

# **ANTHROPOLOGY 8891.04: SOCIAL-ECOLOGICAL SYSTEMS**

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Spring 2018  
Hours of instruction: TR 11:10 – 12:30 AM  
Smith Lab 4094  
Office hours: W12-3 PM or by appointment

## **COURSE DESCRIPTION**

This course provides an overview of frameworks, theories, concepts, and methods used in the interdisciplinary study of social-ecological systems. We will cover a wide range of conceptual frameworks, including complexity theory, complex adaptive systems, resilience, institutional analysis of social-ecological systems, ecosystem services, and coupled human and natural systems. We will critically analyze these frameworks and examine how they have been used to study human-environment interactions. The goal of the course is that student draw from these conceptual frameworks to develop a conceptual model for their own study of human-environment interactions.

## **COURSE GOALS**

The goal is to train students to think theoretically about human-environment interactions as social-ecological systems, in which processes within and feedbacks between human and natural systems are critical for understanding the non-linear dynamics and emergent outcomes of these social-ecological systems. This entails that students should be able to:

1. Understand the role of conceptual frameworks in shaping research on social-ecological systems.
2. Know the different theoretical frameworks that have been used describe and explain the dynamics of social-ecological systems.
3. Synthesize literature on a framework, concept or question in the study of social-ecological systems.
4. Apply systems thinking to analyze human-environment interactions as social-ecological systems.
5. Develop a theoretical model for their own study of human-environment interactions.

## DISABILITY SERVICES

Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 292-3307, [slds@osu.edu](mailto:slds@osu.edu); [slds.osu.edu](http://slds.osu.edu).

## COMMITTEE ON ACADEMIC MISCONDUCT STATEMENT

All students should become familiar with the rules governing academic misconduct, especially as they pertain to plagiarism and cheating. Ignorance of the rules is not an excuse and all alleged cases of academic misconduct will be reported to the committee on academic misconduct.

## READINGS

There is one required book. It has nothing to do with social-ecological systems, but everything with succeeding in graduate school. Shore, Zachary. 2016. *Grad School Essentials: A crash course in scholarly skills*. Berkeley (CA): University of California Press. All other readings are available via Carmen.

## COURSE REQUIREMENTS AND EVALUATION

- 1) Discussion.** You are expected to have read the assigned readings once or twice before you come to class. As you read, highlight, take notes, summarize, look up new words or concepts, and come with questions for me and/or your classmates. In short, be prepared to discuss the readings in class and bring the readings to class. I recommend you to go over the readings once more after class. You are expected to be actively engaged in class; that is, coming to class prepared, paying attention, and contributing to discussions and problem solving, both by making comments and by facilitating other peoples' participation. Everyone is responsible for making the workshop an effective learning activity. This entails not only talking, but also listening and encouraging others to participate. Because it is difficult to do well in the course if sessions are missed *attendance and participation in every class meeting is required*. Please contact me if there is an emergency situation. If you are ill and must miss a class, you are responsible for getting the notes and assignment information from your classmate.
- 2) Grad School Essentials.** In the beginning of the semester we will and discuss Zachary Shore's *Grad School Essentials*. Every week we will read one chapter on how to read, critique, write, speak, act and research. It is an easy read and it has valuable lessons for graduate students. For each chapter I would like you to answer three questions for each of the chapters and associate scholarly skills: (1) What are

you already doing in terms of the respective scholarly skills? (2) What new scholarly skills did you learn from reading Grad School Essentials? and (3) What skill - new or old - would you recommend to your fellow graduate students? The answers to these questions do not need to be long - one or two sentences or 140 characters for each question would be fine. I would like you to post your answers to the three questions every week before our Thursday meeting.

- 3) Online Reflections.** Each week you will write a short reflection (no more than 1,000 words) about the readings and the conceptual framework that we cover that week. In your reflection, you have to do the following: (1) explain the conceptual framework in your own words; (2) discuss the strengths and weaknesses of the framework; (3) discuss how it builds on other frameworks; and (4) discuss whether and how it is useful for your own study of human-environment interactions. The reflections are due before class on Tuesday.
- 4) Doctoral exam homework.** There will be a few exercises over the course of the semester that help you prepare for your final paper or proposal, including (1) finding and managing sources; (2) identify the type of sources on your list; (3) define key concepts in your own words; (4) compare and contrast key resources to explain key debates; (5) draw a figure that represents your theoretical model; (6) abstract/outline/argument of your paper; (7) presentation of your paper or proposal; and (8) synthesis of one key topic/question/debate.
- 5) Final Paper or Proposal.** The final project of this course will be a 10-page, single-spaced paper or proposal in which you outline a theoretical model for your own study of human-environment interactions that explains why it is important to use a systems approach and how you would study the social-ecological system. You should draw from the frameworks that we covered in the course (and other relevant frameworks). The final paper is due on Monday 30 April before midnight.

