

Economics 437 Spring 2017

Prof. Levis A. Kochin

Class Monday and Wednesday 12:30 PM to 2:20PM Savery 166

Office Hours Monday and Wednesday 3:30PM to 4:30PM and by Appointment

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This version of assignment list 3/10 /2017

There will be no class on Wednesday April 12 , Monday April 17,

Monday May 29 (Memorial Day) and Wednesday May 3

NOTE The Texts are not in the University of Washington Bookstore Purchase the texts online

This course is about the intersections of Economics and Biology. We will look in five areas:

- 1) Animals and plants, as well as people, make resource allocation decisions. There has been a convergence of economic and biological approaches to modeling these choices. The foraging behavior of animals is similar to the productive and consumptive behavior of people and can be modeled using price theory.
- 2) Animals and plants interact and thus make strategic decisions. Game Theory can be used to predict these interactions.
- 3) Humans are biological creatures. Our emotions and our reason are the products of biological evolution in natural history. The extent to which this history guides and limits human behavior has been the subject of great controversy.
- 4) Important parts of any human economy are concerned with using living things. Fisheries, Farming and Pharmaceuticals are important industries which cannot be understood without considering the biology of fish, crops and germs.
- 5) Human attempts to limit infection are subject to an important biological kickback in the form of resistance.

Required Texts: All are available now used and new at Amazon

- 1) Robert Dawkins. *The Selfish Gene* 2nd Press the 30th and 40th Anniversary Editions are both available used or new on Amazon the 2nd Edition (1990) also contains all assigned material
- 2) Matt Ridley. *The Origins of Virtue: Human Instincts and the Evolution of Cooperation* paperbound Penguin Books 1998 paperbound Now available now used and new at Amazon.
- 3) Jared Diamond (1997) *Guns Germs and Steel: The Fate of Human Societies* WW Norton Paperbound Now available used and new at Amazon
- 4) A reader will be available at Ram's Copy Center on the Ave for those who would like a hard copy version of the required readings which will be Emailed to enrolled students

GRADING

Quizzes Unscheduled 40%

Final Exam 60%

Thursday June 8 8:30AM to 10:20AM

Please bring a Bluebook

SCHEDULE OF ASSIGNMENTS

1) **Economic Theory and Biological Theory Monday March 27**

“Economics and Biology; The Historic Link” Edited From the Wikipedia article on Malthus posted on the next to the last page of the assignments

“Optimal Foraging Theory” Wikipedia
https://en.wikipedia.org/wiki/Optimal_foraging_theory

.If you are not familiar with the names Charles Darwin, Alfred Wallace, Ronald Fisher and John Maynard Smith read the articles on them in Wikipedia

Price Theory and Animal Behavior Wednesday March 29

Tullock, Gordon (1971) “The Coal Tit as a Careful Shopper” *The American Naturalist* Jan/Feb 1971

Stephans and Krebs *Foraging Theory* “Risk Sensitive Foraging” Ch. 6

Maynard Smith, J. (1978) “Optimization Theory in Evolution” *Annual Review of Ecological Systems* Vol. 9 pp 31-56

1) **Game Theory and Biology**

a) **Selfish Co-operation Monday April 3**

Dawkins. *The Selfish Gene* Ch 1-4 **Read the endnotes** in Dawkins *The Selfish Gene* on this and all other assignments from *The Selfish Gene*

b) The Evolutionary Stable Strategy Wednesday April 5

Dawkins *The Selfish Gene* Ch. 5-6

*Maynard Smith, John. “The Limitations of Evolution Theory” “The Evolution of Animal Intelligence” and “Evolution and the Theory of Games” Chapters 20-22 in *Did Darwin Get it Right: Essays on games, sex and evolution* Chapman and Hall 1989

Monday April 10

c) Group Selection and the Battle of the Generations

Dawkins *The Selfish Gene* Ch. 7

No Class Wednesday April 12 and Monday April 17

d) Sex Battle of the Generations Wednesday April 19

Dawkins *The Selfish Gene* Ch. 9

Maynard Smith. “Why Sex” Ch. 19 in *Did Darwin Get it Right: Essays on games, sex and evolution* Chapman and Hall 1989

Clutton-Brock, T. H. “Birth sex ratios and the reproductive success of sons and daughters” Ch. 16 in *Essays in Honor of John Maynard Smith* edited by Greenwood,

Harvey and Slatkin, Cambridge University Press 1985

Yezerinac, Weatherhead and Boag (1996) “Cuckoldery and lack of parentage dependant paternal care in yellow warblers: a cost-benefit approach” *Animal Behavior* Vol. 52

Levis Kochin and Melissa Knox “Behavioral Accommodations to the Excess Supply of Men in the Chinese Marriage Market” University of Washington 2012 2

Monday April 24

e) Co-operation vs. Non-co-operation

Dawkins *The Selfish Gene* Ch. 10, 12

Axelrod and Hamilton(1981) “The Evolution of Co-operation” *Science* Vol. 211 pp1390-1396

Nowak, Martin and Sigmund, Karl (1993) “A strategy of win-stay lose-shift outperforms Tit for Tat in the Prisoner’s Dilemma Game” *Nature* Vol. 364 pp. 56-58

Houston, A.J. And Davies N.B. ‘The Evolution of Cooperation and Life History In the Dunnock, “Prunella modularis” in *Behavioral Ecology* edited by R.B. Sibley and R. H. Smith

Wednesday April 26

f) The Reach of Replicators

Dawkins *The Selfish Gene* Ch. 11, 13

Monday May 1 Wednesday May 3

Sociobiology

Adam Smith *The Wealth of Nations* “1) Pins 2) The division of labor is limited by the extent of the market’

