

SOCIAL ANALYSIS OF ECOLOGICAL CHANGE Fall 1995 revised

[Peter Taylor](#)

R. Soc 660/ S&TS 660/ B&Soc 460

3 or 4 credits

Seminar Tu 1.25-4.30

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Science & Technology Studies

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Office Hours (by sign-up sheet) Tu 11.15-1.15

Course description

Processes such as deforestation, species loss, land degradation, overpopulation, and global warming are, in their causes and their effects, social and environmental at one and the same time. This seminar examines a range of approaches to the analysis of ecological and social processes, drawing on interpretations of different socio-ecological studies by historians, sociologists and anthropologists to inform our discussions.

Topics include ideas of nature, colonial conservation science, systems ecology, the tragedy of the commons, neo-Malthusianism, human ecology, local knowledge, nomadic pastoralism, ecological degradation and its determinants, political ecology, women and eco-development, and global environmental discourse. Interpretations address themes of metaphor, worldviews, individualism, simpling, environmental determinism, levels of analysis, relations of production, social construction, gender, subalternity, technocratic rationality and participatory research.

Course goals

This course aims to work from two angles:

i) examining the study of ecological and social processes, as undertaken since World War II in the disciplines of human ecology, geography, anthropology, range ecology, environmental science, etc ; and

ii) contributing a social studies of science perspective on these studies.

Through this two-angle approach students from rural/ development sociology, natural resources, and history and social studies of science (and other fields) should become acquainted with a range of the problems and analytic frameworks of historians, sociologists and anthropologists dealing with science, and this angle should provide them critical perspectives on the different analyses of socio-ecological issues that the course reviews. Although the coverage of "socio-ecological" science can neither be exhaustive* nor avoid overlapping with other courses, the topics and readings have been chosen so students should acquire new critical perspectives on the analysis of socio-ecological issues. (*Note: The issues analyzed tend to be Third world and non-urban, and the interpretive perspectives

come mostly from the Western commentators.)

Requirements

1. Reading (sometimes a lot), attendance, and participation in the discussion.
2. Lead (probably with 1 or 2 others) the discussion for 2 seminars. Leaders must prepare the extra readings (others are encouraged, but not required to), and interpret their message to the class. Leaders must meet with me in advance of the class.
3. Before class at least 8 times in the semester students must email to the class list, STS660-L@cornell.edu, two questions that they would like discussed.
4. Undergraduates will be assigned to a peer group(s), which will meet for an hour in advance of each class in order to prepare for the discussion and to formulate requests for "background briefings" from me. This makes up the extra or fourth credit.
5. Each week the first part of the seminar will be reading the 1 page reflection/discussion provocations that students bring to class (at least 5 times in the semester). Bring enough copies for everyone in the seminar. Emailing these also in advance to the class list will allow discussion leaders to prepare better for discussions.
6. The last part of the seminar each week will consist of 1 or 2 students giving short presentations on the progress of their term paper research, conforming to the ideal schedule of progress toward the final term paper (see below.).
7. The term paper will be *either* a research proposal related to your work or a *review* of the growing literature in an area or period of "socio-ecological" science. Reviews of areas not covered directly or sufficiently in the syllabus are particularly welcome, e.g. Ecological economics; Environmental sociology; Deep ecology, environmental ethics and left ecologies; Sustainable development; New sociology of agriculture; Adaptive approaches to social & ecological theory; Conservation Biology; Subaltern studies and the environment; Women and the environment. I can provide a list of possible readings for many of these topics. The review should use in a disciplined and explicit way some of the social studies of science frameworks or themes introduced in the course. 10-15 pages for undergraduates; 15-20 for graduates, properly referenced.
 Topic & bibliography 9/26
 Outline .10/24
 Draft 12/1 (Note the early date!)
 Final version (revised following comments) 12/12 (Note the early date!)
 Class presentation 11/21, 11/28 or 12/5
8. Extensions are given only if they are negotiated well in advance, and if you get more than 2 weeks behind the schedule above, you must propose an acceptable revised schedule. I do not want any prolonged incompletes from this course!
9. Submission of one or two suggested additions or substitutions to the readings, with a brief note explaining the recommendation. Due: 12/5

Grading

Class participation 10%
 Discussion leading 20
 Submission of reflection/discussion provocations 10

Progress report on term paper 10
Term paper 50

Only graduate student auditors will be allowed, and they will be required to do the reading and participate in class, including to take their turn at leading discussions and to submit reflection/discussion provocations.

