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Themes in Southwest Prehistory, edited by George J. Gumerman (1994). School of American Research Press, Santa Fe. 330 pages, xiv, 35 illustrations, 8 tables, index. \$22.50, paper cover.

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The 11 chapters by 26 authors in this book result from a School of American Research seminar entitled, "The Organization and Evolution of Prehistoric Southwestern Society," held in September 1989. The goal of the seminar was to have well-known Southwestern scholars consider the entire Southwest as a single but diverse entity, with papers structured according to particular themes, including aggregation, abandonment, warfare, health, and demography.

The first chapter, "Patterns and Perturbations in Southwestern Prehistory," is a brief introduction by George Gumerman that discusses some of the processes of culture change addressed in the book. Gumerman argues that it is more profitable to first examine what causes patterned behavior rather than what causes variation, and then to look at the reasons for the differential transmission of the many variations in those patterns. The American Southwest is considered an ideal laboratory for exploring the context of changing natural and cultural conditions in order to better understand the forces of culture change.

Chapter Two, "Cultural Evolution in the Prehistoric Southwest," was authored by Gumerman and Murray Gel-Mann. They discuss broad scale behavioral changes in the Southwest, and identify seven key periods of change: 1500 to 900 B.C., A.D. 200 to 500, A.D. 600 to 850, A.D. 950 to 1100, A.D. 1140 to 1200, A.D. 1250 to 1300, and A.D. 1425 to 1450. Three main factors in the evolution of Southwestern societies are noted: universal conditions, the diffusion of behavioral patterns from one region to another, and local historical accident. Agents of change include the natural environment, technological innovation, demographic factors, interaction with neighbors and invaders, and internal social conditions.

Chapter Three, "Economic Implications of Changing Land-use Patterns in the Late Archaic," by W. H. Wills and Bruce B. Huckell, addresses changes in the use of the landscape following the introduction of domesticated plants into the Southwest, ca. 1500 to 1000 B.C. Those changes imply important economic reorganization. Cultigens are seen as a new food resource that aided in the intensification of foraging activities and helped buffer seasonal and annual variation in food availability. The authors note that land-use patterns involving intensive use of particular locales may have been already in place in some areas before cultigens became important.

Chapter Four, "Adaptive Stress, Environment, and Demography," was written by Jeffrey S. Dean, William H. Doelle, and Janet D. Orcutt. Their focus is on episodes of subsistence stress related to environmental conditions and demography. Different types of environmental variability are defined for the Colorado Plateau, Mogollon Highlands, and Sonoran Desert. Environmental variability is categorized as three types: stable, low frequency processes (every 25 years or more), and high frequency processes (less than 25 years periodicity). Important environmental factors that influenced the success of agriculture are tracked through time and include alluvial groundwater fluctuations, aggradation and degradation of alluvial floodplains, and changes in streamflow. In order to document the correlation of demography, settlement patterns, and environmental conditions, the authors provide detailed population estimates for 11 subregions. Trends in population growth and decline, as well as shifts in settlements, are compared to environmental conditions in those subregions. Not surprising, population growth is demonstrated to usually occur when floodplain and alluvial groundwater conditions are optimal. The three subregions with the largest populations are the San Juan Basin, with 60,000 people at A.D. 1000, the Northern Rio Grande, with 27,000 people at A.D. 1275, and the Hohokam area, with 25,000 souls from A.D. 1050 to 1200. A regional trend in Southwestern population is summarized as a steady growth from A.D. 1, reaching a maximum at A.D. 1000, with fluctuations slightly for about 200 years, then a precipitous drop after A.D. 1200. The maximum population for the Southwest is argued to have been approximately 130,000 to 150,000 at A.D. 1000. The major population increase between A.D. 800 and 1000 was a result of an increasing reliance on lowland and upland agriculture, favorable environmental conditions, and abundant underexploited space to absorb expanding populations. After A.D. 1130, however, environmental conditions deteriorated in all three major areas, settlements shifted, and certain areas were abandoned. After A.D. 1200, streambank downcutting, drought, and low water tables created major population decline on the plateau and in the mountains. The authors state that the data indicate demographic responses to environmental fluctuations in the Southwest were primarily local, not regional, and that some demographic patterns may be behavioral adaptations that were not necessarily induced by environmental conditions.

