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American Indian Culture and Research Journal

Title

The Last Fifty Years: Transforming Southwestern Archaeology

Permalink

<https://escholarship.org/uc/item/0t47n9w2>

Journal

American Indian Culture and Research Journal , 10(4)

ISSN

0161-6463

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Publication Date

1986-09-01

DOI

10.17953

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Review Essay

The Last Fifty Years: Transforming Southwestern Archaeology

Steadman Upham

Emil W. Haury's Prehistory of the American Southwest. By J. Jefferson Reid and David E. Doyel, eds. Tucson: University of Arizona Press, 1986. 506 pp. \$45.00 Cloth.

Social Adaptation to Food Stress: A Prehistoric Southwest Example. By Paul E. Minnis. Chicago: University of Chicago Press, 1985. 256 pp. \$20.00 Cloth. \$8.00 Paper.

Prehistoric Adaptation in the American Southwest. By Rosalind Hunter-Anderson. Cambridge: Cambridge University Press, 1986. 200 pp. \$79.95 Cloth.

INTRODUCTION

I accepted the task of reviewing the three books sent to me by this journal because I felt it provided me with an opportunity to review research directions in Southwestern archaeology during the last fifty years. Such an undertaking (and I use the term loosely) may signal my departure from the ranks of more rational colleagues, who may suspect that I have finally slipped over the edge into the abyss reserved for those whose only remaining professional goal is to "contemplate with perspective." But I also am compelled to offer my "perspective" because of the exceptional books this journal has asked me to review. Rarely do three titles (*Emil W. Haury's Prehistory of the American Southwest*, edited by J. Jefferson Reid and David E. Doyel, University of Arizona

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Press; *Social Adaptation to Food Stress: A Prehistoric Southwest Example* by Paul E. Minnis, University of Chicago Press; and *Prehistoric Adaptation in the American Southwest* by Rosalind Hunter-Anderson, Cambridge University Press) encapsulate the history, present state, and future directions of a field of study so coherently. These works embody a longitudinal view of Southwestern archaeology and together permit a discussion of what we have learned during the past fifty years and what we still strive to know about prehistory in the American Southwest.

My remarks focus on four pivotal areas of inquiry in Southwestern archaeology where change and rethinking have been commonplace during the last five decades: 1) the definition of cultures, 2) chronology construction, 3) subsistence and agriculture, and 4) population, disease, and sociopolitical complexity. The books that form the basis of this essay are each directly relevant to one or more of these issues. In the case of Emil Haury, it is safe to say that he (along with a few other important archaeologists of his day) defined our field of view on these as well as other key issues. Before I consider each of these topics, however, I comment briefly on the three books.

Emil W. Haury's Prehistory of the American Southwest

Emil Haury is one of the great figures in American science. His life and career express the essence of his work: rugged individualism, commitment to principle, devotion to family, and dedication to profession. These themes are echoed throughout the finely-crafted volume, a paean to Haury's contribution to Southwestern archaeology, assembled and edited by J. Jefferson Reid and David E. Doyel. Reid and Doyel, former students and present colleagues of Haury, selected key articles from Haury's extensive bibliography to highlight the most significant aspects of his work. Each major section is introduced by colleagues of Haury's, most of whom worked with him at the University of Arizona. During his career, Haury led pathfinding efforts in the development of dendrochronology, the definition and description of prehistoric cultures (Hohokam, Mogollon, and Anasazi), and the establishment of antiquity for the PaleoIndian in the American Southwest. Haury's seminal articles on each of these topics are included in the volume. The entire collection is introduced by J. Jefferson Reid in a warm biographical summary

of Haury's life and work. *Emil Haury's Prehistory of the American Southwest*, an anthology of Haury's most important work in Southwestern archaeology, deserves to be in the library of all serious students of Southwestern prehistory.

