Anthropogenic Environments:  
The Cultural Modification of Landscapes and Ecological Systems  
(Conference Proposal)  

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We live in an environment transformed by millennia of cultural forces. From the first moment when a hunter deliberately burned grassland to provide better grazing for deer, or a forager scattered seeds on a fertile riverbank, human beings became one of the primary shapers of their ecological systems. No inhabited region of the planet can truly be considered "wild" or "natural" in the sense that humans had no part in creating its current landscape.

The effects and importance of human impacts on the environment are fiercely debated by biologists, climatologists, and public policy specialists, both within scholarly venues and mainstream media. Archaeologists, however, are uniquely able to define the nature and implications of anthropogenic landscapes. Only we have data of sufficient time depth and geographic breadth to understand and interpret the myriad ways in which human societies have created and changed their local ecological communities. The multiple scales of archaeological research, from regional surveys to micromorphological studies of site stratigraphy, allow us to explore the full complexity of this topic. Not only does our data speak to the larger questions (Did humans cause widespread extinctions at the end of the Pleistocene? Did deforestation and over-grazing lead to the collapse of early civilizations?) but also to the smallest (Did human settlement increase the diversity and variability of local microhabitats? of parasites? of pest species?)

Although media accounts of anthropogenic environmental change would suggest that human impacts on the environment are inevitably negative, human/environmental interactions are far more varied and complex. Certain types of cultural modification of the environment are detrimental to some species of plants and animals, but other species thrive in the ecological niches opened by human settlements. Humans have caused the extinction of some species, like the dodo bird, but they have also spread species with previously restricted geographic ranges to every corner of the globe, as happened with domestic wheat. Traditional foraging and farming techniques often increase biodiversity, both of species that are food sources and those that are not (Nabhan et al. 1982). At the same time, traditional societies have been responsible for environmental disasters with wide-ranging effects on all local species, including humans (for example, Diamond 1995; Kirch et al. 1992; Köhler-Rollfeson and Rollefson 1990).

The importance of anthropogenic environments to archaeology, however, goes beyond links to today's headlines about climate change and habitat destruction, although archaeology has a role in understanding those processes. Because the modification of local environments is so fundamental to human adaptations, measures of environmental impacts can be used to answer basic anthropological questions about the past. The way and degree to which prehistoric peoples changed their local landscapes are related to mobility patterns, population size, economic adaptations, and the cultural value placed on plants, animals, and geographic features. An understanding of the built environment can contextualize and explain foraging and production decisions, as well as community and labor organization.

To use the one example with which I am most familiar, measures of human impacts on the environment have been used extensively in the Hohokam cultural region of the U.S. Southwest to further our reconstructions of past economic and social
systems. The presence of weedy species among pollen samples, for example, speaks to the growth of field systems around prehistoric villages and disturbance of the local vegetation with increasing population density (Fish 1985). Relative proportions of rabbit species may reflect the degree to which agriculturalists engaged in irrigation agriculture or cleared woody vegetation and undergrowth (Bayham and Hatch 1985; Dean 2003:317; Szuter 1991:196). The ubiquity of pest species, particularly rodents and small birds, may indicate shifts in mobility patterns from frequent residential moves to larger populations with more permanent settlements (Dean 2005). Although these are examples from only one region, there are many similar studies from around the world that use measures of anthropogenic environment change to answer basic questions about the past (for only a few examples, see articles edited by Ayala and French 2005; Marwick 2005; Stahl 2000; Tchernov 1991).

Because such research has been conducted in a wide variety of contexts, archaeologists working in almost every region of the globe would have something to contribute to this proposed conference. From Polynesian archaeologists interested in the extinction of native birds (Steadman and Rolett 1996), to Mediterranean archaeologists measuring the effects of over-grazing on early Neolithic landscapes (Köhler-Rollefson and Rollefson 1990), to European archaeologists identifying dung-fertilized soil through the detection of predatory mites (Schelvis 1992), this is a topic that is important in many regions. Certainly, some of the most common themes in human/environmental interactions, such as species extinction, the domestication and spread of plants and animals, and the role of farmland destruction in the collapse of complex societies, have long been debated from China to Mesopotamia to Mesoamerica (for example, Culbert 1973; Flannery 1986; Jacobsen and Adams 1958; Liu et al. 2002; Martin and Klein 1984).

