Themes in Southwest Prehistory

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Cultural Evolution in the Prehistoric Southwest

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In 1540, when Francisco Vásquez de Coronado and his party slogged their way into what is now called the Southwest, they initiated profound changes in the lives of the inhabitants, changes that would have ramifications down through the centuries. Though most people might consider that event the major turning point in Southwestern Native American culture history, it was only one of a two-millennia-long series of far-reaching changes. Interaction with other groups, population shifts, environmental perturbations, subsistence changes, social and technological innovations, and a host of other factors resulted in both slowly evolving cultural transformations and rapid dramatic change.

Cultural evolution is a fact that does not need to be demonstrated here. Archaeological data from all parts of the world document change from simple small-scale societies with foraging economies to complex polities with many specialized economic and social institutions. Even though the transformation from simple to complex forms is so widespread, the process is not without hesitations and reversals, and the nature of the factors that facilitate or constrain the transformations is in great dispute.

The Southwest is an ideal laboratory in which to examine the processes of cultural evolution, from Archaic lifeways based on foraging to that stage based upon primary dependence on cultivated crops, known variously as neolithic, tribal society, or settled village life, and then to a stage exhibiting early manifestations of cultural complexity. The Southwest extends over three major climatic and topographic zones, encompassing a number of what archaeologists have called cultures, traditions, style zones, regional systems, and behavioral patterns. The region therefore provides a variety of environments and cultural traditions through which to trace and compare the transitions of its inhabitants from incipient agriculturists to large-town dwellers. The temporal and material culture data available for the
exploration of such changes, though variable in quality and quantity through both
time and space, are almost overwhelming in amount and precision compared with
those from most other areas of the world. The challenge is to formulate generaliza-
tions about Southwestern culture change without allowing the multiplicity of de-
tail to obscure regularities or provide crippling exceptions to every generalization.

All sciences have two traditions of inquiry. One is dominated by synthesizers,
those who desire to find underlying unifying principles by searching for hidden
symmetries. The other consists of diversifiers, those who search for heterogeneity,
seeking to explore the richness and diversity of the universe and to break the sym-
metry sought by the synthesizers. Southwestern archaeology has cycled through
both traditions.

The early archaeologists were, for the most part, of the synthesizing tradition.
Investigators like Jesse Walter Fewkes and A. V. Kidder wove complex patterns out
of oral tradition, existing Native American practices, and the skimpy detail of the
material culture from only a few surveys and excavations. Synthesizing is easiest
when the data base is small because the range of diversity is poorly represented.
Some early scholars such as Harold Colton and Lyndon Hargrave did pursue the
diversifying tradition, and that unusual archaeologist Harold S. Gladwin con-
structed grand schemes while at the same time documenting the great variety in
the archaeological record.

The 1950s and early 1960s saw a reaction to the overenthusiastic synthesis
and generalization of an earlier generation of archaeologists. The result was the
ascendancy of the diversifying tradition. Great effort was spent in trying to re-
construct the culture histories of small regions, without attempting to place those
local sequences within the larger picture of Southwestern prehistory or within a
general theory of cultural evolution. More recently, in the late 1970s and 1980s,
there has again arisen a trend toward synthesis and generalization; at the same
time, huge amounts of new data have become available, largely through massive
efforts in contract archaeology. The time, therefore, is opportune for archaeol-
gists to combine the best of the diversifying and synthesizing traditions and to
offer new insights into the nature of Southwestern cultural transformations and
their relationship to ideas about cultural evolution—or even ideas about the evolu-
tion of complex adaptive systems in general.

It is the tension between generalization and detail that permits plausible gen-
eral explanations for stability and change to go beyond particularistic description.
The broad geographic and temporal scope of knowledge about past cultural and
natural realms in the Southwest encourages generalizations about the evolution
of culture that may be applicable to other areas of the world as well. The wealth
of available detail, however, accentuates the enormous variety in the past human
and natural record, discourages facile generalizations, and makes it clear that a
“normative” perspective of the past is simplistic.
THE NATURE OF THE PREHISTORIC SOUTHWEST