As one reads these articles, especially the important statements of definition and description (e.g., "The Mogollon Culture of Southwestern New Mexico" or "Roosevelt 9:6: A Hohokam Site of the Colonial Period"), one cannot but wonder what it was like to practice archaeology before the press of development and the depredations of pothunters. These onslaughts have imparted a certain urgency to archaeological research and have contributed to a highly competitive atmosphere where careers and ideas are linked more to the cultural resource dollar and the "undisturbed" site than to the idea of a "community of scholars" that dominated during Haury's day. Such a reflection is especially appropriate in the context of my review, for Haury concludes the collection of his writing with a recently-prepared essay that looks back over his illustrious career and re-evaluates some of his more controversial work. Cautious flexibility is evident in Haury's remarks, but what is surprising is not what he says about his great contributions to the field. Rather, what remains with the reader are Haury's remarks on controversy and on the conduct of science. Such a perspective may seem out of place in the context of contemporary archaeology, but Haury's gentlemanly approach to his work and to his colleagues, coupled with an acute sense of professionalism and commitment to principle, would be ideals well-considered today. One hopes readers will look at "Thoughts After Sixty Years as a Southwestern Archaeologist" not so much as a retrospective, but as a recipe for professional interaction and the future conduct of the field.

Social Adaptation to Food Stress

Environmental marginality has been a recurrent theme in Southwestern archaeology since the time of Adolph Bandelier. Arid climatic conditions, a paucity of surface water, sparse desertic vegetation, and thin soils have led many investigators to conclude that populations inhabiting the region prehistorically were doomed to a marginal existence tied to a precarious subsistence base. These same kinds of arguments were made in the 1950s about tropical lowland environments. In that case, however, it

was assumed that the tropical lowlands offered an unvaried, homogeneous environment. Today we know that such is not the case, that lowland environments offer a diverse and varied set of conditions and resources. In much the same way that perceptions have changed about lowland environmental zones, archaeologists, aided greatly by dendroclimatic reconstructions, have begun to re-think the nature of Southwestern environments. The idea of environmental marginality has not been erased in the Southwest, but now there is a growing sophistication about the complex and variegated character of Southwestern environments, as well as the subsistence technologies used by prehistoric Southwestern groups. Such sophistication is demonstrated in the recent book by Paul Minnis.

Minnis tackles a subject that many archaeologists have alluded to but few have actually addressed in detail: the idea that crop failures and periodic food shortages shaped the settlement histories of various Southwestern regions. Minnis presents an in-depth analysis of the Mimbres Mogollon, whose society and culture are best known for elaborate pottery decorated with anthropomorphic and zoomorphic designs. Minnis develops a predictive model of responses to periods of food stress by presenting a summary of general theoretical information on the subject. He refines and evaluates the model using ethnographic case materials. He then examines the environment of the Mimbres Valley and the subsistence practices of the Mimbres Mogollon. He develops relatively detailed population estimates based on survey and excavation data collected by the Mimbres Foundation over an eight-year period. He also models environmental change between A.D. 600 and 1249 using decadic tree-ring sequences. Combining dendroclimatological and archaeological data, Minnis then estimates the frequency and magnitude of food stress faced by the prehistoric inhabitants of the Mimbres Valley.

Of greatest interest are Minnis' discussions of responses to food stress. He argues that during periods of increased stress, populations have two alternatives: they can either increase the level of social integration (read sociopolitical complexity) or increase their dependence on other groups. Minnis rejects the idea that the level of social integration increased in the Mimbres area. Instead, he argues that Mimbres groups sought contact with populations residing both within and outside of their region. During periods of maximum food stress (Classic period), in-

traregional trade increased. Manifestations of this emergent interdependence are seen archaeologically in increased exchange activity. Minnis examines the issue of exchange in some detail and tentatively concludes that the Mimbres were seeking to buffer the kinds of environmental risk that led to severe food stress by establishing ties with their neighbors. This "risk-spreading" model has been advocated by others as a way to account for the process of "tribalization" and the emergence of tribes.¹ One might legitimately question the supposed benefits of spreading such risk, especially in an arid and unpredictable environment like the Southwest. Yet as Minnis shows, the benefits were short-lived; the culture history of the Mimbres region was punctuated by several episodes of major culture change and was finally abandoned during the mid- to late 1200s. In Minnis' reconstruction, food stress was largely responsible for such changes.