Chapter Five, "Patterns of Diet and Disease: Health Profiles for the Prehistoric Southwest," by Debra L. Martin, summarizes various health problems of people in the Southwest during the period of 1000 B.C. to A.D. 1450. Martin states that in the Southwest there has been a general lack of systematic investigations of diet and disease that incorporate other relevant aspects of the archaeological database which inform on human adaptation and subsistence stress. Various examples of documented health problems include bladder stones, iron deficiency anemia, congenital defects such as vertebral fusion, disruption in growth during childhood, helminthic parasites such as pinworm and hookworm, nonvenereal endemic syphilis, tuberculosis, rickets, dental caries, and a variety of viruses. The health effects of an increasing reliance on agriculture and denser settlements, and the possible connection between domestication of animals and transmissible infections are discussed. For example, domesticated turkeys may have been a source of ornithoses, shigella and salmonella. Martin notes an interesting paradox: while increased sedentism resulted in increased subsistence stress and endemic diseases, population also increased significantly. Martin suggests that this paradox can be explained by the fact that increasing health problems primarily affected the very young and the very old — consumers rather than producers. The current data indicate a general trend through time of higher frequencies and more severe manifestations of skeletal forms of infection brought about by malnutrition and famine, social disruption, and demographic instability.

Chapter Six, "Processes of Aggregation in the Prehistoric Southwest," was written by Linda S. Cordell, David E. Doyel, and Keith W. Kintigh. The authors define aggregation as the processes that produce spatial clustering of households, communities, or archaeological habitation sites, and note that such settlements appear in the Southwest sometime after A.D. 1000. Acknowledging the difficulties in measuring degrees of aggregation (especially for pithouse villages), various theories of what caused aggregation are reviewed including cooperative responses to increasing economic uncertainties brought about by climatic deterioration, a need for defense or overt hostilities, and/or increasing population and decreased residential mobility. Several case studies are examined: Eastern Anasazi, the Arizona Deserts, and Mogollon and Western Pueblo areas. The authors argue, following Johnson (1989), that aggregated sites are those with evidence of more than six contemporaneous households (thus, much of the Southwest!). They note that for many areas, agricultural intensification (e.g., water control features) took place just before aggregation occurred. With the exception of the Mimbres area, where aggregation happened around A.D. 1000-1050, it "becomes the rule at about 1275 to 1290". They question "if Hohokam settlement patterns should be described as highly aggregated at any point in the sequence" (but see Howard 1991, 1993).

Chapter Seven, "Toward an Explanation for Southwestern 'Abandonments,'" is by Paul R. Fish, Suzanne K. Fish, George J. Gumerman, and I. Jefferson Reid. They discuss various models for abandonment, which they note occurred commonly at sites, less frequently in locales (ie, valleys), and infrequently in regions. Although this chapter addresses environmental deterioration, the main emphasis is on cultural factors such as intrusive ethnic groups, intergroup conflict, trade realignments, domino effects, and especially the development of organization modes which enabled denser and more integrated populations. The authors view the process of aggregation, an important Southwestern phenomena, as a social experiment related to the intensification of production beginning around A.D. 1000. They do not believe that pronounced hierarchy and linearization were responsible; instead, Southwestern groups developed elaborate kinship and comprehensive sodality organizations. An important point they make is that movements of groups from one area to another ("abandonments") most likely resulted from an interplay between conditions in

the homeland and the availability and perceptions of the alternatives. Because few unoccupied areas existed in the Southwest after A. D. 1000, negotiations between abandoning groups and the receiving groups most likely took place before abandonment occurred. Ethnographic data suggest two types of solutions were possible in such cases: (1) preservation of the incoming group identity by accretion as separate clans, and (2) acceptance of distinct ethnic groups conditional to fulfilling particular functions or roles within the receiving group. Abandonments for the Western Anasazi, Tucson Basin Hohokam, and Grasshopper region are examined.