In order to understand change and stability in the prehistoric Southwest, it is necessary to consider the question of scale. At one extreme is the view of the Southwest as a single social entity; at the other is the concentration on the individual decision maker. How do we characterize the nature of social relationships throughout the region (Levy 1989; Tainter and Plog, this volume; Cordell, Doyel, and Knutigh, this volume)? Is the Southwest a bounded social entity (McGuire et al., this volume)? How does it change through time? How do internal relationships change (Upham, Crown, and Plog, this volume)? How does the classic division of the Southwest into Hohokam, Anasazi, and Mogollon traditions relate to cultural behavior or to entities that archaeologists call cultures (Tainter and Plog, this volume; Upham, Crown, and Plog, this volume)? What kinds of cultural behavior are represented by the many local traditions that make up the larger traditions? These kinds of questions, which deal with scale, greatly affect our thoughts about the role of social relationships in influencing cultural transformations. One of the most dramatic changes in recent Southwestern archaeology is the realization that there were many more forms of local cultural behavior than anyone previously imagined. It is the understanding of small-scale social relationships and how they change that sharpens our knowledge about the larger-scale processes of culture change.

The Southwest has traditionally been defined by the presence of certain material culture traits—particularly pottery, maize agriculture, and village architecture—the limits of which bound it on all sides except the south, where those traits extend into Mesoamerica. The anthropological definition has typically been inexact, often focusing on the Pueblos and ignoring the peoples and places that do not fit into some restrictive scheme. Depending on how tightly the cultural criteria are drawn, the culture area known as the Southwest expands or contracts. Early attempts to define the area were made primarily for the purposes of classification (Goddard 1913; Wissler 1917). Kroeber (1939) and then Kirchoff (1954) refined these definitions and attempted to account for the differences within the Southwest while recognizing the similarities that combine the diverse ways of life into a single culture area.

Archaeologists have had similar problems of definition, dealing first with the Anasazi as the model for the Southwest (Kidder 1924) and later adding the Hohokam (Gladwin and Gladwin 1935) and the Mogollon (Hauri 1936). For years archaeologists debated the definitions and boundaries of these "cultural" entities (McGuire et al., this volume). By the late 1960s, however, scholars were less interested in classification than in the nature of past behavior and how it changed. Most archaeologists, especially those working on the Colorado Plateau, with their excellent record of past environments, opted for ecological explanations of culture change and stability (Euler et al. 1979). The major explanations for change in the low deserts of Arizona were either (1) the social and political innovations necessary for the design, construction, and maintenance of public works, or else (2) the interaction with Mexican peoples. Boundaries were supposedly no longer
of much interest, but since most of the ecologically oriented archaeologists also used the concept of culture as a highly integrated system, boundaries were implied, if seldom mentioned.

The question of cultural boundaries could no longer be ignored by the 1980s. By then, the tremendous diversity of cultural behavior was readily apparent in the data, which demonstrated the variety of different social forms previously included under a single rubric such as Anasazi or even, say, the more narrowly defined Kayenta Anasazi. For certain periods, the concepts of Hohokam, Mogollon, and Anasazi have lost much of their utility, except for the purpose of stylistic or technological classification (Speth 1988). Not only are the boundaries between entities often indistinct and variable through time (McGuire et al., this volume; Tainter and Plog, this volume), but the meanings of the boundaries are unknown: they may be ethnic, linguistic, stylistic, economic, ideological, social, or combinations of these. Furthermore, boundaries of various types have existed that have not been detected in the archaeological record (Upham, Crown, and Plog, this volume). At present, archaeologists disagree about the nature of many of the boundaries that have been detected. It is most likely that there were many different kinds of boundaries reflecting different sorts of relationships and that those relationships were in various states of flux.

THE EVOLUTION TOWARD INCREASING COMPLEXITY

Complexity is not easy to define. In order to capture the intuitive ideas that most of us have of what complexity means, several different quantities would probably have to be introduced. It turns out, however, that in most scientific usage and in much ordinary discourse what is meant by the complexity of a system being observed is, more or less, the length of the description given by the observer of the regularities of the system (Gell-Mann 1992). This is obviously a subjective or context-dependent— even a behavioral— definition, but no comparable objective definition has ever been found. Probably there is none. Granted the subjectivity of the definition, it is still necessary to provide a number of comments and qualifications before the concept can be used.

For one thing, the length of an ostensive description is no good; it is just as easy to point to a complicated system as to a simple one. Likewise, since a short nickname could be given to any system, the description should be in a language previously agreed upon with a correspondent (and a distant correspondent at that, to eliminate the possibility of pointing!).