Prehistoric Adaptation in the American Southwest

Hunter-Anderson's new book is a small (124 pages of text) but ambitious study of the changing structure of human adaptation in the northern portion of the American Southwest during a 9000-year period (8000 B.C. to A.D. 1000). The book is divided into five major sections: 1) a discussion of past research in the northern Southwest, 2) an "ecological-systemic" model of human adaptation, 3) a description of the study area and summary of ethnographic data, 4) a statistical analysis of assemblages, houses, and sites, and 5) an evaluation of fit between the model and the data. Hunter-Anderson is concerned not only with detailing the kinds of adaptive changes that occurred in east-central Arizona and west-central New Mexico during this 9000-year period, but also in building a relevant body of theory to guide future research. Even though her efforts fall somewhat short of the mark in both instances, the work is of interest because of the way it illuminates the new interpretive positions in Southwestern archaeology.

Hunter-Anderson begins the book with an examination of previous archaeological work devoted to reconstructing social, political, and economic organizations in the Southwest. Her summation of this work is negative and is intended to discredit interpretive positions that do not align with her views. I choose not to comment on this portion of the book, especially in light of the

view of scientific disputation and collegiality Haury presents (see above). Instead, I focus on the more constructive parts of Hunter-Anderson's work.

Hunter-Anderson develops an ecological-systemic model that relies on a demographic prime mover, the increasing size and density of the human population in the region. She argues that "the large size of a human population relative to its home range alters the environmental, and hence adaptive, context for that population."² Thus, population and environmental variability, the traditional anchors of Southwestern archaeology, are marshalled in support of her modeling effort. To that end, Hunter-Anderson proposes the following sequence of adaptive changes in the study area: hunting and gathering, intensified hunting and gathering, long term food storage for over-wintering purposes, the inception of horticulture, elaboration of food transport and processing technologies, technological changes in hunting, and the rise of corporate social organization.³

To evaluate whether such a sequence of change is congruent with existing data, Hunter-Anderson undertakes a multivariate statistical analysis (Q and R mode factor analyses) of a) artifact assemblages from 46 separate pit houses and 23 sites, b) house assemblages from three sites, and c) site assemblages from ten sites. The methodological problem is "to partition the assemblages into groups of artifacts which 'behave' together, in terms of frequency, each group related to an activity or set of related activities."⁴ The analyses are well-constructed and of interest, and the results document a number of significant changes in technology, site structure, and, by inference, site function. Like most Southwestern archaeologists who have undertaken such an ambitious analysis, Hunter-Anderson also struggles with problems of contemporaneity and small sample size. Yet she fights through this difficulty and generates very specific interpretations based on factor loadings and the broader sequence of adaptive changes she has posited. She also explores alternative explanations of the data.

Some of the results of the factor analysis are trivial (grinding and pounding tools have high factor loadings, i.e., are highly correlated); others are more important (the identification of a distinct set of site assemblages whose settlement system role appears to be related to hunting activities). Hunter-Anderson also documents an increasing use of horticultural products through time that is correlated with a reorganization of domes-

tic activities in houses and an increase in storage space. She argues such changes are related to developing sedentism and to the need to store food for over-wintering. These same changes in subsistence, residential architecture, and artifacts have been identified by other Southwestern archaeologists and have been interpreted in quite a different fashion.⁵ All of Hunter-Anderson's conclusions are dependent on the results of Q and R mode factor analyses and are thus based on the strength of correlation. As she points out earlier in the book, however, "correlation is not causation but only observation."⁶

Hunter-Anderson's book is a tendentious excursion into Southwestern archaeology. She is opinionated and attempts to use the force of her opinions to forge new interpretive trails and build a more comprehensive body of theory. For this effort, she is to be commended. Yet her work can be criticized to be the very canons she develops, and her intolerance of these same deficiencies in other archaeologists' work is certain to direct criticism to her own. The bases for many of her interpretations are not clear, and on the last page of the book she writes that "throughout the study new categories or ways of thinking about the data were derived from the model and from my intuitive convictions about the connections between archaeological remains and cultural organizational forms."⁷ Many other Southwestern archaeologists will prefer to rely on anthropology's rich ethnological literature as well as the results of previous archaeological work to derive such connections.

