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ANTY 553.01: Evolutionary Archaeology

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Anthropology 553: EVOLUTIONARY ARCHAEOLOGY

Anthropology 553, Evolutionary Archaeology is a graduate seminar designed to expose students to the fast-growing world of Darwinian evolutionary archaeology. The seminar will have two specific goals. First, students will gain a basic understanding of the major trends in current archaeological evolutionary thinking with a focus on cultural transmission theory, human behavioral ecology, and macroevolutionary approaches to archaeology. Second, students will gain experience in applying the tenets of Darwinian evolutionary theory to the development and analysis of archaeological data. Students will emerge from the course with enhanced abilities to link theoretical problems to strategies for collection and analysis of archaeological data within an evolutionary framework.

Professor: Dr. Anna M. Prentiss; Office: Social Sciences 205; Telephone: 243-6152; Message Telephone (Anthropology Department) 243-2693; email: anna.prentiss@umontana.edu; Office hours: Monday, Wednesday, Friday, 10-12, or by appointment.

Text/Readings:

Richerson, Peter J. and Robert Boyd

2005 *Not By Our Genes Alone*. University of Chicago Press, Chicago.

Broughton, Jack and Michael D. Cannon

2009 *Evolutionary Ecology and Archaeology*. University of Utah Press, Salt Lake City.

Hart, John P. and John Edward Terrell (optional)

2002 *Darwin and Archaeology: A Handbook of Key Concepts*. Bergin and Garvey, Westport, CT.

Mesoudi, Alex

2011 *Cultural Evolution: How Darwinian Theory can Explain Human Culture and Synthesize the Social Sciences*. University of Chicago Press, Chicago.

Prentiss, Anna Marie, Ian Kuijt, and James C. Chatters

2009 *Macroevolution in Human Prehistory: Evolutionary Theory and Processual Archaeology*. Springer, New York.

Stark, Miriam T., Brenda J. Bowser, and Lee Horne

2008 *Cultural Transmission and Material Culture*. University of Arizona Press, Tucson.

Learning Outcomes:

1. Knowledge of fundamental concepts and debates in evolutionary archaeology

2. Ability to develop and complete a research project in evolutionary archaeology.
3. Expansion of skills in data collection and analysis within an evolutionary framework.
4. Improvement in writing and speaking skills.

Grade Determination:

Seminar assignments are designed to develop student skills in reading and understanding the literature in Darwinian archaeology and designing and implementing research projects within this framework. Assignments are as follows:

1. Each student will develop a 5-10 page research plan or design for their seminar project (Assignment 2). This will include a discussion of the research problem, hypotheses to be tested, and proposed methods. This paper also provides you a chance to review and cite the literature relevant to your research problem. The paper should be approximately five pages in length and written using *American Antiquity* style. Due date for the paper: October 24. It is worth 100 points.

2. Each student is required to write a 20 page research paper (again using *American Antiquity* style). The research paper will present results of a study that will include an explicit analysis of archaeological data developed in an evolutionary framework (dual inheritance theory, selectionism, evolutionary ecology, macroevolutionary theory). The paper will include in introduction to the problem, a discussion of theoretical background and previous research, methods, analysis, and final discussion. The goal is to stimulate each student to explore in depth one evolutionary model by developing it as a research tool for a context of your choice. The research paper is due December 8. It is worth 250 points.

Assignments must be well written with minimal grammatical problems, spelling issues, etc. If you have writing problems you should seriously consider visiting the university writing center for extra help. Assignments must demonstrate an attempt by you to obtain and cite the critical anthropological literature associated with your research topic. Assignments with minimal citation of the literature will be scored low (that is also what will happen to you in the “real world”).

3. All students will participate in seminar activities. Participation will include presentation of readings and research result. Participation is worth 50 points.

Grades will be determined on the basis of total points achieved:

Assignments (see below)	350 Points
Seminar Participation	50 Points
Total	400 Points

Students with 90% (360 points) or more will receive an "A," etc. Deadlines are extended only in cases of illness (with a doctor's note) or an emergency. The professor retains the option to use + and – grades when final scores are close (within a point on a 0-100 scale) to an up or down

transition.

Reading List and Schedule

***(August 29)* Introduction and Background**

Reading:

Hart and Terrell
Mesoudi, Chapters 1 and 2

***(September 5)* Cultural Microevolution: Modeling Culture as an Inheritance System.**

Reading:

Richerson and Boyd, All chapters
Mesoudi, Chapter 3

***(September 12)* Cultural Transmission in Archaeology and Socio-Cultural Anthropology, Some Case Studies**

Reading:

Stark et al., All chapters

***(September 19)* Microeconomics, Evolution, and Human Behavior: Introduction to Human Behavioral Ecology; Plio-Pleistocene Adaptations; Post-Glacial Adaptations**

Reading:

Broughton and Cannon, Chapters 1-15

***(September 26)* Archaeological Case Studies in Behavioral Ecology: Technological Organization; Food Production Strategies; Cooperation and Competition**

Reading:

Broughton and Cannon, Chapters 15-25

***(October 3)* Cultural Macroevolution: Introduction and Artifact Centered Macroevolution**

Mesoudi, Chapter 4

Prentiss, Anna Marie

2011 Introduction to this Special Issue on Evolution of Material Culture. *Evolution:*

Education and Outreach 4:374-378.

Prentiss, Anna Marie, Randall R. Skelton, Niles Eldredge, and Colin P. Quinn

2011 Get Rad! The Evolution of the Skateboard Deck. *Evolution: Education and Outreach* 4:379-389.

Tehrani, Jamshid

2011 Patterns of Evolution on Iranian Tribal Textiles. *Evolution: Education and Outreach* 4:390-396.

Dagg, Joachim L.