**Evaluation:** Course responsibilities will be weighted in the following way:

1. Discussion	15%
2. Grad School Essentials (3)	5%
3. Online Reflections (12)	25%
4. Doctoral exam exercises (8)	25%
5. Final Paper or proposal	30%
<b>Total</b>	<b>100%</b>

Final grades are based on the OSU Standard Scheme. A general guide to how you are doing is: A 93; A- 90-92; B+ 87-89; B 83-86; B- 80-82; C+ 77-79; C 73-76; C- 70-72; D+ 67-69; D 60-66; E < 60.

**Additional notes from the instructor:**

- Except in cases of properly documented illness or personal emergency will late assignments be accepted; they will progressively lose value and will be evaluated as time allows.
- I will use Carmen to post assignments and other information for the class (e.g., cancelled office hours, changes in readings). Check it regularly (at least twice a week).
- Please note that the schedule below is tentative and that the instructor reserves the right to make changes.

**SCHEDULE AND TOPICS****WEEK 1: INTRODUCTION****T1/9 and R1/11**

Agar, Michael. 2004. We Have Met the Other and We're All Nonlinear: Ethnography as a Nonlinear Dynamic System. *Complexity* 10 (2):16-24.

Henrich, Joseph, Steven J. Heine, and Ara Norenzayan. 2010. Most people are not WEIRD. *Nature* 466 (1 July 2010):29.

Ravitch, Sharon M., and Matthew Riggan. 2012. Reason & Rigor: How conceptual frameworks guide research. Los Angeles (CA): Sage.

Hallstein, Eric, Michael Kiparsky, and Anne Short. 2009. An Orals Survival Kit. *Chronicle of Higher Education*.

Barreca, Gina. 2011. 6 Easy—and Not So Easy—Pieces of Advice for Grad Students. *Chronicle of Higher Education*.

**WEEK 2: COMPLEXITY****T1/16 and R1/18**

Mitchell, Melanie. 2009. *Complexity: a guided tour*. Oxford (UK): Oxford University Press.

Miller, John H., and Scott E. Page. 2007. *Complex Adaptive Systems: An Introduction to Computational Models of Social Life*, Princeton Studies in Complexity. Princeton (NJ): Princeton University Press.

Holland, John H. 2014. *Complexity: A very short introduction*. Oxford (UK): Oxford University Press.

Shore, Zachary. 2016. *How to Read & How to Critique in Grad School Essentials: A crash course in scholarly skills*. Berkeley (CA): University of California Press. Pp 1-55.

### **WEEK 3: COMPLEX ADAPTIVE SYSTEMS**

#### **T1/23 and R1/25**

Lansing, J. Stephen. 1989. Balinese "Water Temples" and the Management of Irrigation. *American Anthropologist* 89 (1):326-341.

Lansing, J. Stephen. 2003. Complex adaptive systems. *Annual review of anthropology* 32:183-204.

Moritz, Mark, Paul Scholte, Ian M. Hamilton, and Saïdou Kari. 2013. Open Access, Open Systems: Pastoral Management of Common-Pool Resources in the Chad Basin. *Human Ecology* 41 (3):351-365.

Shore, Zachary. 2016. *How to Write & How to Speak in Grad School Essentials: A crash course in scholarly skills*. Berkeley (CA): University of California Press. Pp 56-96.

### **WEEK 4: COMPLEX ADAPTIVE SYSTEMS**

#### **T1/30 and R2/1**

Mark Moritz. 2018 Book manuscript in preparation. *Emergent Commons: How Pastoralists avoid a Tragedy of the Commons in West Africa*. Princeton Studies in Complexity Series. Princeton University Press.

Downey, Sean S. 2010. Can Properties of Labor-Exchange Networks Explain the Resilience of Swidden Agriculture? *Ecology and Society* 15 (4):15.

Shore, Zachary. 2016. *How to Act & How to Research in Grad School Essentials: A crash course in scholarly skills*. Berkeley (CA): University of California Press. Pp 97-147.