Matt Ridley *The Origins of Virtue: Human Instincts and the Evolution of Cooperation* Penguin Books 1998

Martin A. Nowak “Why We Help” *Scientific American* July 2012

Franz B. M. de Waal “How Animals Do Business” *Scientific American* April 2005 73-79

The Economics of Biological Resources

a) Fishing

, Monday May 8 and Wednesday May 10

Gardner Brown “The Economics of Renewable Resources: Fishing ”
University of Washington 1994

Costello, Gaines, Lynham “Can Catch Shares Prevent Fisheries Collapse” *Science* Vol. 321 (19 September 2008) pp. 1678- 1681
Wikipedia articles on “Fisheries Management”, “Individual Fishing Quota“ and “ Common Fisheries Policy” (European Union)

b) The Evolution of Agriculture

Monday May 15

Jared Diamond (1997) *Guns Germs and Steel: The Fate of Human Societies*. WW Norton, 1997

Chapters 4,5, 6, 7 and 8

c) Pharmacy Wednesday May 17

Berndt, Erni R. "Pharmaceuticals in U.S. Health Care: Determinants of Quality and Price" *Journal of Economic Perspectives* Vol. 16 N. 4.

Kremer, Michael "Pharmaceuticals and the Developing World" *Journal of Economic Perspectives* Vol. 16 N. 4. pp 65-90

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d) Resistance: Evolution Bites Back

Monday May 22 Wednesday May 24

Wednesday May 24th is the last class

Gardner Brown and David F. Layton (1996) "Resistance Economics: social cost and the evolution of antibiotic resistance" *Environment and Development Economics* Vol. Part 1

NO CLASS Monday May 29th (Memorial Day) and Wednesday May 31

Review Session Friday June 2 12:30PM -2:30PM Tentatively

FINAL EXAM Thursday June 8 8:30AM to 10:20AM

Bring a Bluebook

Economics and Biology; The Historic Link

Edited From the Wikipedia article on Malthus

“[Charles Darwin](#) and [Alfred Russel Wallace](#) each read and acknowledged the role played by Malthus in the development of their own ideas. Darwin referred to Malthus as "that great philosopher",^[72] and said: "This is the doctrine of Malthus, applied with manifold force to the animal and vegetable kingdoms, for in this case there can be no artificial increase of food, and no prudential restraint from marriage".^[73] Darwin also wrote:

"In October 1838... I happened to read for amusement Malthus on *Population*... it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of new species."
—Barlow, Nora 1958. *The autobiography of Charles Darwin*. p128

Wallace stated:

"But perhaps the most important book I read was Malthus's *Principles of Population*... It was the first great work I had yet read treating of any of the problems of philosophical biology, and its main principles remained with me as a permanent possession, and twenty years later gave me the long-sought clue to the effective agent in the evolution of organic species.
—Wallace, Alfred Russel 1908. *My life: a record of events and opinions*.^[74]

[Ronald Fisher](#) commented skeptically on Malthusianism as a basis for a theory of [natural selection](#).^[75] Fisher did not deny^[citation needed] Malthus's basic premises, but emphasized the role of [fecundity](#).^[76] [John Maynard Smith](#) doubted that famine functioned as the great leveller, as portrayed by Malthus, but he also accepted the basic premises:

3"[A population] cannot increase logarithmically for ever. Sooner or later, a shortage of resources must bring the increase to a halt. It was this insight which led both Darwin and Wallace acquired by reading... Malthus, and which led to the idea of natural selection."
—Maynard Smith, John 1998. *Evolutionary genetics*. 2nd ed Oxford. p17”

Wikipedia Downloaded August 14, 2012

Some Possible 437 Term Paper Topics

Malthus to Darwin to Maynard Smith : Economics and Evolution
Evolution and Religion in Islam
The Evolution of Property Rights
Why Do Hunter Gatherers Share Meat more than vegies?
Why didn't West Coast Native Americans Farm?
Cultural Survival and Genetic Survival Genes and Memes Applied to:
Sperm Donation , Egg Donation , Adoption Celibacy or Religion
The biology and economics of the differences between men and women in
earnings or politics or sexual behavior or child care or education or life span or
Why are more boys born than girls?
The effects of Sex Selective Abortion on Savings, Marriage Rates, Birth Rates etc.
Reciprocal Altruism in Apes or Bats or Humans, Killer Whales or ...
The Economics of a bio-fuel
Farm Policy in the US or the European Union or Japan or
The History of Regulation in some one regulated stock (Alaskan Halibut, Alaskan
Salmon, deer, Pollock, Pacific Hake, salmon, Cod, tuna or any other species fished
or hunted)
The Regulation of By-Catch in New Zealand or Alaska or the Pacific Coast of the US...
Megafauna Extinction in North America, New Zealand or Africa, India or Madagascar
An Economic Perspective on the Endangered Species Act
Drug Resistance in AIDS in Antibiotics in Malaria
The Economics and biology of impotence and its cures
Selection at the population level
Agricultural Policy in the US or the European Union or Brazil, Japan or China or ...
Economics of Biological Invasions: Wolves or Fire Ants or Milfoil or Whatever
Free trade in Pharmaceuticals?
The Economics of Prohibition of Alcohol or Marijuana or Cocaine or Heroin or Tobacco
Lions and Tigers and Bears; O My! : RE-introducing Megafauna to the US
The Evolution of Human Utility (Just so stories and scientific hypotheses)
Nature and Nurture (for IQ, cancer, diabetes, wages etc)
The Costs and Benefits of Decoding Your Personal Genome
Resistance and the progression of HIV to AIDS
Resistance and the control of Malaria or Ebola or Measles or Chickenpox
Should it be legal to feed healthy animals antibiotics?
Vaccination – Who should pay for it? Should it be illegal not to be vaccinated?