

Archaeological Contributions to Contemporary Socioecological Issues

Scott E. Ingram

School of Human Evolution and Social Change, Arizona State University



The main point:

Archaeologists can provide insights into contemporary socioecological issues by selecting research questions with contemporary relevance and examining these questions with long-term archaeological data sets.

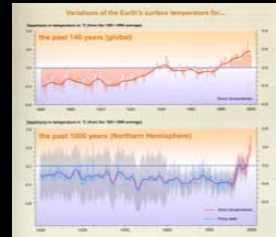
Why archaeologists should contribute to contemporary issues:

Current environmental research pays inadequate attention to the long time span and slow-moving processes that often underlie environmental problems (van der Leeuw and Redman 2002).

Long-term perspectives and data are critical for understanding the dynamics that underlie current socioecological problems.

Insights come from the long-view

The short view
→



The long view
→

How archaeologists contribute:

By providing the public, the scientific community, and policy makers with an understanding of:

- the relationship between key variables affecting social and ecological change through time
- current conditions as a product of the long-term interactions of key variables
- context to stimulate a more complete understanding of a problem
- the range of possible future socioecological conditions (experiments and scenarios)

Not prediction

Proposed model of engagement using a climate change example:

CURRENT - FUTURE SOCIOECOLOGICAL PROBLEMS

- Climatic variability up
- Extreme events up
- Precipitation up/down
- Temperature up
- Vegetation change

FROM THE ARCHAEOLOGICAL RECORD

Examine past paleo-environmental records for analogous events; examine social adjustments and responses to climate events in the past.

FOR THE PRESENT

Report results to peers, the public, and policy makers. Provides context for future decision-making.

Research questions come from the present.

See also Fisher and Fairman 2005 for desertification example.

Research questions for archaeologists involving contemporary socioecological issues:



Climate Change: Why at some places and at some times are societies resilient to climate change and sometimes not?

What factors influence the capacity of human societies to respond to climate change?
From the "Strategic Plan for the Climate Change Science Program, Final Report 2007" US Climate Change Science Program

What human behaviors, attitudes, beliefs, economic strategies, and forms of governance are associated with periods of stable/unstable climate? (Cumley 1993:388)

In what places and for what reasons has biodiversity loss occurred in the past?



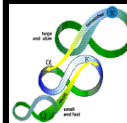
Biodiversity: What is the relationship between human actions and biodiversity loss?

What is the relationship between population growth and biodiversity loss?



Sustainability: What are examples of sustainable and un-sustainable socioecological practices from the past?

Which characteristics of societies seem to be the most relevant to the sustainability of those societies?



Resilience: What social and ecological conditions precede small and broad scale periods of social stability and transformation?

What social and ecological conditions enhance/reduce resilience of societies to ecological perturbations?

Theoretical frameworks and research domains:

- Historical and human ecology
- Complex adaptive systems
- Resilience
- Vulnerability and adaptive capacity
- Risk and uncertainty
- Social memory
- Traditional ecological knowledge

Funding Domains:

- U.S. Global Change Research Program
- Human Dimensions of Global Change (NSF)
- Millennium Ecosystem Assessment
- Strategic Plan for the Climate Change Science Program

Examples of archaeological research contributing to contemporary issues at ASU:

NSF Biocomplexity grant (Archaeology, Ecology, Modeling). Considers the conditions that foster periods of stability and transformation in socioecological systems. Will use a resilience theory perspective. Regional scale study area (U.S. Southwest and Northern Mexico).

Legacies project (Archaeology and Ecology). Examining contemporary landscapes as the result of past land uses and agricultural life ways.

CAP LTER, NSF IGERT Urban Ecology: Archaeologists study complex systems, urbanization, aggregation, migration, and land-use change. Past insights can be applied to the present.

References and Resources:

- Climate Change 2001: Synthesis Report. A Contribution of Working Groups I, II, and III to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Climate Change Graph: http://www.grida.no/climate/ipcc_tar/wg1/fig01p1.htm. Anal. Co.: http://www.grida.no/climate/ipcc_tar/wg1/fig01p2.htm
- Human Dimensions of Global Change <http://www.usgcrp.gov/usgcrp/Program/Esums/hsd.htm>
- Intergovernmental Panel on Climate Change. <http://www.ipcc.ch/>
- Millennium Ecosystem Assessment. Home page: <http://www.millenniumassessment.org/us/index.aspx>
- Strategic Plan for the Climate Change Science Program. Final Report 2007: US Climate Change Science Program. <http://www.climatechange.gov/strategicplan2007/finalreportjan2007-chap1.htm>
- van der Leeuw, Sander, and Charles Redman. 2002. Finding Archaeology at the Center of Socio-Natural Studies. *American Anthropology* 6(14): 597-605.
- Photo credits:
The dead, ice torii rock. <http://www.photos.phyproduct.com/landbay/>
Climate change image, withering tree. Environmental Society of Australia. <http://news10.org.au/broughton.asp>
Biodiversity site. sbsb. Frog image. To be determined.
Sustainability site. sbsb. People holding hands. To be determined.
<http://www.fscu.com/corpportal/company/environment/113385.html>
Resilience site. sbsb. parashu image. Robinson Atlantic. <http://resilience.org.uk/> at p/0/1133201/002-00_TOPIC
- For further information: Scott.Ingram@asu.edu