking on your own, or else shows a serious misunderstanding of the nature of the material and/or the assignment. Also used for essays that are just barely coherent.
- F: For unacceptable essays. An essay may be judged unacceptable if it contains plagiarism (see below); if it consists primarily in content inappropriate to the question or the material for this course; if it shows a complete misunderstanding of the course content; or if the writing fails to meet standard college-level requirements of basic communication in English.

The A-F system translates on your transcripts into a 4-point scale, where A = 4, AB = 3.5, B = 3, BC = 2.5, C = 2, D = 1, and F = 0. On any given assignment, you may receive a grade that is different from one of these, reflecting a penumbra around each grade (e.g., the "B" grade might range between 2.76 and 3.25). Thus you can tell if your paper is at the high, middle, or low end of the grade range for any given assignment.