

Phil*6740 Philosophy of Biology - 2012

Tuesday 6:00- 8:50 p.m. Rozanski, 109

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Description

This year, the Graduate Seminar in the Philosophy of Biology will focus on the topic of theory change and challenges to orthodoxy in biological science. What sorts of factors drive theory change? Is it a rational process? How do social factors like prestige and authority promote or inhibit theory change? When should challenges to orthodoxy be taken seriously, and what exactly does this involve?

To address these questions, we will consider some of the traditional philosophical views on theory change by the likes of Popper, Kuhn, and Lakatos. However, our primary focus will be on two contemporary examples. One excellent example is the debate over gene centrism, or, the idea that traits evolve “for the good of the genes”. This perspective has dominated evolutionary biology since about 1966, but in recent years it has been criticized by some well-known biologists. E.O. Wilson, formerly one of gene centrism’s most outspoken proponents, has recently joined the ranks of its detractors. We will be reading Wilson’s recent (2012) book on the evolution of human nature, and considering the responses that it and some related papers in the primary literature are generating.

A second example is the so called “developmentalist challenge” to the Modern Synthesis version of evolutionary theory. It is argued by Mary Jane West Eberhardt and others that current evolutionary theory “ignores the organism” by overlooking phenotypic plasticity. On the traditional view, organisms are thought to evolve by a process of genetic mutation, variation and selection. Arguably, this gets things the wrong way around: first the organism accommodates to an environmental change by phenotypic plasticity, then that change becomes canalized by genetic assimilation. Does this alternative mechanism pose a serious challenge to the traditional theory? How should one go about deciding whether to accept such purported challenges to orthodoxy?

Grading

Participation (30%) This grade is based on discussion of reflection questions and readings during class.

First paper (30%) 3,000-4,000 words.

Final paper (40%) 5,000- 7,000 words.

Format

Each week, students are assigned a number of chapters and a set of questions on those readings.

Students will meet in small groups prior to class to discuss the readings, prepare answers to reflection questions, and to develop their own arguments and questions. We will then meet as a class to share our thoughts and insights.

Readings

Peter Godfrey Smith (2003), *Theory and Reality: An Introduction to the Philosophy of Science*. Chicago.

Richard Dawkins (1982), *The Extended Phenotype: The Long Reach of the Gene*. Oxford University Press.

E.O. Wilson (2012) *The Social Conquest of Earth*. Liveright Publishing

Plus selected articles or chapters.

Course Outline

Part 1: Theory change as it is portrayed in the philosophy of science.

Sep. 18 **Theory and Reality**
Read Chapters 1 - 4 (p.g. 1 - 74)

Sep. 25 **Theory and Reality**
Read Chapters 5 - 8 (p.g. 75 - 135)

Part 2: The Selfish Gene orthodoxy in evolutionary biology.

Oct. 2 **The Extended Phenotype**
Read Chapters 1 - 4 (p.g. 1 - 80)

Oct. 9 **The Extended Phenotype**
Read Chapters 5- 8 (p.g. 81 - 155)

Part 3: The challenge from Multi-Level Selection theory.

Oct. 16 **Social Conquest of Earth**
Read Sections 1 & 2 (p.g. 7-105)

Oct. 23 **Social Conquest of Earth**
Read Sections 3 & 4 (p.g. 109-187)

Oct. 30 **Social Conquest of Earth**
Read Sections 5 & 6 (p.g. 191-299)

Nov. 6 **Social Conquest of Earth**
Read: TBA -
First papers due

Part 4: The developmentalist challenge

Nov. 13 **Phenotypic Plasticity**
Read (TBA)

Nov. 20 **Phenotypic Plasticity**
Read (TBA)

Nov. 27 **Phenotypic Plasticity**
Read (TBA)

Final papers due December 12

E-mail Communication

As per University regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the university and its students.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Drop Date

The last date to drop one-semester Fall 2012 courses, without academic penalty, is **Thursday November**

1. For regulations and procedures for Dropping Courses, see the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Student Rights and Responsibilities

Each student at the University of Guelph has rights which carry commensurate responsibilities that involve, broadly, being a civil and respectful member of the University community. The Rights and Responsibilities are detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c14/c14-strightsrespon.shtml>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and enjoins all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded in any electronic media without the permission of the presenter, whether the instructor, a classmate or guest lecturer.

Resources

The Undergraduate Calendar is the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate programs. It can be found at:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/>

If you find yourself in difficulty, contact the undergraduate advisor in your program, or the BA Counselling Office: <http://www.uoguelph.ca/baco/contact.shtml>