Syllabus and readings

(Interpretive themes are given in parentheses below the topic.)

Readings will be available from Gnomon copy for around \$60 (including copyright permissions). Some required readings, marked #, are not included in the reader, mostly because of excessive permission charges. These and the "extra" readings will be on reserve in xerox form in the Biology & Society reading (aka "advising") room (Clark Hall 278; open from 8.30-4.30 M-F only).

1. Introduction to course and participants

(two strands: study of ecological and social processes and social studies of science; "intrasecting processes")

Post- class reading: Taylor, P. J. and R. García-Barrios (1995). "The social analysis of ecological change: From systems to intersecting processes." Social Science Information 34(1): 5-30.

HISTORY

2. Nature as a social and historical construct

(Historians' tools: historical semantics, cultural materialism, material & cultural revolutions)

Williams, R. (1980) "Ideas of Nature," in Problems in Materialism and Culture. London: Verso, 67-85.

Wolf, E. (1982). "Introduction & Afterword," in Europe and People without History. Berkeley, U. Calif. Press, 1-23; 385-391.

Cronon, W. (1983) Changes in the Land N.Y.: Hill & Wang, 3-15; 159-170

Merchant, C. (1989). Ecological revolutions. Chapel Hill, U. N. Carolina, chaps. 1 & 8

Extra:

Denevan, W. M., 1992, "The pristine myth - The landscape of the Americas in 1492", Annals of the Association of American Geographers, 82(3): 369-385.

Giles-Vernick, T. (1995). "Envisioning history in land: Mpimu historiography and ecology in the Central African Republic." Workshop on Science, Technology, and Natural Resource Management in a Comparative Global Context, Cornell University, April.

Worster, D. and et al. "A round table: Environmental history." The journal of American history 76 (4, 1990): 1087-1147.

Worster, D. (1977) "Science in Arcadia & The empire of reason." In Nature's economy. Cambridge: Cambridge University Press, 2-55.

4. Systems: Cybernetics and ecology in the atomic age

(Post-WW2 technocratic optimism, correlations between social location and conceptual advances)

Heims, S. (1980) John von Neumann and Norbert Wiener Cambridge, MA: MIT Press, 179-220.

Excerpts from the Conference on Teleological Mechanisms:

Frank, L.K. (1948) "Foreword." *Annals of the New York Academy of Science* **50**: 189-196
 Hutchinson, G. E. (1948) "Circular Causal Systems in Ecology." *Annals of the New York Academy of Science* **50**: 221-223,236-246.
 Taylor, P. J. (1988). "Technocratic Optimism, H.T. Odum, and the Partial Transformation of Ecological Metaphor after World War II," *Journal of the History of Biology* **21**(2): 213-244.
 Odum, E.P. (1964), "New Ecology," *Bioscience* **14**: 14-16.
 #Odum, H.T. "Chaps. 1, part 2, 11." In *Environment, Power & Society*, Pp. 1-41, 304-310. New York: Wiley-Interscience, 1971.

Extra:

Taylor, P. J. and A. S. Blum (1991). "Ecosystems as circuits: Diagrams and the limits of physical analogies," *Biology & Philosophy* **6**: 275-294.

5. Individuals: Selfish and Aggregable

A. Tragedy of the commons

(Simple models, simpling, atomized individuals)

Hardin, G. (1968). "The Tragedy of the Commons," *Science* **162**: 1243-1248.

Roberts, A. (1979) "The 'tragedy' of the commons," from *The Self-Managing Environment* London: Allison & Busby, chap. 10

#Berkes, F., D. Feeny, B. McCay & J. Acheson (1989) "The benefits of the commons." *Nature* **340**:91-93.