Chapter Eight, "Strong and Weak Patterning in Southwestern Prehistory.- The Formation of Puebloan Archaeology," is by Joseph A. Tainter and Fred Plog. This chapter looks at elements of variation that are not limited to the typical "salient characteristics" of the prehistoric record. Concepts that are explored include (1) degree of structure (ie, strong versus weak patterning), (2) ranking (which few archaeologists agree on how to recognize), (3) complexity, (4) regional integration, and (5) modularity (simple, repetitive units). These concepts are addressed through an examination of the Chacoan System, which they call a strong pattern, versus its periphery which is a weak pattern. The authors argue that the notion of Anasazi and Mogollon as cultural traditions "has outlived its usefulness and, indeed, never was correct." The Anasazi phenomena is explained as a manifestation of the movement of goods and marriage partners, emulation of sumptuary behavior among elites, and the adoption of common symbols to reinforce exchange ties.

Chapter Nine, "Alliance Formation and Cultural Identity in the American Southwest," was authored by Steadman Upham, Patricia L. Crown, and Stephen Plog. They provide an alternative to the traditional "cultural systems" approach (ie, Hohokam, Anasazi, Mogollon) which they feel does not adequately describe and explain culture change through time, by presenting a model of prehistoric group interaction which utilizes the concepts of "province," "alliance," and "social networks." Alliances among different groups are seen as social mechanisms that united spatially separate groups in economic and sociopolitical relationships, in order to buffer environmental risk, obtain mates, and exchange goods and information. The authors argue that the concept of settlement pattern needs to be "decoupled" from interaction in describing archaeological patterns, and they prefer to use the term "settlement clusters" to more accurately describe aspects of settlement structure. In some ways, alliances are considered similar to the term "regional systems" commonly used in Hohokam archaeology. The authors examine regional systems for the Salt-Gila River and the Tucson Basin Hohokam, Salado polychrome and other ceramic alliances, Chaco Canyon alliance networks, and late period alliances. They argue that by A.D. 900, groups in different areas were moved to ally with their neighbors, and by the A.D. 1100s, the earlier alliances were replaced by more localized alliance networks. In addition, the emergence of Salado and Jeddito alliances suggest opposition between the two which may have resulted from intergroup conflict and regional warfare.

Chapter Ten, "The Scream of the Butterfly: Competition and Conflict in the Prehistoric Southwest," is by David R. Wilcox and Jonathan Haas. As the title indicates, this chapter reviews a large body of evidence for warfare, raiding, violence, and conflict at different times and places in the prehistoric Southwest. The authors argue that tribal-level warfare probably was not always endemic, and that reduced levels of conflict or fear of completing neighbors may have been periodically achieved due to the successful spread of religious ideologies or the formation of economic alliances. The possibility of Pueblo human sacrifice is discussed, and examples are given of burials of individuals with weapons imbedded in them, trophy heads, mass graves of burned bodies, scalping, disarticulated skeletons, and cannibalism. In addition, architectural data are examined including towers, palisades, forts, hill-slope retreats, fortified villages, and "guard" villages. Other evidence consists of artifacts (ie, weapons), burned sites, rock art (especially Basketmaker art), and "no-man's lands." Interestingly, the authors note that direct evidence for conflict and competition is rare for the Hohokam, although there are hints of the existence of no-man's land in the Hohokam region after A.D. 1100. The period from A.D. 1250 to 1300 contains the clearest and most widespread evidence for warfare among the Anasazi. In response to critics of the existence of prehistoric warfare, Wilcox and Haas argue that tribal warfare typically consists of few large-scale battles, sieges, or casualties; instead hit-and-run raiding is common. None-the-less, the authors believe too little attention has been given to the role that warfare played in patterns of aggregation and abandonment of certain areas of the Southwest.