Not only the language, but also the knowledge and understanding of the world that are shared by the observer and the correspondent may significantly affect the length of message required for the description. Just as important is the level of detail achieved in the description— what is known in physical science as the “coarse graining.”

Given the coarse graining, the language, and the assumed level of knowledge and understanding, one could, of course, repeat the story for the previous level of coarseness.

So far we have considered only the situation in which the world leaves the regularities alone. For a regular system, the situation is very large indeed. In general, it is more likely to be small. We can consider some possible situations in which the situation of regularity is still possible, but the world does not leave it alone. In that case, we can consider the situation in which the world keeps the regularities of the system, but the system does not leave them alone.

Finally, it is increased in complexity. In the case of the regularity, the system must relate social roles, buildings, species, etc., in a way that is not mechanical (Speth 1988: 23).

Someti
and understanding, the description should be as concise as possible. The length could, of course, be artificially inflated by the use of unnecessary verbiage or just by repeating things that could be said only once.

So far, then, we are discussing a definition of complexity based on (1) the length of a concise description, (2) to a distant correspondent, (3) using language previously agreed upon, (4) of the regularities of an observed system, (5) given the coarse graining that is applied, and (6) the knowledge and understanding of the world shared by the observer and the correspondent. But this definition still leaves the notion of regularities to be examined. What does it mean to separate regularities from random details?

For a finite stream of data, there is no rigorous way to distinguish a system's regular features from those that are attributed to chance. For an infinite stream, the situation is more hopeful. If possible, we should therefore be dealing with a very large body of data. As the amount of coarse-grained information increases, so does the meaningfulness of extracting regularities, since a regular pattern will be more likely to recur frequently enough to set it off from incidental features.

We can see how the foregoing observations apply in the description of a prehistoric society, with emphasis on its social structure. Evidently, complexity does not depend on the length of a message that merely designates sites or names a branch or phase of a particular ruin. We also see that the concentration on social complexity means that the coarse graining will ignore features of the remains that do not appear to bear importantly on social structure. The language for discussing that structure is fairly standard these days and is heavily influenced by certain theories of various degrees of plausibility and usefulness, of what is considered to be a typical sequence of stages of societal development. The regularities that are actually identified are similarly constrained by the limitations of current theories. Finally, it is clear that the likelihood of recognizing patterns of social structure is increased if there is an abundance of material.

In the light of these rather obvious general remarks, we can see that the social complexity assigned by an archaeologist to a prehistoric culture really does typically relate to the length of the concise description of regularities—the various social roles, the patterns of residence, the distribution and architecture of public buildings, the arts and crafts, the technology, the utilization of plant and animal species, the relations with other cultures, and so forth—as well as to the “variety of mechanisms for organizing these into a coherent, functioning whole” (Tainter 1988:23).

Sometimes, societies are described as more or less complex merely according to how they are thought to fit into a particular presumed sequence of evolutionary stages. Such an interpretation of the meaning of complexity is really justified only to the extent that it agrees with the more general interpretation given here. Fortunately, it often does agree, and the concept of complexity as a measure of the evolutionary status of a society continues to have heuristic potential despite recent criticism (Plog 1989).

There is no question that after the adoption of agriculture, societies tend
to evolve into more complex entities. The intertwined relationships among agricultural intensification, population growth, political integration, and social role diversity are major aspects of the processes of cultural evolution. Usually, those changes are associated with an increase in social inequality, and it is an interesting question whether that effect was less blatant in parts of the Southwest than in societies at comparable stages of evolution elsewhere in the world, as has sometimes been claimed.

This general view of social complexity does not imply a universal and consistent trend toward increased complexity, or that all interacting groups share a similar level of complexity. Southwestern culture history is characterized by periods of both rapid and slow change. In a few cases, such as with the Casitas people of west- and north-central Arizona, there was very little change from the 1300s until the first United States military intervention in the 1800s (Euler 1981; Schwartz 1989). Apparently, those ancestors of the contemporary Pai developed an adaptive system that efficiently fitted their environments. There are numerous examples of the local development of complexity followed by a collapse and a reversion to more simple forms. Often other locales then take a leading role in the trend toward complexity. Areas of the Southwest that were in the vanguard of increasing social complexity did not usually retain that position for more than a few centuries, after which there was stagnation or collapse. The categorization of a society in terms of complexity does not, of course, indicate how the society reached that stage; it is simply a descriptive measure.