Peters, P. (1987). "Embedded systems and rooted models: The grazing lands of Botswana and the commons debate," in B. J. McKay and J. M. Acheson (Ed.), *The question of the commons: The culture and ecology of communal resources*. Tucson: University of Arizona Press, 171-194.

Taylor, P. (ms.) "Two inversions"

Extra:

Wade, M. (1987) "The management of common property resources: collective action as an alternative to privatisation or state regulation," *Camb. J. Econ.* **11**: 95-106.

Hymes, D. (1974), excerpts from "Traditions and paradigms," in D. Hymes (ed.) *Studies in the History of Linguistics: Traditions and paradigms* Bloomington: U. Indiana Press, 15-20.

Taylor, P. (1989) "Revising models and generating theory," *Oikos* **54**: 121-126.

Marginson, S. (1988) "The economically rational individual," *Arena* **84**: 105-114.

B. Neo-Malthusianism

QQ

Extra:

Harvey, D. (1974). "Population, resources and the ideology of science," *Economic Geography* **50**: 256-277.

6. Human ecology: adapted?, environmentally determined?

(common units of measurement, environmental determinism, relations of production, borrowings between & relative status of natural vs. social sciences)

Coughenour, M., J. Ellis, D. Swift, D. Coppock, K. Galvin, J. McCabe, T. Hart (1985) "Energy extraction and use in a nomadic pastoral ecosystem," *Science* **230**: 619-625.

Ellis, J. and D. Swift. (1989) "Stability of African pastoral ecosystems: Alternate paradigms and implications for development," *J. Range Management* **41**:450-459.

Watts, M. J. (1984). "The demise of the moral economy: food & famine," in E. Scott (Ed.), Life Before the Drought. Boston, MA: Allen & Irwin, 124-148.

Little, M. A., N. Dyson-Hudson, R. Dyson-Hudson, J. E. Ellis, and D. M. Swift. "Human Biology and the Development of the Ecosystem Approach." In The Ecosystem Approach in Anthropology, ed. E.F. Moran. Boulder: Westview, 1984.

Extra:

Rappaport, R. (1968). Pigs for the ancestors: Ritual in the ecology of a New Guinea people. New Haven: Yale University Press. Reprinted with epilogue, 1984. QQselections

Watts, M. (1983) "On the poverty of theory: Natural hazards research in context," in K. Hewitt (ed.) Interpretations of calamity from the viewpoint of human ecology Boston: Allen & Unwin, 231-262.

7. Models of nomads and nomadic modelers

(social construction & heterogeneous resources, socio-ecology, counter-factual analysis, universal vs. locally particular science)

Picardi, A. and W. Seifert (1976). "A tragedy of the commons in the Sahel," Technology Review May: 42-51.

Taylor, P. (1992). "Re/constructing socio-ecologies: System dynamics modeling of nomadic pastoralists in sub-Saharan Africa," in A. Clarke and J. Fujimura (Ed.), The Right Tools for the Job: At work in twentieth-century life sciences. Princeton: Princeton University Press, 115-148.

Little, P. (1988). "Land use conflicts in the agricultural/pastoral borderlands: The case of Kenya," in P. Little, M. Horowitz and A. Nyerges (Ed.), Lands at risk in the third world: Local level perspectives. Boulder: Westview, ed., 195-212.

Extra:

8. Local knowledge: adapted, flexible, or vulnerable?

Richards, P. (1983). "Ecological change and the politics of land use," African Studies Review 26: 1-72.

Watts, M. (1983). "Good try, Mr. Paul: Populism and the politics of African land use," African Studies Review 26: 73-84.

Rocheleau, D. (1991). "Gender, ecology and the science of survival: Stories and lessons from Kenya." Agriculture and Human Values 8(1): 156-165.

Extra:

Toledo, V. (1990) "The ecological rationality of peasant production," in ed. Altieri, M. and S. Hecht, Agroecology and small farm development. Boca Raton; CRC Press, 53-60.

9. Political ecology I: Agricultural margins & forest frontiers

(Political economy meets ecology)

Watts, M. (1987) "Drought, environment and food security," in M. Glantz (ed.), Drought and hunger in Africa. Cambridge: Cambridge UP, 171-211.