THE BOOKS IN PERSPECTIVE

The impact of Emil Haury's work on contemporary archaeologists is clearly evident in the works by Minnis and Hunter-Anderson. All of the contingent data necessary for these archaeologists to generate and test their models are linked to Haury's important contributions. Dendrochronology and the related study of dendroclimatology, for example, provide Minnis with the fine-grained data necessary to examine climatic variability in relation to changing subsistence and productive technologies among the Mimbres Mogollon. Similarly, the earliest period of Hunter-Anderson's temporal field of view (ca. 8000 B.C.) is shaped literally by the work Haury did at Naco and Lehner. Later periods in her study, and especially those of the Mogollon

period, are the direct result of the pioneering efforts of Haury in defining these cultural entities. Archaic transitions that figure prominently in both studies again find their roots in Haury's work at Ventana Cave, and the contributions he made to defining and interpreting the Cochise cultural sequence in the southern and central Southwest. In short, the frame of reference for Minnis' and Hunter-Anderson's studies (as well as those of all archaeologists working in the area today) is the lasting legacy of Emil Haury.

There is also little question that Haury's work continues to shape inquiry into questions about Southwestern prehistory. It would be a mistake to believe, however, that contemporary archaeologists continue to work under the same paradigm, using the same methodologies, as archaeologists trained during Haury's day. Paradigms, theories, methods, techniques, *and* perspectives have changed. To understand how perspectives have changed, how archaeologists of today pursue research issues, I briefly identify four separate areas of current interest and research in Southwestern archaeology.

The Definition of Culture and Adaptive Diversity

An earlier generation of archaeologists devoted its time to defining archaeological cultures and to refining local and regional phase sequences within a given culture. Largely because of this pioneering work, archaeologists are now able to address other questions about culture change and stability; the identification and definition of archaeological cultures are no longer viewed as scientifically justifiable pursuits in the field of Southwestern archaeology. Instead, contemporary archaeologists have sought to describe and explain aspects of the social, political, and economic systems for different Southwestern groups, and to characterize broad patterns in the adaptive history of regions. In the Mogollon and Anasazi areas, for example, several studies during the last five years have offered synthetic treatments of these issues at the regional level.⁸

Hunter-Anderson's and Minnis' formulations are but the latest in this series of analyses. More importantly, however, Southwestern archaeologists have not proceeded to broader syntheses in the absence of theoretical underpinnings. Models from economic geography, theoretical ecology, and evolutionary biology

have all been adapted with varying levels of success. Some commentators have viewed these developments with alarm, citing the lack of unity in approaches and methods. Others, while acknowledging the "creative chaos" in approaches, view such work as largely positive.⁹

Although the eclectic nature of the field is well expressed in the diversity of approaches alluded to above, such eclecticism has not produced totally diverse and unrelated interpretations. A growing consensus is emerging, based on research conducted in many different regions, that Southwestern societies developed organization strategies that were extremely *resilient* over long periods of time. These organizational strategies were not fixed and immutable once set into place, as some phase sequences would suggest. Instead, they were flexible and permitted a wide latitude in a group's organizational responses to the exigencies of the natural and social environments.¹⁰ This interpretation depicts the archaeological record as a chronicle of organizational diversity that not only shows simple and complex organizational structures, but also portrays variability in these structures through time. Such a recognition has clear implications for non-linear developmental sequences and variability in rates of culture change.

