

THEORY AND ITS APPLICATION IN BIOLOGICAL ANTHROPOLOGY

ARKY 617 (Winter 2009)

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Office hours: Weds. 2:00-3:30 & by appointment

COURSE DESCRIPTION

This seminar will focus on basic issues in the study of evolutionary theory as it applies to biological anthropology. It is designed to provide you with a sound understanding of the history and current status of evolutionary theory and to give you the opportunity to apply this understanding to your sub-discipline within biological anthropology. We will spend the first half of the course considering the principles of evolutionary biology. The remainder of the semester will focus on the application of this theory to human and non-human primates. While evolutionary biology provides the theoretical foundation for this course, species of the order Primate are both biological and cultural animals. Consequently, this course will take a biocultural approach; that is, we will consider both the biological and cultural adaptations which these species exhibit.

The course assumes some prior experience with molecular and population genetics and evolutionary theory, such as that covered in entry-level biology and biological anthropology courses. Course content and structure will be geared to the level of students in the master's program who have completed some of their coursework, but have yet to fully embark on their thesis.

It is acknowledged that many students may find greater relevance of some aspects of evolutionary theory to their research interests. This affinity will be respected in the sense that no student will be forced to apply the less-relevant aspects of evolutionary theory to their area of study. However, all students will be expected to gain a familiarity with materials covered in the course. For example, evo-devo and the debate concerning adaptation may not be directly relevant to all students' work, but students should be able to provide a brief description of the implications of these topics to their area of research.

COURSE OBJECTIVES

By the end of the course, students will be able to:

- (1) Describe, in some detail, the history of science as a way of knowing and the development of evolutionary theory;
- (2) Justify their use of the scientific or other method in their own research;

- (3) Describe the state of the science in 2006 and identify key questions in the field of evolutionary theory;
- (4) Summarise and critique the application of evolutionary theory to their sub-discipline of biological anthropology;
- (5) Verbally articulate the application of evolutionary theory to their particular research topic in a concise and compelling manner.

READINGS

The bulk of the readings will come from selected book chapters and journal papers. Many of these are available as pdf files at the class Blackboard website. In addition, we will use the following books which are available at the U. Calgary book store.

Darwin, Charles 1859. *On the Origin of Species*. 1st Edition.

Ridley, Mark (editor) 2004. *Evolution*. 2nd Edition. Oxford Univ.Press, NY.

ORGANIZATION

1. Meetings of the seminar will be devoted to discussion of selected topics. It is expected that you will accept the professional responsibility to carefully read the materials assigned and participate actively in the discussion.
2. Worksheets and/or essays will be assigned for each topic and collected periodically. All written work must be typed.
3. Each member of the seminar will be responsible for leading two class meetings and individually leading one class meeting.
 - a. *Round one*: Students will choose class #3, 4, 5, or 7 to lead.
 - b. *Round two*: The topics covered here will be determined by the students with input from me. The individual leading this class will also be responsible for handing in a 2500-3000 word summary-critique of the state of the science on the topic.

EVALUATION

Readings and Discussion 30% Due date: weekly

Each week a selection of readings and questions will be assigned. Questions will be designed to ensure comprehension of the material and to facilitate discussion. I will occasionally collect your answers to evaluate your understanding of the assigned material. The discussion should

reflect a critical evaluation of the material presented. It is to your advantage to cite relevant literature when discussing particular papers and topics. In many cases this literature may be from earlier class meetings and, hopefully, from material you have covered elsewhere.

| | | |
|-----------------------------|-----|---------------------------------|
| Leading class (first time) | 10% | Due date: depends on class lead |
| Leading class (second time) | 15% | Due date: depends on class lead |

Leading a class requires you to do the following:

1. *Select articles for the class* (due 11 days prior to the class):
These articles should provide the students with a bit of history on the topic as well as the state of the science. The class leader must send the articles selected to me at least 11 days prior to the class so that I have a bit of time to evaluate them before you post them for the other students. I generally have a list of papers which will provide you with a starting point on the topic. For the first class that you lead, you will have a less flexibility in choosing articles as I want to ensure that the seminal pieces on each topic are covered.
2. *Write discussion questions* (due 8 days prior to the class):
These questions should lead the rest of us to write a summary and critique of the each assigned reading and to stimulate discussion. It is often a good idea to ask your peers to compare and contrast articles which reach different conclusions. You may wish to ask provocative questions to stimulate discussion. Please send these questions to me electronically.
3. *Write an introduction to the topic* (due 8 days prior to the class):
The introduction must summarizing why the topic is relevant, how it ties in with topics covered in other class meetings, and what you hope will be achieved in the class. This should be roughly one paragraph. Please send the introduction to me electronically.
4. *Introduce the topic in class*:
This should be designed to give the students some background on the topic and last 15-20 minutes. While you will want to provide relevant history and perhaps more detail than is available in the readings, you need to avoid covering the material we will discuss as a class; that is, don't answer the questions which have been provided to stimulate class discussion.
5. *Facilitate discussion*:
This is often the most challenging aspect of leading the class as it requires you to think on your feet, asking the class questions to stimulate critical evaluation of the topic covered.

