AMERICAN ANTHROPOLOGICAL ASSOCIATION 2002

AAA 2002 Session #419, Thursday 21 November 2002, 4:00 – 5:45 p.m. Hyatt Regency New Orleans
Organizer: **Barbara Herr-Harthorn** (UC Santa Barbara)
Chair: **Emilio Moran** (Indiana U)

Session abstract:

POWERFUL GIS TOOLS TO ADVANCE SPATIAL AND TEMPORAL ANALYSIS IN ANTHROPOLOGICAL RESEARCH.

In the past decade a vast array of spatial analytic tools has become available to the social sciences. These tools, sometimes referred to in the aggregate as geographic information systems techniques, have expanded our ability to examine the role of location in the behavior of people, in the distribution of disease, and in economic and environmental decision-making. Considerations of location and place have largely been the province of geographers, and anthropologists (except for some archeologists) have rarely incorporated these powerful tools in their array of usable techniques. When spatial analytic tools are merged with multi-temporal capabilities using time-series data from aerial photos or satellite images, the capabilities are remarkable. This panel brings together some of the anthropologists who have been making robust use of these techniques to address questions of anthropological import such as the crop choices made by farmers, temporal cycles of subsistence, cultural perceptions of space, effects of spatial and cultural factors on health care utilization, and modification of the landscape from a natural into an anthropogenic one.

Papers Abstracts:

MORAN, Emilio (Indiana U)
SPATIAL AND BIOPHYSICAL DIMENSIONS OF LAND USE AND LAND COVER CHANGE IN AMAZONIA
Examining most landscapes leads to a quick conclusion: that there is great patchiness and heterogeneity in how people use the land. There are many reasons why this might be the case: Differences in availability of labor between households. Differences in the amount of available capital to operate and change the land cover. Differences in land tenure type or in length of tenure. Differences between ethnic groups or enclaves. Less often mentioned are differences in biophysical endowments such as differences in soil quality, topographic location, slope and aspect, and drainage. These differences can all be mapped unto a landscape permitting a spatial analysis of the relative role that these social and biophysical factors in bringing about particular land cover outcomes over time. This paper examines a frontier area in the Brazilian Amazon studied by the author over a period of 30 years. In recent years, using remotely sensed satellite data and spatial analytical techniques it has been possible to link social and biophysical factors to carry out a spatial analysis. The paper shows that topography and soils create a time-lag effect on land use and land cover rates of change, but that given enough time this lag is overcome by other spatial factors such as proximity to town and markets.

TUCKER, Catherine (Indiana), **MUNROE, Darla** (Indiana), **SOUTHWORTH, Jane** (Florida)

ANALYZING SOCIAL AND ENVIRONMENTAL PROCESSES IN HONDURAS AND GUATEMALA: THE COMPLEMENTARITY OF ETHNOGRAPHIC AND SPATIALLY EXPLICIT APPROACHES.

Changes in land cover and land use (LUCC) in Guatemala and Honduras reflect complex relationships among socioeconomic, political and environmental factors. Deforestation poses a particular conundrum for these nations, yet policies designed to protect forests often conflict with economic development programs that encourage agricultural expansion. This paper examines the processes of forest cover change in two study sites, one in eastern Guatemala, and the other in western Honduras. The sites present similarities in topography and forest type, yet contrast in national policies, ethnic composition and market relationships. Coffee production represents the major economic activity in both sites, but the Guatemalan site has been producing export-quality coffee for several decades longer than the Honduran site. The Guatemalan site has less forest cover than the one in Honduras, although historically both regions were dominated by pine-oak forest. This study explores possible factors that explain the contrast in current forest cover area and land cover patterns by using comparable data sources that include ethnographic information, rapid rural appraisals, GIS coverages, and Landsat TM satellite images. In addition, spatially explicit analyses allow investigation of how fragmentation patterns of forest and agricultural land cover relate to land use, topography and the distance from roads and markets. The conjunction of ethnographic, economic and policy information with spatially explicit techniques results in a robust analysis and reveals questions for further research.