Chronometric Dating

The course that Haury set for Southwestern archaeology, both with his pioneering work in dendrochronology and later with his support for dendrochronological research as Chairman of the Department of Anthropology at the University of Arizona, has been followed closely by other dating advances: 1) progress in dating small samples of organic materials by the radiocarbon method using the linear accelerator, 2) the development of new secular variation curves for archaeomagnetic dating, and 3) experimentation with methods of laboratory-induced obsidian hydration dating. These advances, coupled with existing methods of relative dating (especially ceramic and lithic typologies), might suggest that the Southwest continues its role as archaeology's chronological "Garden of Eden."

It is true that the Southwest has been a center for research on dating techniques (both relative and chronometric). The region also appears to provide more opportunities to use these techniques because of favorable conditions of preservation and the

presence of suitable materials, like obsidian, for dating. Moreover, the past history of research on ceramic and lithic typologies in the Southwest has portrayed to outsiders an image of dating precision in the use of relative dating techniques. A number of analyses of material culture calibrated by dendrochronology or other advanced chronometric techniques, however, have presented data at variance with existing interpretations and typologies. Consequently, a re-examination of culture historical frameworks has begun.

Two areas of research are especially important. First, it has become clear that some projectile point styles are poor temporal indicators. This finding is important because Southwestern archaeologists routinely use projectile points to date sites and assign cultural affiliation. Obsidian hydration dating of San Pedro style points, commonly dated to the late Archaic period (1500 B.C. to A.D. 200),¹¹ documents the persistence of this point style in some Southwestern regions well into the fourteenth century.¹² Such persistence appears to be linked as well to the persistence of hunting and gathering and, consequently, re-examination has begun in many regions where such styles have been used to date "Archaic" age sites. Other analyses of so-called "archaic" style points also suggest that their temporal spans need to be reevaluated.¹³ Thus, chronometric dating has opened a new interpretive avenue by revealing the persistence of hunting and gathering during the late prehistoric period, and has called into question the temporal sensitivity of the traditional projectile point typology.

Second, it has been recognized that some Southwestern pottery types are not as temporally sensitive as once thought. Specific types of black-on-white pottery, for example, have been found to occur with much later polychrome, glaze, and/or black-on-red (orange) types. These inhomogeneous distributions have been documented for much of the plateau and montane regions of the Southwest.¹⁴ The co-occurrence of apparently "early" and late ceramic types has substantial implications for interpretations predicated on the contemporaneity of different kinds of sites in settlement systems. For example, one of Hunter-Anderson's important conclusions documents an increasing use of horticultural products through time, a process that is correlated with a reorganization of domestic activities in houses and an increase in storage space. She argues such changes are related to developing sedentism and to the need to store food for over-wintering.

This conclusion is dependent on an analysis that begins by partitioning sites into different time periods using a relative dating technique (dating by ceramic types). The ceramic typologies used by Hunter-Anderson are Colton's and related classification schemes that are not sensitive to the early-late co-occurrence phenomenon. The same changes in subsistence, residential architecture, and artifacts noted by Hunter-Anderson have been identified by other Southwestern archaeologists and have been interpreted in quite a different fashion. For example, citing inhomogeneous distributions of ceramics (as well as other data), Lightfoot and Feinman argue for greater contemporaneity among sites than does Hunter-Anderson and for differences in status among and between site residents.¹⁵ Future analyses should help to resolve this interesting interpretive discrepancy.

Subsistence and Agriculture

The practice of agriculture in the prehistoric Southwest has continued to stimulate the curiosity of investigators, just as it did when the first corn cobs were unearthed in dry caves and rock shelters of the Four Corners area at the turn of the century. The aridity and generally marginal environmental conditions for agriculture made continued reliance on cultigens seem an unlikely alternative for prehistoric groups. Now, Minnis has brought new information to bear on this topic and has indeed suggested that food stress and subsistence failure were common in some areas of the Southwest during prehistory. More critically, however, Minnis suggests that Southwestern groups knew about corn and other domesticates long before they began to rely on such foods; that the decision to practice agriculture was as much an organizational decision involving important social and economic criteria as one related to perceptions of an improved subsistence base. Data clearly show that ignorance of cultigens and cropping practices did not keep Southwesterners away from agriculture.

