

ANG 6583 section 12E5

Issues in Evolutionary Anthropology

Fall 2014

TIME: Mondays Periods 7– 9 (1:55 – 4:55 PM)

PLACE: TUR 2303

INSTRUCTOR: David Daegling, TUR B376
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OFFICE HOURS: Mondays 10:30 – 11:30 AM; Wednesdays 1:00 – 3:00 PM.

COURSE OBJECTIVES:

This seminar examines the role of evolutionary theory in the methods and practice of biological anthropology. Major issues in evolutionary biology are explored through examples from the anthropological literature, and we will also consider the contribution of cognate fields to evolutionary theory. The challenges in applying theoretical concepts to specific research questions and the influence of evolutionary theory on anthropological thought are emphasized.

COURSE REQUIREMENTS:

Attendance and active participation in the seminar are essential for the success of the course. Absence from class and/or failure to participate in discussion of assigned readings will detrimentally influence your course grade. Throughout the semester, you will be asked to discuss issues raised in the assigned readings and offer questions for further discussion. Three papers (5-7 pages each) will be assigned over the course of the semester; topics for these papers will be distributed two weeks in advance. Papers are to be submitted as printed or electronic copies at the beginning of class on the due date. Participation will account for 25% of your course grade; each paper accounts for 25% of your grade. Information on current UF grading policies for assigning grade points can be found at

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

OTHER POLICIES:

Cell phones and pagers must be turned off during class. Late papers are subject to a full letter grade reduction. Incompletes will not be granted for any work submitted beyond the end of term (12/10). Plagiarism in any form is subject to university policy. Students requesting classroom accommodation must first register with the Dean of Students Office (DSO). The DSO will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Students experiencing personal problems that are interfering with their academic performance are encouraged to contact the University Counseling Center (301 Peabody Hall, 392-1575), Student Mental Health (Student Health Care Center, 392-1171), or Sexual Assault Recovery Services (Student Health Care Center, 392-1161).

COURSE SCHEDULE:

| <i>Week</i> | <i>Topic</i> |
|--------------------|--|
| 1 (8/25) | Fundamentals of Evolution |
| 2 (9/1) | No Class |
| 3 (9/8) | Natural Selection |
| 4 (9/15) | The Adaptationist Paradigm |
| 5 (9/22) | Species Concepts |
| 6 (9/29) | Systematic Philosophy (1st paper due) |
| 7 (10/6) | Units of Selection Revisited |
| 8 (10/13) | Tempo and Mode in Evolution |
| 9 (10/20) | Macroevolution |
| 10 (10/27) | Genes and Phenotypes |
| 11 (11/3) | Approaches to Morphology (2nd paper due) |
| 12 (11/10) | Heterochrony and Life Histories |
| 13 (11/17) | Evolution of Cooperation |
| 14 (11/24) | Evolution and Human Behavior |
| 15 (12/1) | Trends in Evolution |
| 16 (12/8) | Social/Metaphysical Dimensions of Evolutionary Thought (3rd paper due) |

Course Readings: George C. Williams (1966) *Adaptation and Natural Selection* is required and is to be read in its entirety by Week 3 (9/8). Douglas Futuyma's *Evolutionary Biology* (Sinauer) is recommended as a supplementary text for students who wish to review core concepts in evolutionary theory, but there will be no formal assignments from this text. Assigned articles are posted in pdf format on the course website (Canvas platform) <https://lss.at.ufl.edu/>

Week 4 **Adaptationist Paradigm**

Gould SJ and Lewontin RC (1979) The spandrels of San Marco and the Panglossian paradigm: A critique of the adaptationist programme. *Proc Royal Soc Lond B* 205:581-598.

Reeve HK, Sherman PW (1993) Adaptation and the goals of evolutionary research. *Quart Rev Biol* 68:1-32.

Campbell M (1983) Adaptation and fitness. *Studies Hist Phil Sci A* 14:59-65.

Tattersall I (2002) Adaptation: The unifying myth of biological anthropology. *Teaching Anthropology SACC Notes* 9(1): 9-11.

Week 5**Species Concepts**

Simpson GG (1951) The species concept. *Evolution* 5: 285-298.

Sokal RR, Crovello TJ (1970) The biological species concept: a critical evaluation. *Am Nat* 104:127-153.

Tattersall I (1992) Species concepts and species identification in human evolution. *J Hum Evol* 22: 341-349.

Groves C (2004) The what, why and how of primate taxonomy. *Int J Primatol* 25:1105-1126.

Week 6**Systematic Philosophy**

Simpson GG (1945) The principles of classification and a classification of mammals. *Bull Am Mus Nat Hist* 85: 1-33.

Sneath PHA, Sokal RR (1962) Numerical taxonomy. *Nature* 193: 855-860.

Hennig W (1965) Phylogenetic systematics. *Ann Rev Entomol* 10: 97-116.

Gingerich, PD (1979) The stratophenetic approach to phylogeny reconstruction in vertebrate paleontology, p. 41-77. In J. Cracraft and N. Eldredge (eds.), *Phylogenetic Analysis and Paleontology*. Columbia University Press, New York.

Ridley M (1983) Can classification do without evolution? *New Scientist* 1/12/83:647-651.

Week 7**The Units of Selection**

Lewontin RC (1970) The units of selection. *Annual Review of Ecology and Systematics* 1: 1-18.

Brandon RN (1999) The units of selection revisited: The modules of selection. *Biology and Philosophy* 14:167-180.