One appeal of a conference on anthropogenic environmental change would be its interest to archaeologists with a wide range of methodological specializations. Although zooarchaeology, paleoethnobotany, and geoarchaeology are the specialties most closely tied to this topic, many general archaeologists have also done research on human-created landscapes. This is particularly true for those archaeologists who work on community- and regional-level interactions, where the built environment is often critical to understanding the patterning of landscape use (for example, Fish and Fish 1991; Nelson and Schollmayer 2003). Such a conference would also be of interest to archaeologists working in marginal environments, including rainforest and arid- or semi-arid regions, where human manipulation of local geology, plants, and animal species had the greatest impact. A variety of methodological perspectives, therefore, using a broad range of archaeological materials, could be represented at the conference.

The cultural modification of the environment is not restricted to societies with any particular level of social and economic complexity, further broadening the appeal of the proposed conference within the discipline. Archaeologists specializing in the study of foraging, farming or complex societies have contributed to the growing volume of research on anthropogenic landscapes. The effects of foragers on their local environments, for example, include burning vegetation, hunting animal species, and scattering seeds (Russell-Smith et al. 1997; Thomas 1981). Subsistence farmers had more measurable environmental impacts, particularly through the domestication and spread of plants and animals, the encouragement of pest species, and changing local habitat diversity (Nabhan et al. 1982; Tchernov 1991). Finally, complex societies have had the largest, and often the most negative, impact on their local environments. Indeed, the collapse of state-level societies has been blamed on human modification of
the environment in such diverse regions as the Maya lowlands and the Mesopotamian river valleys (Culbert 1973; Artzy and Hillel 1988).

In addition to archaeologists, this is a topic of great interest to naturalists, ethno-botonists, biologists, and wildlife management specialists. A conference thrown open to all disciplines would not be productive, but one that focuses specifically on the use of archaeological methods and theory would provide a forum for meaningful interdisciplinary dialog. This would mean including scholars who have worked closely with archaeologists and archaeological data. Previous inter-disciplinary collaborations on the topic of human environmental change have made for successful books. These include edited research volumes (Baleé 1998; Jacobsen and Firor 1992) as well as more popular books by authors such as Jared Diamond and Gary Nabhan (Diamond 1997, 2005; Nabhan 1987, 2002) that combine anthropological and biological perspectives.

A great deal has already been published on the subject of anthropogenic environments. On the market today, however, there is little that would be comparable to the book that would come from this proposed conference. Popular or semi-popular books on this topic abound, including those that use significant anthropological and archaeological data, such as Diamond's Guns, Germs, and Steel and Cartmill's A View to a Death in the Morning. While these are of interest to researchers, they are targeted toward a wider, non-academic audience. Other books, such as Redman's Human Impact on Ancient Environments, or The Archaeology of Global Change, and Jacobsen and Firor's edited volume Human Impact on the Environment, are focused more on questions of ecological degradation and species extinction, and have less about the use of environmental data to answer anthropological questions about past societies. Baleé's edited volume Advances in Historical Ecology, while focused on questions more closely aligned with the purpose of this proposed conference, is not restricted to archaeology and its methodology, but rather includes a wide variety of ethnographic and historic perspectives. Previously published volumes of archaeological research focused on anthropogenic environments have been more regionally or topically restricted, such as Martin and Klein's Quaternary Extinctions, Bottema et al.'s Man's Role in the Shaping of Eastern Mediterranean Landscape, or Lentz's Imperfect Balance: Landscape Transformations in the Precolombian Americas. A volume of archaeological perspectives on anthropogenic environmental change over a broad span of time and space, therefore, would find a place in the market for this popular subject.

Potential topics for discussion:

The following are some of the broad themes that may be covered by the proposed conference. These are just preliminary ideas, and of course would be modified depending on the interests of the participants.