Partly as a result of Minnis' work, archaeologists have started to re-examine data related to agricultural beginnings in the Southwest and to identify when the first cultigens arrived in the region from Mexico. Indeed, one of the major topics of the 1980s in Southwestern archaeology has been the antiquity of the first maize (although squash was certainly the first Southwestern domesticate). During this decade, positions have changed as

more and more data have been made available. As the 1980s began and the re-excavation of Bat Cave was in progress, Southwestern archaeologists were moving toward revising the date for the earliest maize; 500 B.C. was a date frequently mentioned.¹⁶ This very recent date contrasted markedly with Herbert Dick's published dates of 3500 B.C. for the Bat Cave material.¹⁷ A more recent date for the appearance of maize was also bolstered by radiocarbon dates between 1000 B.C. and 500 B.C. on Bat Cave corn.¹⁸

Yet some archaeologists have continued to maintain that maize has considerably greater antiquity in the Southwest. This position has received a boost from two recent discoveries. Simmons dated organic material associated with maize pollen from sites in the San Juan Basin to approximately 2000 B.C., suggesting that corn agriculture was being practiced in the Southwest by that time, albeit at low levels. In a second development, Upham et. al. dated eight-rowed corn (Maiz de Ocho) recovered from rock shelter sites in the Organ Mountains of southern New Mexico to 1225 B.C.²⁰ This latter find is especially significant in tracing the ancestry and antiquity of maize in the Southwest, because Maiz de Ocho is not the earliest variety of maize found in the region. That credit belongs to a maize variety known as Chapalote. Maiz de Ocho, however, appears to be indigenous to the Southwest, having developed in the arid deserts of southern New Mexico and northern Chihuahua as a hybrid from Chapalote and a more primitive eight-rowed variety.²¹ An estimated age for Chapalote, given these new dates, now appears to be about 2500 B.C. Interestingly, in an article written in 1962, Emil Haury estimated the antiquity of maize and the beginnings of agriculture in the Southwest to be 2500 B.C.²² This kind of accurate grassroots "feel" for the data characterizes many of Haury's conclusions about key cultural transformations in Southwestern prehistory.

Population, Disease, and Sociopolitical Complexity

The legacy of Emil Haury is seen today in nearly all facets of Southwestern archaeology. Yet in one area of research, Haury and other archaeologists of his generation did not actively pursue questions that are now deemed to be of great relevance. These questions focus on 1) the size of native southwestern populations, especially during the late prehistoric periods, 2) the role of epidemic disease and European-introduced acute crowd

infections in population reduction following contact, and 3) the degree and extent of complex sociopolitical organizations in the Southwest during the different prehistoric periods. Obviously, a full consideration of these issues is beyond the scope of the present essay. Suffice it to say, however, that the previous generation of archaeologists was heavily influenced by ethnographic descriptions of native Southwestern groups. Today it is recognized that although the seminal ethnographies contain a wealth of valuable data, they depict the social, political and economic arrangements of groups after a long and disruptive contact history. Population reduction due to disease and other factors, population dislocation and resettlement, the dissolution of native belief systems and their replacement by the Christian religion, and the imposition of new political and economic systems have all contributed to dramatic changes in native societies. Archaeologists have finally begun to examine the archaeological record in light of these changes and have sought to place the ethnographic descriptions of Southwestern groups in proper perspective. Fortunately, the foundation for that perspective has been provided by Haury and others and additional studies like those of Minnis and Hunter-Anderson will move the field forward to address the complex issues of pre- and post-contact demographic structure and sociopolitical organization. If the next fifty years of Southwestern archaeology are as productive as the last, then resolution of the many issues raised in this essay should lead to textbook orthodoxy, and a new generation of archaeologists will be examining the work of today's practitioners. With luck, that examination will prove positive and the contributions of contemporary Southwestern archaeologists will be seen as providing a more comprehensive and balanced view of prehistory.