Although there are variations from locale to locale in the dynamics of culture change through time, there are a number of time periods that characterize certain stages in Southwestern culture history. In some ways the time periods are arbitrary and simply reflect convenient points from which to discuss the state of the Southwest. Generally, however, the dates do seem to delineate periods of widespread rapid change, either toward greater complexity or toward more simple social forms. Traditionally in the Southwest, as in most areas of the world, the past has been divided into a series of named or numbered stages. However, with the refinement of chronologies and the accumulation of vast amounts of data demonstrating great local variation, a simplistic concept like Pueblo I is no longer adequate. An attempt was made in a recent seminar to address that problem, by identifying and naming "hinge points"—time intervals that seemed to characterize periods of rapid change throughout much of the Southwest (Cordell and Gumerman 1989). The unnamed periods used in this paper are a further refinement of the hinge point concept, underscoring dating imprecision and the fact that, in some cases, different social processes were taking place in various parts of the Southwest at the same time. Finally, it must be noted that any culture-historical overview will focus on the development and fate of strong patterns—those that tend toward greater complexity because they are the part of the archaeological record that is most apparent and has attracted most scholarly attention (Taft et al. in this volume). Weak patterns are more difficult to detect archaeologically and therefore are underrepresented in culture-historical overviews.

SOME KEY PERSPECTIVES

IN THE SOUTH

CIRCA 1500 TO 6

The domestication of maize in the Southwest some time before the west, but that maize was being transplanted to the lowland valleys of the population of geographic predictability by the Mogollon time (Hard 1990).

Evidence for conflict. In fact, extended family groups were more common and the Gulf of California was not the site of interaction. A deal of interaction seems to have been known as the...
SOME KEY PERIODS OF BEHAVIORAL CHANGE IN THE SOUTHWEST

CIRCA 1500 TO 900 BC

The domestication of maize, which began at about this time, produced transformations that laid the foundation for the next two and one-half millennia of Southwestern culture history (Wills and Huckell, this volume). It would be some time before there was a dependence on cultivated crops throughout the Southwest, but maize was already producing profound economic and social changes. In both the low and high deserts of the Southwest there is evidence of more permanent house structures and storage facilities. Deep midden deposits indicate long-term or frequent, repeated occupations. Clearly, the organization of labor was being transformed from a system that emphasized mobility and dispersion of the population to one more geographically anchored, with attention to control of geographic zones. Domesticated plants and long-term storage provided greater predictability about the future. Only in the mountain zone, the area later occupied by the Mogollon, is there little evidence of permanent village occupation at this time (Hard 1990). The greatest concentration of population was in the Rio Grande valley just north of the Jornada del Muerto and in the southern Arizona desert.

Evidence for the degree of interaction between groups during this early period is conflicting. Most lithic material derives from local sources, but the style of artifacts extended from the Pacific to central Texas and from the Columbia Plateau to somewhere in northwestern Mexico (McGuire et al., this volume). Shell from the Gulf of California is found over much of this area. In short, there was a great deal of interaction and exchange over much of this huge region, but local groups seem nevertheless to have been tethered to local resources. The cultural area later known as the Southwestern did not really exist at this time.

AD 200 TO 500

The development of the classic three major Southwestern traditions, the Hohokam, Mogollon, and Anasazi, occurs at this time. Although the cultural meaning and structural distinctiveness of these traditions have been questioned (Tainter and Plog, this volume), they serve as convenient rubrics for the discussion of the material culture of large areas. The traditions have been defined on the basis of artifact types, architectural style, and, to some degree, settlement pattern and geographical location. Because of the wide range of behavior that has been documented within each of the major traditions, however, the terms have greater utility as labels for material culture than they do for distinctive social and political structures.