In choosing a topic for the second class, you should choose one that is of interest to you, but not the topic you wish to cover in your term paper. I have provided a list of potential topics for the second class you lead. You do not have to choose one of these, I only provide them as they have proven interesting in the past.

| | | |
|----------------------|-----|--------------------|
| Paper Assignment #1: | 10% | Due date: March 14 |
|----------------------|-----|--------------------|

The state of evolutionary theory in the student's sub-discipline: This assignment requires you to review at least 5 papers in your sub-discipline published in the last 10 years to assess the state of evolutionary theory in their sub-discipline. The papers considered must: (1) be seminal or at least "influential" in the sub-discipline, (2) be drawn from disparate of areas in the sub-discipline

which address different questions and use different methods, (3) reflect at least different two schools of thought within the sub-discipline. In this paper, you should: (1) summarise the main points of the paper, (2) summarise the degree to which evolutionary theory* explicitly or implicitly underlies the work, (4) critique, in light of evolutionary theory, the conclusions reached; (5) summarise the state of the sub-discipline's use of evolutionary theory. Essentially you should ask yourself whether or not each paper is well grounded in current evolutionary theory and may make recommendations for the direction of the discipline on the basis of your review. Note that I am only asking you to critique the paper as it relates to evolutionary theory; that is, you need not critique other perceived strengths / weaknesses of the paper. The paper must be 2500-3000 words and be submitted electronically.

* In this you must think about all aspects of evolutionary theory (i.e. variation, mechanisms of evolution such as drift, mutation, gene flow, sexual & natural selection, etc....)

Paper Assignment #2: 2% Due date: March 21

Evaluating another student's work: Each student will read and evaluate another student's paper on the state of evolutionary theory in their subdiscipline. The critique will be returned directly to me and I will pass it along to the students. This paper must be submitted electronically.

Term Paper Abstract: 2% Due date: April 14

This is a summary of the term paper. It must be 200 words or less and be submitted electronically.

Presentation of Term Paper: 11% Due date: April 16

In class presentation of term paper (5 December): You will have a maximum of 20 minutes to describe your term paper. While you are free to use any type of media you wish to give this presentation, I will need to know, no later than 3 days prior to your presentation, if you will need anything in addition to a computer and digital projector.

Paper Assignment #3: 20% Due date: April 22

Term paper (due 12 December): This should address a topic which is directly relevant to your research and demonstrate the application of evolutionary theory to your work. Many students have ended up using parts of this paper as either a chapter or section of their dissertation or thesis. **You must get my okay on your topic no later than 19 April.** The paper must be 5500-7000 words in length and must be submitted as a hard copy.

Assignment Format, Deadlines, & Mark Breakdown

Format for written work

- double space
- font: 12 point, Times New Roman
- 1 inch margins
- provide page numbers
- a separate title page is not necessary
- alignment – left (do not use the “justify” alignment)
- reference format- I don't care what format you use as long as it is easy for me to determine the source for the point referenced.

Deadlines

Work will not be accepted after **4:00 pm** on the due date.

Evaluation

Your final mark for the course will be based on the following:

| Assignment | Percentage of Mark |
|---|--------------------|
| Readings and Discussion | 30% |
| Leading class (first time) | 10% |
| Leading class (second time) | 15% |
| Paper Assignment #1: Evolutionary theory in your sub-discipline | 10% |
| Paper Assignment #2: Review of another's student's work | 2% |
| Paper Assignment #3: Term paper | 20% |
| Term Paper Abstract | 2% |
| Presentation of Term Paper | 11% |

Letter grade assignment: At the end of the course, the numerical marks will be summed and a final letter grade will be assigned based on the following basis:

| Percentage range | Letter grade | Percentage range | Letter grade |
|------------------|--------------|------------------|--------------|
| 95 or higher | A+ | 68-72 | C+ |
| 90-94 | A | 64-67 | C |
| 85-89 | A- | 59-63 | C- |
| 81-84 | B+ | 54-58 | D+ |
| 77-80 | B | 50-53 | D |
| 73-76 | B- | 49 or lower | F |