Ribot, J. C. (1993). "Forestry policy and charcoal production in Senegal." Energy Policy (May): 559-585.

Hecht, S. (1985) "Environment, development and politics: capital accumulation and the livestock sector in eastern amazonia," World Development 13: 663-684.

Collins, J. (1987) "Labor Scarcity and Ecological Change," in Little, P., Horowitz, M., and Nyerges,

A. (eds.) Lands at Risk in the Third World: Local Level Perspectives. Boulder: Westview, 19-37.

García-Barrios, R. and García-Barrios, L. (1990) "Environmental and technological degradation in peasant agriculture: A consequence of development in Mexico," World Development 18: 1569-1585.
Extra:

Watts, M. and R. Peet (eds.) (1993) "Environment and development, Special double issue," Economic Geography 69(3-4): 227-448. -- note: not on reserve.

10. Political Ecology (continued):

(Levels & structure of social action)

P. Blaikie, The political economy of soil erosion in developing countries (London: Longman, 1985), chaps. 5-7.

Watts, M. (1990a) "Review of Brookfield and Blaikie: Land degradation and society," Capitalism, Nature, Socialism 4:123-131.

Peet, R. and M. Watts (1993). "Introduction: Development theory and environment in an age of market triumphalism." Economic Geography 69(3): 227-253.

Taylor, P. ms. "Political ecology as radical social theory"

Extra:

Sewell QQ

11. Gendered ecologies and the politics of production

Schroeder, R. (1993). "Shady practice: Gender and the political ecology of resource stabilization in Gambian garden/ orchards." Economic Geography 69(4): 349-365.

Carney, J. and Watts, M. (1990) "Manufacturing dissent: Work, gender and the politics of meaning in a peasant society," Africa 60: 207-241.

Guyer, J. (1991). "Female farming in anthropology and African history," in M. di-Leonardo (Ed.), Gender at the Crossroads of Knowledge: Feminist Anthropology in the Post-Modern Era. Berkeley, University of California Press, 257-277.

Leach, M. (1992). "Gender and the environment: Traps and opportunities." Development in Practice 2(1): 12-22.

Extra:

Jackson, C. (1995). "Radical environmental myths: A gender perspective." New Left Review. 210:124-142

12. Resistance, agency and power

Mackenzie, F. (1991). "Political economy of the environment, gender and resistance under colonialism: Murnag'a District, Kenya 1910-1950." Canadian Journal of African Studies 25(2): 226-256.

Scott, J. (1987). "Resistance without protest and without organization," Comparative Studies in Society and History 29: 417-452.

Sarkar, T. (1985) "Jitu Santal's Movement in Malda, 1924-1932: A Study in Tribal Protest," Subaltern Studies IV: 136-164.

Smith, C. A. (1984) "Local history in global context: Social and economic transitions in Western Guatemala," Comparative studies in society and history 26(2): 193-228.

Extra:

Adas, M. (1980). "'Moral economy' or 'contested state'? Elite demands and the origins of peasant protest in Southeast Asia," *Journal of Social History* 19(4): 521-546.

Mitchell, T. (1990). "Everyday metaphors of power." *Theory and Society* 19: 545-577.

13. Student Paper Reports

14. Global discourse

(Global vs. trans-local; cultural analysis)

Ross, A. (1991) "Is global culture warming up?" *Social Text* 28: 3-30.

#Taylor, P. (1995ms.) "How do we know we have environmental problems? Undifferentiated science-politics and its potential reconstruction"

Peluso, N. (1993). "Coercing conservation: The politics of state resource control," *Global environmental change* (June): 199-217.

Meffe, G. K., A. H. Ehrlich, et al. (1993). "Human population control: The missing agenda," *Conservation Biology* 7(1): 1-3.

Taylor, P. J. and R. García-Barrios (1995). "The dynamics of socio-environmental change and the limits of neo-Malthusian environmentalism," ms. to appear in M. Dore, T. Mount and H. Shue (Eds.), Limits to markets: Equity and the global environment. Oxford, Blackwell.

Extra:

Taylor, P. J. and R. García-Barrios (1995). "The social analysis of ecological change: From systems to intersecting processes." *Social Science Information* 34(1): 5-30.