ARCURY, Thomas (Wake Forest U), **GESLER, Wilbert M** (UNC Chapel Hill), **PREISSER, John S**. (UNC Chapel Hill), and **SPENCER, John** (UNC Chapel Hill)

HEALTH CARE UTILIZATION IN RURAL US COMMUNITIES: THE EFFECTS OF SPATIAL AND CULTURAL VARIABLES

Residents of rural U.S. communities make less use of health care services than do their urban and suburban counterparts. Several models have been developed to account for this low health care service utilization in rural communities, with most assuming that the spatial dispersion of services is a major force. This analysis uses data from a 1999 survey of 1,059 adults in 12 western North Carolina mountain counties to examine the relative influence of spatial and cultural factors in the number of visits to health care providers and facilities. Using a geographic information system (GIS), the analysis is able to consider distance to nearest health care provider, activity space, average distance to health care received, as well as such cultural variables as ethnicity, religious beliefs, use of traditional remedies, attitudes toward rural doctors, and health behaviors to delineate the causes of variation in health care service utilization. The GIS allows us to measure individual spatial behavior and specify the rule of distance in determining patterns of health care utilization.

KANTNER, John (Georgia State U)
GIS-ENHANCED RECONSTRUCTIONS OF PREHISTORIC LANDSCAPES IN THE AMERICAN SOUTHWEST
Archaeologists investigating prehistoric societies of the Southwestern United States gravitate towards two different explanations for the configuration of the built environment. One set of scholars tends to see features such as roadways and masonry towers as facilitating regional interaction by decreasing travel costs and increasing long-distance communication. Other researchers regard many of these features as critical components of a political and ideological landscape that had little to do with maintenance of a regional economic "system." This paper demonstrates how digital technologies such as virtual reality and Geographic Information Systems (GIS) can help archaeologists determine how cultural landscapes were perceived by their creators. Specifically, various components of the 11th-century Chaco Anasazi landscape are considered both for their potential economic functions and for their possible roles in a spatially expansive ceremonial landscape. The GIS-enhanced analyses confirm that the components were not designed to expedite regional economic interaction. The analyses, however, do identify patterns indicating that the built environment served both political and ritual functions.

FINAN, Timothy J. (U Arizona) and **NELSON, Donald R**.(U Arizona)
GIS AS A PARTICIPATORY PLANNING TOOL IN SEMI-ARID NORTHEAST BRAZIL Northeast Brazil is well recognized as a region plagued by frequent and severe drought, a problem exacerbated by lack of coordinated proactive planning. Traditionally drought planning is reactive, originating at the state level then implemented at community levels. Such a drought mitigation approach is triggered by human suffering and is highly susceptible to political manipulation. Because of these limitations, the state of Ceará has considered strategies to better protect livelihoods of vulnerable rural populations. This paper describes a pilot project in two municípios and the process of creating a more participatory and transparent way of producing proactive drought policy in Ceará. A vulnerability assessment tool, based on GIS, forms the basis of local drought planning—both for contingency crises and for more permanent vulnerability reduction. Using GIS-vulnerability maps as planning tools, local governments and community representatives are able to construct policy priorities consistent with an objective rather than political assessment. Using maps allows for a more transparent process, where resource allocation decisions are publicly vetted. The planning process aims to incorporate a variety of local representatives, and the maps become a focus that facilitates open discussion. While the GIS and maps serve as intermediaries between local communities and municípios, they serve the same function between municípios and the state government whose task it is to develop intervention themes to which it will dedicate resources and that link with locally defined priorities.

Discussants:
Eduardo Brondizio (Indiana)

In his discussion, Professor Brondizio

1. noted how the papers in this session represented a range of theoretical and methodological approaches and applications, summarized in figure 1.
2. presented a diagram that attempts to identify the historical context for applications of remote sensing and spatial analytic tools in the social sciences, especially in

anthropology, making note of advances and new developments in tools, software, remote imagery (figure 2).

3. illustrated how the papers in this session bring together topical applications, data, theory, and analytical processing techniques (figure 3).