Chapter Eleven, "Drawing the Southwest to Scale: Perspectives on Macrorregional Relations," was written by Randall H. McGuire, E. Charles Adams, Ben A. Nelson, and Katherine A. Spielmann. Their perspective views the Southwest not as a spatial unit, since its boundaries fluctuated and are arbitrary, but as a set of social relations between cultural groups, which changed through time. The focus of this chapter is on the linkages between multiple networks of groups, and the authors argue that the Southwest was never a single network of peer polity interaction. In addition, the influence of Mesoamerican groups on the Southwest is downplayed, but it is acknowledged that important concepts and symbols were borrowed from Mesoamerica and reworked into the Puebloan religious system, and that cultural developments in Western Mexico had a strong impact on the Hohokam. Many important differences in the evolution and organization of Mesoamerican and Southwestern groups are summarized, although the formation of regional centers in the Southwest is seen as a part of a broad process that included the expansion of the Mesoamerican periphery and the "liberation of peripheral Mesoamerican polities from the core." The most intensive period of interregional exchange between the two regions occurred from A.D. 1250 to 1400 (the fall of Casas Grandes). This chapter also addresses interactions between Plains and Pueblo groups, and relationships between the Southwest and California and the Great Basin. In conclusion, the authors suggest that the issue of what was inside and outside the Southwest is not a simple one,

and a variety of theoretical models need to be considered to understand patterns found at different sites.

This book is a very valuable contribution to Southwestern prehistory, and its analyses of cultural evolution and patterns has importance well beyond the Southwest. All of the chapters give a comprehensive treatment to the issues at hand, and a diverse number of significant themes are examined. The book is highly recommended reading for all serious students of the Southwest. Indeed, professors who wish to teach Southwest prehistory from a thematic perspective, instead of the traditional culture history approach, will find this book refreshing.

A vast references cited section (57 pages in length!) is included in the book. However, a perusal of those references and a careful reading of the chapters reveals that there is an absence of some citations for, and discussions of, the most recent literature pertaining to the relevant topics. Although the book has a 1994 publication date, it is clear that the papers were written in 1989 (with some later revisions), since the chapters do not incorporate studies done after 1991. This is an unfortunate product of the lengthy production schedule for the book. The authors of chapter three, for example, apologize in their acknowledgment section (page 52) for "some key references missing" due to the paper being written in 1989. Moreover, some of the chapters dealing with Hohokam archaeology also are missing important references for studies done in the 1990s. In particular, chapter six, which outlines processes of aggregation in the Southwest, would have benefited from a discussion of recent Hohokam irrigation studies (e.g., Cable and Mitchell 1991; Howard 1991, 1993). Curiously, Howard's work is mentioned in chapter four, although the authors' statement on page 72 that Howard (1991) argues that "much of the canal building occurred in the Sedentary [period]" is incorrect. Howard (1991:5.12) actually states that "the most explosive period of growth occurred early in the sequence, during the Colonial period," about 200 years before the Sedentary period. Furthermore, Howard's work focused only on one (albeit the second largest) of more than a dozen canal systems, the others with more ambiguous chronology. Also, in chapter five (page 93) Martin states that "when the Hohokam populations of Pueblo Grande built a 20-mile long canal to bring water from the river to the village, they created the potential to contaminate the community water supply." Although there are major canals that head at Pueblo Grande, the site itself is located next to the river, not 20 miles away. The relationship of Hohokam canals and possible waterborne infectious diseases has been addressed in detail by Fink (1991), whose work is not discussed by Martin. Finally, I disagree with the statement in chapter six (page 121) that Pueblo Grande had a substantial Pioneer period component (cf. Bostwick and Downum 1994:302), as well as the comment on page 123 that it was a location of specialized production of stone axes and shell jewelry (cf. Bostwick 1993).

The absence in this book of some of the more recent references does not, however, distract from the overall quality of the book. It is packed with data (mostly summarized), and proposes a number of interesting, well-thought out ideas. The book is well edited, and considering the broad scope of some of the chapters, there is not that much redundancy in the information presented in different chapters. Although the chapters vary in the extent of their treatment of the history of ideas pertaining to their main themes, the book certainly will have significant historical value in the future as a clear statement of leading Southwestern scholars' ca. 1989 positions on topics deemed important at that time. It is clear that despite more than a century of research in the Southwest, there are no hard and fast answers to many of the questions that are posed in the book. As Tainter and Plog note in chapter eight, the famous characterization of the Southwest as a "squeezed orange" is far from the truth.

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