Greater investment in agriculture provided a more reliable food source, resulting in the reduction in mobility that is probably largely responsible for the features that distinguish the Southwest from the adjacent areas with less sedentary populations, such as the Plains and the Great Basin (Wills and Huckell, this volume).
Population increases dramatically in these early centuries of the millennium, except in northern Sonora. Villages are common in most major areas including that of the mountain Mogollon, although many of those villages may not have been occupied throughout the year (Gilman 1987). There are Pioneer period Hohokam settlements in the Lower Sonoran desert of Arizona, Adamana settlements in the north-central region of Arizona, and Basketmaker II communities scattered across the southern Colorado Plateaus. The villages usually consist of pithouses and underground storage facilities, often showing a considerable investment in construction labor and indicating a change in mobility patterns and increasing reliance on agriculture. The pithouse is, in fact, the typical early form of dwelling throughout much of the world during early Neolithic times (Gilman 1987).

Major technological innovations during this period enhanced efficiency in the growing, hunting, and processing of food. The bow and arrow replaced the atlatl; the more efficient two-handed mano and metate came into common use; ceramics for the storage, serving, and cooking of food appeared throughout the Southwest; and the irrigation of crops was practiced in the Arizona desert. The earliest ceramics are all gray or brown, and most of the forms are quite simple, although technically sophisticated. Hohokam and Mogollon ceramics are very similar, suggesting common origins (Haury 1962a; LeBlanc 1982), and Anasazi ceramics have a uniformity throughout the Colorado Plateaus. There was increased domestication of turkeys, which were probably more important for feathers than for food. The technological changes, the increased dependency on domesticated crops, the reduction in mobility, and the concomitant changes in social organization are all interrelated and responsible for the character of what we now call the Hohokam, Anasazi, and Mogollon.

Health during these early centuries was generally good. Although there was widespread but low-level infection in the general population, the people were typically in better health then they were in later periods, a pattern consistent with worldwide evolutionary trajectories (Martin, this volume). A more varied diet and a less dense population than later in prehistory may account for the people's relatively good health. The number of ritually mutilated burials in the Anasazi area and the various established cases of slaughter among the Basketmakers suggest the prevalence of violence, head hunting, and witchcraft (Turner 1983; Wilcox and Haas, this volume). However, there is no clear evidence for organized warfare involving the control of resources.

There is also no strong indication of what is usually called social complexity; these people are presumed to have been simple hamlet farmers who supplemented their diet by hunting and collecting plant foods. The communities, however, were not parochial: they developed and maintained extensive and intensive exchange networks, as evidenced by the large amounts of marine shell found in even the smallest communities.

While the people of the Southwest were living a relatively simple life, societies to the south were evolving civilizations. After major remodeling circa AD 300, the city of Teotihuacan in the Valley of Mexico reached its height during this period.

Closer to the Southwest, the time before AD 400. The second millennium of the Southwestern region was a period of transition. Mexico until the Postclassic period in the northern Southwestern part of the Southwest; the limit of its natural range the limit of its natural range 1988). (In fact, the relevant AD 600 TO 850

It is during this period that the most important political, economic, and social changes occurred. The people experienced a period of stability, with the development of complex societies and the establishment of long-distance trade networks. The Southwest was a region of great diversity, with a wide range of cultural and ecological systems. The period saw the emergence of powerful political centers, such as Teotihuacan in central Mexico and Chaco Canyon in the American Southwest. The Southwest was also a region of great innovation, with advances in agriculture, technology, and social organization.

Population continued to increase, and the physical landscape was transformed by the construction of monumental architecture and the development of irrigation systems. The Southwest was a region of great diversity, with a wide range of cultural and ecological systems. The period saw the emergence of powerful political centers, such as Teotihuacan in central Mexico and Chaco Canyon in the American Southwest. The Southwest was also a region of great innovation, with advances in agriculture, technology, and social organization.

There was in many plac...
Closer to the Southwest, the large central site of La Quemada was founded sometime before AD 400. The nature of the relationship of those southern polities to the Southwest remains conjectural (McGuire et al., this volume). The fact that Mesoamerica was the location of one of the world’s great “pristine civilizations,” however, does not mean that the transmission of technological innovations and other traits was all in a northward direction. The bow and arrow in use during this period in the northern Southwest (Geib and Bungart 1989) did not reach central Mexico until the Postclassic, about AD 900 (Hassig 1988). Likewise, the species of turkey that was domesticated both in the Southwest and in Mexico has the southern part of the southwestern United States and extreme northwestern Mexico as the limit of its natural range and was apparently first domesticated there (Breithaupt 1988). (In fact, the relevant subspecies is confined to that area in the wild state.)