2011 Exploring Mouse Trap History. *Evolution: Education and Outreach* 4:397-414.

Goodale, Nathan, George T. Jones, and Charlotte Beck

2011 Natural Selection and Human Behavior. *Evolution: Education and Outreach* 4:427-434.

O'Brien, Michael J., John Darwent, and R. Lee Lyman

2001 Cladistics is Useful for Reconstructing Archaeological Phylogenies: Palaeoindian Points from the Southeastern United States. *Journal of Archaeological Science* 28:1115-1136.

O'Brien, Michael J., Matthew T. Boulanger, Briggs Buchanan, Mark Collard, R. Lee Lyman, John Darwent

2014 Innovation and Cultural transmission in the American Paleolithic: Phylogenetic Analysis of Eastern Paleoindian Projectile Point Classes. *Journal of Anthropological Archaeology* 34:100-119.

Collard, Mark, Stephen J. Shennan, and Jamshid J. Tehrani

2006 Branching, Blending, and the Evolution of Cultural Similarities and Differences among Human Populations. *Evolution and Human Behavior* 27:169-184.

Jordan, Peter and Stephen Shennan

2009 Diversity in Hunter-Gatherer Technological Traditions: Mapping Trajectories of Cultural 'Descent with Modification' in Northeast California. *Journal of Anthropological Archaeology* 28:342-365.

Lycett, Stephen

2009 Understanding Ancient Hominin Dispersals Using Artefactual Data: A Phylogeographic Analysis of Acheulian Handaxes. *PLoS one* 4(10)e7404.

Larsen, Anna W.

2011 Evolution of Polynesian Bark Cloth and Factors Influencing Cultural Change. *Journal of Anthropological Archaeology* 30: 116-134.

(October 17) **Cultural Macroevolution: Complex Cultural Packages**

Reading:

Mesoudi, Chapters 4 and 5

Prentiss et al. (Chapters 1, 4-11)

Mace, Ruth and Clare J. Holden

2005 A Phylogenetic Approach to Cultural Evolution. *Trends in Ecology and Evolution* 20(3):116-121.

Tehrani, Jamshid J.

2013 The Phylogeny of Little Red Riding Hood. *PLOS ONE* 8(11)e78871.

Prentiss, Anna Marie, James C. Chatters, Matthew J. Walsh, and Randall R. Skelton

2014 Cultural Macroevolution in the Pacific Northwest: A Phylogenetic Test of the Diversification and Decimation Model. *Journal of Archaeological Science* 41:29-43.

Coward, Fiona, Stephen Shennan, Sue Colledge, James Conolly, and Mark Collard

2008 The Spread of Neolithic Plant Economies from the Near East to Northwest Europe: A Phylogenetic Analysis. *Journal of Archaeological Science* 35:42-56.

(October 24) **First Assignment Presentations and Discussions**

(October 31) **Darwinian Study of Social Relationships**

Reading:

Mesoudi, Chapters 8-10

Hawkes, Kristen

1993 Why Hunter-Gatherers Work: An Ancient Version of the Problem of Public Goods. *Current Anthropology* 34:341-362.

Wiessner, Polly

2002 Hunting, Healing, and hxaro exchange A Long-term Perspective on !Kung (Ju/'hoansi) Large-Game Hunting. *Evolution and Human Behavior* 23:407-436.

Bird, R.B. and E.A. Smith

2005 Signaling Theory, Strategic Interaction and Symbolic Capital. *Current Anthropology* 46:221-248.

McGuir, K.R. and W.R. Hildebrandt

2005 Re-thinking Great Basin Foragers: Prestige Hunting and Costly Signaling During the Middle Archaic Period. *American Antiquity* 70:695-712.

Bowles, Samuel

2006 Group Competition, Reproductive Leveling, and the Evolution of Human Altruism. *Science* 314: 1569-1572.

Boone, James L.

1998 The Evolution of Magnanimity: When is it better to give than Receive? *Human Nature* 9:1-21.

Henrich, Joseph and Francisco J. Gil-White

2001 The Evolution of Prestige Freely Conferred Deference as a Mechanism for Enhancing the Benefits of Cultural Transmission. *Evolution and Human Behavior* 22:165-196.

Roscoe, Paul

2009 Social Signalling and the Organization of Small-Scale Society: The case of Contact-Era New Guinea. *Journal of Archaeological Method and Theory* 16:69-116.

Mulder, Monique Borgerhoff et al. (25 co-authors)

2009 Intergenerational Wealth Transmission and the Dynamics of Inequality in Small Scale Societies. *Science* 326:682-688.

Prentiss, Anna Marie, Thomas A. Foor, Guy Cross, Lucille E. Harris, and Michael Wanzienried

2012 The Cultural Evolution of Wealth-based Inequality at Bridge River, British Columbia. *American Antiquity* 77: 542-564.

(November 7) **Student Research Presentations**

(November 14) **Student Research Presentations**

(November 21) **Student research Presentations**

(November 28) **Holiday**

(December 5) **Student Research Presentations**

(December 8) **Research Papers Due (5:00 PM)**

(December 12) **Open Office Hours** (If professor is in town)

Key Terms to research (see Hart and Terrell page xv for a longer list):

adaptation
analogous
homologous
character
clade
culture
cultural virus
cultural trait
descent
drift
Darwinian population
essentialism
evolutionary individual
extrasomatic
exaptation
ecological hierarchy
genealogical hierarchy
genotype
fitness, inclusive fitness
individualism
interactor
meme
model
pathway
phenotype
reductionism
selection (natural, artificial, cultural, stabilizing, group)
“selfish” gene, meme
species
stasis
structural design (*Bauplan*)
trend (driven, passive)
transmission