### **WEEK 5: NICHE CONSTRUCTION**

#### **T2/6 and R2/8**

Bird, Douglas W., Rebecca Bliege Bird, Brian F. Coddling, and Nyalangka Taylor. 2016. A Landscape Architecture of Fire: Cultural Emergence and Ecological Pyrodiversity in Australia's Western Desert. *Current Anthropology* 57 (S13):S65-S79.

Bird, Rebecca Bliege. 2015. Disturbance, Complexity, Scale: New Approaches to the Study of Human-Environment Interactions. *Annual Review of Anthropology* 44 (1):241-257.

Laland, Kevin N., and Michael J. O'Brien. 2010. Niche Construction Theory and Archaeology. *Journal of Archaeological Method and Theory* 17 (4):303-322.

**WEEK 6: RESILIENCE**  
**T2/13 and R2/15**

Holling, C. S. 2001. Understanding the Complexity of Economic, Ecological, and Social Systems. *Ecosystems* 4 (5):390-405.

Robinson, Lance W., and Fikret Berkes. 2010. Applying Resilience Thinking to Questions of Policy for Pastoralist Systems: Lessons from the Gabra of Northern Kenya. *Human Ecology* 38 (3):335-350.

Redman, Charles L., and Ann P. Kinzig. 2003. Resilience of Past Landscapes: Resilience Theory, Society, and the Longue Durée. *Conservation Ecology* (11955449) 7 (1):N.PAG.

**WEEK 7: REGIME SHIFTS**  
**T2/20 and R2/22**

Biggs, R, T Blenckner, C Folke, L Gordon, A Norström, M Nyström, and G Peterson. 2012. Regime shifts. In *Encyclopedia of Theoretical Ecology*.

Scheffer, M., and S. R. C. Carpenter. 2003. Catastrophic regime shifts in ecosystems: linking theory to observation. *Trends in Ecology & Evolution* 18 (12):648-656.

Scheffer, Marten, Matthijs Baas, and Tone K. Bjordam. 2017. Teaching originality? Common habits behind creative production in science and arts. *Ecology and Society* 22 (2).

**WEEK 8: COMMONS AND SOCIAL-ECOLOGICAL SYSTEMS**  
**T2/27 and R3/1**

Ostrom, Elinor. 1990. *Governing the commons: the evolution of institutions for collective action*. Cambridge (UK): Cambridge University Press. Chapter One.

Ostrom, Elinor. 2007. A diagnostic approach for going beyond panaceas. *PNAS* 104 (39):15181-15187.

Anderies, John M., and Marco A. Janssen. 2013. *Sustaining the Commons*. Tempe (AZ): Center for the Study of Institutional Diversity. Pages 129-160. Focus on the chapter on coupled infrastructure.

**WEEK 9: COUPLED HUMAN AND NATURAL SYSTEMS**  
**T3/6 and R3/8**

Liu, Jianguo, et al. 2007. Complexity of Coupled Human and Natural Systems. *Science* 317 (5844):1513-1516.

Moritz, Mark, et al. 2016. Studying the Logone Floodplain, Cameroon as a Coupled Human and Natural System. *African Journal of Aquatic Sciences* 41 (1):99-108.

Downing, Andrea S., et al. 2014. Coupled human and natural system dynamics as key to the sustainability of Lake Victoria's ecosystem services. *Ecology and Society* 19 (4).

Optional: Berwald, Thomas J., Penelope L. Firth, and Sarah L. Ruth. 2016. The Dynamics of Coupled Natural and Human Systems Program at the U.S. National Science Foundation: lessons learned in interdisciplinary funding program development and management. *Current Opinion in Environmental Sustainability* 19:123-133.

**SPRING BREAK**  
**T3/13 and R3/15**

**WEEK 10: MODELING**  
**T3/20 and R3/22**

Epstein, Joshua M. 2008. Why model? *Journal of Artificial Societies and Social Simulation* 11 (4):12.

Moritz, Mark, Ian M. Hamilton, Andrew Yoak, Paul Scholte, Jeff Cronley, Paul Maddock, and Hongyang Pi. 2015. Simple Movement Rules result in Ideal Free Distribution of Mobile Pastoralists. *Ecological Modelling* 305 (10 June 2015):54-63.

NetLogo Model of Ideal Free Distribution of Mobile Pastoralists in the Logone Floodplain, Cameroon (Links to an external site.). 3.0, Columbus (Ohio).