- Methods of, and theoretical approaches to, measuring anthropogenic impacts on landscapes and ecological communities
- Causes of increased or decreased plant and animal diversity
- Use of measures of anthropogenic impacts on local environments to identify changes in sedentism, population pressure, and diet
- Environmental manipulation by foraging societies and their impact on the geographical range and diversity of plant and animals communities
The impact of agricultural societies on local environments, the constraints on agricultural systems imposed by environmental factors, and the consequences of anthropogenic environmental change on farming societies

- Complex societies and the built environment
- Environmental degradation and socio-economic "collapse" episodes world-wide
- The importance of archaeological data to modern ecological challenges

**Proposed Conference Structure:**
This conference would bring together a wide variety of archaeologists and non-archaeologists who do not normally work together. For the conference to be as productive as possible under these circumstances, discussion must be given precedence over presentations. The work-group style symposia at the SAA annual meetings have been very successful in creating the kind of environment in which in-depth discussion of a given topic can take place. If the resources were available, I would propose that preliminary drafts of papers would be submitted electronically ahead of the conference and placed on a secure server to which participants had password access, allowing them to read the papers before arriving in Carbondale. Participants would be assigned to various working groups, based on their interests. Preliminarily, these working groups would correspond to the topics for discussion outlined above. Rather than presenting their research during their conference session, each working group would participate in a moderated discussion, with the other conference participants as an audience to ask questions and move the discussion forward. This format would promote the exchange of ideas and true dialog between all conference participants. It would also encourage participants to write their papers earlier, theoretically making the task of editing the conference volume easier. The volume itself would be organized by the work-group themes, with individual papers grouped under those headings. The discussion moderators would write short introduction or discussion papers for each of these sections, similar to the format used by Jean Hudson for her 1991 Visiting Scholar volume.

**Preliminary List of Invitees:**
The following people would be potential invitees to the conference, depending on their availability. The group includes archaeologists, as well as botanists, geologists, and biologists who have previous experience working with archaeological data and issues.

Robert Bettinger, UC Davis  
Virginia Butler, Portland State University  
Carlos Cordova, Oklahoma State University  
Carole Crumley, University of North Carolina  
Paul Fish, University of Arizona  
Suzanne Fish, University of Arizona  
Donald Grayson, University of Washington  
Karen Gust-Schollmeyer, Arizona State University  
R. Lee Lyman, University of Missouri  
Paul Minnis, University of Oklahoma
Gary Nabhan, Northern Arizona University
Margaret Nelson, Arizona State University
Deborah Pearsall, University of Missouri
Charles Redman, Arizona State University
Anna Roosevelt, University of Illinois, Chicago
David Steadman, Florida Museum of Natural History
Lior Weissbrod, Washington University, St. Louis
Artzy, Michal and Daniel Hillel  
*Geoarchaeology* 3:235-238.

Ayala, Gianna and Charly French  

Baleé, William, ed.  

Bayham, Frank E. and Pamela C. Hatch  

Bottema, S., G. Entjes-Niegorg, and W. van Zeist, eds.  

Cartmill, Matt  

Culbert, T. Patrick, ed.  

Dean, Rebecca M.  

Diamond, Jared  

Fish, Paul R. and Suzanne K. Fish  

Fish, Suzanne K.  

Flannery, Kent V.  

Jacobsen, Thorkild, and Robert McC. Adams  

Jacobsen, Judith E., and John Firor, eds.  

Kirch, Patrick V., J.R. Flenley, David Steadman, F. Lamont and S. Dawson  
Köhler-Rollefson, Ilse, and Gary O. Rollefson

Lentz, David L.

Liu, Hogyan, Lihong Xu and Haiting Cui

Martin, Paul S. and Richard G. Klein, eds.

Marwick, Ben

Nabhan, Gary


Nelson, Margaret C., and Karen Gust Schollmeyer

Redman, Charles L.

Russell-Smith, Jeremy, Diane Lucas, Minnie Gapindi, Billy Gunbunuka, Nipper Kapirigi and George Namingum

Schelvis, Jaap

Stahl, Peter W.

Steadman, David and Barry Rolett

Szuter, Christine R.
Tchernov, Eitan

Thomas, David Hurst