Sober E, Wilson DS (1994) A critical review of philosophical work on the units of selection problem. *Philosophy of Science* 61:534-555.

Gould SJ, Lloyd EA (1999) Individuality and adaptation across levels of selection: How shall we name and generalize the unit of Darwinism? *Proc Nat Acad Sci USA* 96:11904-11909.

Week 8

Tempo and Mode in Evolution

- Gould SJ, Eldredge N (1977) Punctuated equilibria: The tempo and mode of evolution reconsidered. *Paleobiology* 3: 115-151.
- Levinton JS (1983) Stasis in progress: the empirical basis of macroevolution. *Ann Rev Ecol Syst* 14:103-137.
- Prothero, DR (1992) Punctuated equilibrium at twenty: a paleontological perspective. *Skeptic* 1:38-47.
- Foley R (2001) In the shadow of the modern synthesis? Alternative perspectives on the last fifty years of paleoanthropology. *Evol Anthropol* 10: 5-14.

Week 9

Macroevolution

- Charlesworth B, Lande R, Slatkin M. 1982. A Neo-Darwinian commentary on macroevolution. *Evolution* 36:474-498.
- Wright S. 1982. The shifting balance theory and macroevolution. *Ann Rev Genet* 16:1-19.
- Erwin DH. 2000. Macroevolution is more than repeated rounds of microevolution. *Evol Dev* 2: 78-84.
- Potts R (1996) Variability selection in hominid evolution. *Evol Anthropol* 7:81-96.

Week 10

Genes and Phenotypes

- Waddington CH (1942) Canalization of development and the inheritance of acquired characters. *Nature* 150: 563-565.
- King M-C, Wilson AC (1975) Evolution at two levels in humans and chimpanzees. *Science* 188: 107-116.
- Via S, Lande R (1985) Genotype-environment interaction and the evolution of phenotypic plasticity. *Evolution* 39: 505-522.
- Hlusko LJ (2004) Integrating the genotype and phenotype in hominid paleontology. *Proc Nat Acad Sci USA* 101: 2653-2657.

Week 11**Approaches to Morphology**

Dwyer PD (1984) Functionalism and structuralism: Two programs for evolutionary biologists. *Am Nat* 124: 745-750.

Lauder GV (1981) Form and function: Structural analysis in evolutionary morphology. *Paleobiology* 7:430-442.

Radinsky LB (1986) Approaches in evolutionary morphology: A search for patterns. *Ann Rev Ecol Syst* 17:1-14.

Cheverud JM (1996) Developmental integration and the evolution of pleiotropy. *Am Zool* 36: 44-50.

Week 12**Heterochrony and Life Histories**

Kaplan H, Hill KR, Lancaster J, Hurtado AM (2000) A theory of human life history evolution: Diet, intelligence and longevity. *Evol Anthropol* 9:156-185.

Hawkes K, O'Connell JF, Blurton Jones NG, Alvarez H, Charnov EL (1998) Grandmothering, menopause, and the evolution of human life histories. *Proc Nat Acad Sci USA* 95:1336-1339.

Kirkwood TBL, Rose MR (1991) Evolution of senescence: Late survival sacrificed for reproduction. *Phil Trans R Soc Lond B* 332:15-24.

Bribiescas RG (2006) On the evolution, life history and proximate mechanisms of human male reproductive senescence. *Evol Anthropol* 15:132-141.

Week 13**Evolution of Cooperation**

Dugatkin LA, Mesterton-Gibbons M, Houston AI (1992). Beyond the prisoner's dilemma: Toward models to discriminate among mechanisms of cooperation in nature. *Trends Ecol Evol* 7:202-205.

Boehm C (1997) Impact of the human egalitarian syndrome on Darwinian selection mechanics. *Am Nat* 150: S100-S121.

Wrangham RW (1999) Evolution of coalitionary killing. *Yrbk Phys Anthropol* 42: 1-30.

Fehr E and Gächter S (2002) Altruistic punishment in humans. *Nature* 415:137-140.

Week 14 **Evolution and Human Behavior**

Skinner BF (1981) Selection by consequences. *Science* 213:501-504.

Durham WH (1992) Applications of evolutionary culture theory. *Ann Rev Anthropol* 21:331-353.

Buss DM (2009) The great struggles of life: Darwin and the emergence of evolutionary psychology. *Am Psych* 64:140-148.

Hrdy SB, Judge DS (1993) Darwin and the puzzle of primogeniture. *Human Nature* 4:1-45.

Week 15 **Trends in Evolution**

Grehan JR, Ainsworth R (1985) Orthogenesis and evolution. *Systematic Zoology* 34: 174-192.

Jablonski D (2005) Mass extinctions and macroevolution. *Paleobiology* 31:192-210.

Bonner JT (1968) Size change in development and evolution. *J Paleont* 42S:1-15.

McShea DW (1994) Mechanisms of large-scale evolutionary trends. *Evolution* 48:1747-1763.

Week 16 **Social and Metaphysical Dimensions of Evolutionary Thought**

Ruse M (1977) Karl Popper's philosophy of biology. *Philosophy of Science* 44:638-661.

Nelkin, D. (2004). God Talk: Confusion between Science and Religion (Posthumous Essay) *Science, Technology & Human Values* 29:139-152.

Marks J (2009) What is the viewpoint of hemoglobin, and does it matter? *Hist Phil Life Sci* 31:241-262.

Rudolph JL and Stewart J (1998) Evolution and the nature of science: on the historical discord and its implications for education. *J Research in Science Teaching* 35:1069-1089.