**WEEK 11: TELECOUPLING**  
**T3/27 and R3/29**

Liu, Jianguo, et al. 2013. Framing Sustainability in a Telecoupled World. *Ecology and Society* 18 (2).

Hulina, Jacqueline, Carol Bocetti, Henry Campa Iii, Vanessa Hull, Wu Yang, and Jianguo Liu. 2017. Telecoupling framework for research on migratory species in the Anthropocene. *Elem Sci Anth* 5 (0).

## **WEEK 12: POLITICAL ECOLOGY**

**T4/3 and R4/5**

Crane, Todd A. 2010. Of models and meanings: cultural resilience in social–ecological systems. *Ecology and Society* 15 (4):19.

Garland, Elizabeth. 2008. The Elephant in the Room: Confronting the Colonial Character of Wildlife Conservation in Africa. *African Studies Review* 51 (3):51-74.

Turner, Matthew D. 2014. Political ecology I: An alliance with resilience? *Progress in Human Geography* 38 (4):616-623.

Wilmer, H., and M. E. Fernandez-Gimenez. 2016. Some years you live like a coyote: Gendered practices of cultural resilience in working rangeland landscapes. *Ambio* 45 (Suppl 3):363-372.

## **WEEK 13: GOING META**

**T4/10 and R4/12**

Bosque-Pérez, Nilsa A., P. Zion Klos, Jo Ellen Force, Lisette P. Waits, Kate Cleary, Paul Rhoades, Sara M. Galbraith, Amanda L. Bentley Brymer, Michael O'Rourke, Sanford D. Eigenbrode, Bryan Finegan, J. D. Wulfhorst, Nicole Sibelet, and Joseph D. Holbrook. 2016. A Pedagogical Model for Team-Based, Problem-Focused Interdisciplinary Doctoral Education. *BioScience* 66 (6):477-488.

McGreavy, Bridie, Laura Lindenfeld, Karen Hutchins Bieluch, Linda Silka, Jessica Leahy, and Bill Zoellick. 2015. Communication and sustainability science teams as complex systems. *Ecology and Society* 20 (1).

Miller, T. R., T. D. Baird, C. M. Littlefield, G. Kofinas, III F. Chapin, and C. L. Redman. 2008. Epistemological pluralism: reorganizing interdisciplinary research. *Ecology and Society* 13 (2):46.

## **WEEK 14: PRESENTATIONS**

**T4/17 and R4/19**



## **LEARNING OUTCOMES**

1. Understand the role of conceptual frameworks in shaping research on social-ecological systems.
  - a. Explain what a conceptual framework is
  - b. Explain how conceptual frameworks shape research
2. Know the different theoretical frameworks that have been used describe and explain the dynamics of social-ecological systems.
  - a. List the main theoretical frameworks
  - b. Explain frameworks, key concepts, and the questions they addressed
  - c. Discuss the strengths and weaknesses of theoretical frameworks
  - d. Describe how the frameworks have shaped other theoretical frameworks
  - e. Compare and contrast different theoretical frameworks
  - f. Explain contributions to the study of social-ecological systems
3. Synthesize literature on a framework, concept or question in the study of social-ecological systems.
  - a. Distinguish between different types of resources
  - b. Identify and find key sources
  - c. Explain frameworks, models, and concepts in their own words
  - d. Analyze different sources and identify disagreements
  - e. Plan and organize literature review
  - f. Synthesize sources and make new connections
4. Apply systems thinking to analyze human-environment interactions as social-ecological systems.
  - a. Explain models, concepts and questions of theoretical frameworks
  - b. Identify the components, interactions, and processes in systems
  - c. Apply conceptual tools to describe and explain a social-ecological system
5. Develop a theoretical model for their own study of human-environment interactions.
  - a. Construct their own theoretical model
  - b. Use relevant and appropriate theoretical frameworks
  - c. Articulate clearly and logically their own theoretical model
  - d. Convince reader of importance of topic and rigor of approach

## **Assessment of learning outcomes**

1. Online reflections – SLO1, SLO2, SLO4
2. Discussions – SLO1, SLO2, SLO4
3. Grad School Essentials – SLO5
4. Presentations – SLO4, SLO5
5. Doctoral exam homework – SLO3
6. Final paper or proposal – SLO1, SLO2, SLO3, SLO4, SLO5