SCHEDULE OF TOPICS

| Class | Date | Leader | Topic |
|-------|----------|--------------|--|
| 1 | Jan. 14 | Wilson | Introduction |
| 2 | Jan. 21 | Wilson | Fundamental concepts: Science, Biology, Lyell, and Malthus |
| 3 | Jan. 28 | * | Fundamental concepts: Darwin |
| 4 | Feb. 4 | * | The modern synthesis: the mechanism & process of evolution |
| 5 | Feb. 11 | * | A Newer Synthesis: post-modern-synthesis developments |
| | Feb. 18 | | <i>Reading Break ~ No Class</i> |
| 6 | Feb. 25 | Hallgrimsson | Evo-devo: explaining variation (guest lecture) |
| 7 | Mar. 4 | * | Problems in defining adaptation |
| 8 | Mar. 11 | * | * |
| 9 | Mar. 18 | * | * |
| 10 | Mar. 25 | * | * |
| 11 | April 1 | * | * |
| 12 | April 8 | * | * |
| 13 | April 15 | * | Student presentations |

* to be determined

Topic ideas for the second class you lead: As noted above, you do not have to choose one of these. I only provide them as they have proved interesting to students in the past.

- Adaptation in humans: genetic, physiological, and behavioral mechanisms
- Stress Theory-adaptation “upside down...”
- Cultural evolution
- Sexual selection (covers the topic in more detail than it is covered earlier in the semester)
- Adaptation to nutritional stress
- Adaptation to hypoxia
- Adaptation to infectious disease
- Adaptation to thermal stress
- The evolution and maintenance of polymorphism in populations

DEPARTMENT OF ARCHAEOLOGY STATEMENT OF INTELLECTUAL HONESTY

(With thanks to the Department of Anthropology for use of their
Statement of Intellectual Honesty as our guide.)

Intellectual honesty is the cornerstone of the development and acquisition of knowledge. Knowledge is cumulative and further advances are predicated on the contributions of others. In the normal course of scholarship, these contributions are apprehended, critically evaluated and utilized as a foundation for further inquiry. Intellectual honesty demands that the contribution of others be acknowledged.

Essentially, plagiarism is a form of cheating that involves submitting or presenting work in a course as if it were the student's own done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:

- a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another person impersonate the student or otherwise substituting the work of another for one's own in an examination or test).
- b) parts of the work are taken from another source without references to the original author.
- c) the whole work is copied from another source and/or
- d) a student submits or presents work in one course which has also been submitted in another course (even though it may be entirely the work of that student) without the express consent of the instructors of the courses concerned.

While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offense.

The elementary rules of quotation and paraphrase are given below. There are further details and conventions of punctuation that you will need to look up in a manual of style, but observance of these rules should assure compliance with contemporary standards of intellectual honesty.

1. If you use more than four words from any source, put them in quotation marks and identify the source with a reference.

EXAMPLE:

It has been observed that "many tribes are, in a sense, ethnographic fictions"
(Leach 1954: 291).

2. If your direct quotation is more than three lines long, put it in block form, that is, left and right indented and single-spaced, without quotation marks and with a reference.

EXAMPLE:

Malinowski thought of tribes as social systems with well defined boundaries. This conception of tribe was later to be challenged by one of his students, who observed that:

The ethnographer has often only managed to discern that existence of 'a tribe' because he took it as axiomatic that this kind of cultural entity must exist (Leach 1954: 291).

3. To paraphrase the work of another means to present the same train of thought and evidence, but rephrased into your own words. Whenever you do this, you must include a note or reference to the source. A common mistake is to break up an author's words, and rearrange them slightly, passing them off as your own. This is wrong, even if you include a note or reference to the source. To do this for more than a few words is to commit plagiarism.

Below are three passages. The first is an excerpt from E.A. Leach, *Political Systems of Highland Burma*. The second is an improper paraphrase of the passage that would be considered plagiarism. The third is a proper paraphrase.

1. It is largely an academic fiction to suppose that in a 'normal' ethnographic situation one ordinarily finds distinct 'tribes' distributed on the map in orderly fashion with clear-cut boundaries between them. I agree of course that ethnographic monographs frequently suggest that this is the case, but are the facts proved? My own view is that the ethnographer has often only managed to discern the existence of 'a tribe' because he took it as axiomatic that this kind of cultural entity must exist. Many such tribes are, in a sense, ethnographic fictions (Leach 1954: 290-1). **(source)**
2. It is an academic misconception to think that in a typical ethnographic situation tribes with clear-cut boundaries can be found distributed in an orderly fashion on the map. Ethnographic monographs often imply that this is so, but what are the facts? The ethnographer is often able to find a 'tribe' only because she takes it for granted that this kind of group must exist. Many tribes are figments of the anthropologist's imagination. **(plagiarism)**
3. Ethnographic monographs often suggest that it is normally the case that there exist in the real world contiguous tribes with clearly discernible boundaries: however, it is Leach's view that such units are found only because the ethnographer has taken their existence for granted (Leach 1954: 290-1). **(proper paraphrase)**

STUDENT ACCOMMODATIONS

"It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course."