NOTES

1. David P. Braun and Stephen Plog, "Evolution of Tribal Social Networks: Theory and Preshistoric North American Evidence," *American Antiquity* 47 (1982): 504-525.
2. Rosalind Hunter-Anderson, *Prehistoric Adaptation in the American Southwest* (Cambridge: Cambridge University Press, 1987), 22.
3. *Ibid.*, 20.
4. *Ibid.*, 61.
5. See, for example, Kent G. Lightfoot and Gary Feinman, "Social Differentiation and Leadership Development in Early Pithouse Villages in the Mongololn Region of the American Southwest," *American Antiquity* 47 (1982): 64-86.

6. Hunter-Anderson, *Prehistoric Adaptation in the American Southwest*, 17.
7. *Ibid.*, 124.
8. Keith W. Kentigh, *Settlement, Subsistence, and Society in Late Zuni Prehistory*, Anthropological Papers of the University of Arizona, No. 44. (Tucson: University of Arizona Press, 1985); Kent G. Lightfoot, *Prehistoric Political Dynamics: A Case Study from the American Southwest* (DeKalb, Illinois: Northern Illinois University Press, 1984); Stephen Plog, ed., *Spatial Organization and Exchange: Archaeological Survey of Northern Black Mesa* (Carbondale, Illinois: Southern Illinois University Press, 1986); Steadman Upham, *Politics of Power: An Economic and Political History of the Western Pueblo* (New York: Academic Press, 1982).
9. Linda S. Cordell, *Prehistory of the Southwest* (Orlando, Florida: Academic Press, 1984).
10. Braun and S. Plog, "Evolution of Tribal Social Networks . . ."; Cordell, *Prehistory of the Southwest*; Linda S. Cordell and Fred Plog, "Escaping the Confines of Normative Thought: A Reevaluation of Puebloan Prehistory," *American Antiquity* 44 (1979); Fred Plog, "Exchange, Tribes and Alliances: The Northern Southwest," *American Archaeology* 4(3) (1984): 217-223; and Steadman Upham, "Adaptive Diversity and Southwestern Abandonment," *Journal of Anthropological Research* 40 (1984): 235-256, have all presented formulations that reflect this position.
11. Emil W. Hauray, *The Stratigraphy and Archaeology of Ventana Cave* (Tucson: University of Arizona Press, 1950).
12. Steadman Upham, Christopher M. Stevenson, Richard E. Newton, and Michael Johnson, "Chronometric Dating of San Pedro Style Projectile Points in Southern New Mexico," in *Mongollon Variability*, Charlotte Benson and Steadman Upham, eds., Occasional Papers of the University Museum 15 (Las Cruces, NM: New Mexico State University, 1986).
13. Cordell, *Prehistory of the Southwest* (1984).
14. Steadman Upham, Kent G. Lightfoot and Gary Feinman, "Explaining Socially Determined Ceramic Distributions in the Prehistoric Plateau Southwest," *American Antiquity* 46 (1981): 822-833; Lightfoot and Feinman, "Social Differentiation and Leadership Development . . ."; Lightfoot, *Prehistoric Political Dynamics* . . . ; S. Plog, ed., *Spatial Organization and Exchange* . . . ; Upham, *Politics of Power* . . .
15. Lightfoot and Feinman, "Social Differentiation and Leadership Development. . . ."
16. Michael S. Berry, *Time, Space, and Transition in Anasazi Prehistory* (Salt Lake City, Utah: University of Utah Press, 1982).
17. Herbert W. Dick, *Bat Cave* (Sante Fe, NM: School of American Research, 1965).
18. Cordell, *Prehistory of the Southwest*.
19. Simmons (1986).
20. Steadman Upham, Richard S. McNeish, Walton C. Galinat, and Christopher M. Stevensen, "Evidence Concerning the Origin of Maiz de Ocho," *American Anthropologist* 89 (1987): 410-419.
21. *Ibid.*
22. See J. Jefferson Reid and David E. Doyel, *Emil H. Hauray's Prehistory of the American Southwest* (Tucson: University of Arizona Press, 1986): 27-28.