**AD 600 TO 890**

It is during this period that the concepts of Hohokam, Mogollon, and Anasazi seem most appropriate in terms of cultural traditions in the classic sense for which they were intended. Artifacts and facilities took on stylistic characteristics that closely identify them with one of the three named traditions. Artifacts style often had a flamboyant and exuberant flair.

Population continued to increase and expand into areas previously little used for habitation, especially the uplands, although there were some local abandonments. The people experienced greater nutritional stress and more infections than in the earlier periods, but those conditions were still not severe. By this time, beans were grown throughout the region, providing amino acids, protein, and fat not available in maize or squash. Beans were an important subsistence item, but unlike maize they needed constant tending throughout the growing season and therefore may have encouraged increased sedentism.

Irrigation systems, ballcourts, and, somewhat later, platform mounds become more numerous and extensive in the Hohokam area. Such public structures may indicate that although Hohokam communities tended to be dispersed over the landscape, they were highly integrated into intercommunity networks. Among the Mogollon and Anasazi, a manifestation of large community or even intercommunity integration, the great kiva, became more prevalent and formalized, suggesting that ideology was an important integrating factor for much of the Southwest. The Mogollon continued to live in pithouses, as did some of the Anasazi. Anasazi dwellings and storage facilities, however, were often constructed above ground, resulting in pueblos. In some areas, such as large portions of the Colorado Plateaus, the Mimbres Valley and other Mogollon areas, parts of the Hohokam region, and northern Mexico, there was clustering of populations into larger communities. The larger villages, however, did not grow at the expense of the hinterlands, as was common in later periods when there were wide areas devoid of permanently settled populations (Fish et al., this volume).

There was in many places a striking standardization of Anasazi architecture.
which, along with ceramic design styles of the White Mound and Kana-a traditions, indicates real social connectivity, with village networks and information sharing. Larger villages in the north often consisted of modular clusters of rooms, suggesting that communities were made up of smaller social elements. Since the components of the larger sites are similar in size and morphology, they may represent a common social order for much of the northern region. There is no evidence to suggest, however, that this similarity is the result of a unified social or political entity. Violence between communities was apparently quite common (Wilcox and Haas, this volume).

In the south, the platform mounds and ballcourts, as well as the importation of rubber balls (Haury 1937), signal an increase in interaction with Mesoamerican societies. It was a period of decentralization in Mesoamerica, with the collapse of the great urban state of Teotihuacán and a roughly simultaneous expansion of the northern Mesoamerican frontier. Relatively large-scale polities, such as those of La Quemada and Altavista, flourished north of the Lerma and Santiago rivers, which, before the founding of La Quemada in the previous period, had been the northern boundary of Mesoamerica. Some researchers have argued that the new polities were founded as outposts of central Mexican empires, and others interpret them as relatively independent social and political entities (McGuire et al., this volume).

**AD 950 TO 1100**

The years 950 to 1100 witnessed great population increase and regional expansion. For the first time, there was a great deal of divergence in social forms between localities. Some of those forms took on a considerable complexity, while others remained more simply organized. In Tainter and Plog's terms (this volume), there were both strong patterns—often produced by societies tending toward complexity, probably with elements of hierarchy, and belonging to regional systems—and weak patterns—likely to be the products of simpler, probably more egalitarian societies interacting on a local scale.

Small drainages in the Hohokam country, the mountainous central zone of the Southwest, and the western part of the Colorado Plateaus were characterized by ceramics with local design styles and often by unique architectural features. The development of local styles is so prevalent that early archaeologists named entire new traditions in some areas, such as the Winslow and Virgin branches of the Western Anasazi. The situation was different from that prevailing in earlier periods, when there had been widespread social interaction, apparently organized on a simple level, as seen in the modularity of architecture in the north and the great geographic extent of ceramic design styles such as Lino and Kana-a.

In other areas, there was a florescence based on earlier traditions. The Mimbres people, predominantly of central and southwestern New Mexico, aggregated in large aboveground villages for the first time and greatly elaborated their ceramic tradition (Anyon, Collins, and Bennett 1983)—changes concurrent with the beginnings of agricultural intensification and a climate unusually favorable for agri-
culture (Minnis 1985b). The Mimbres culture provides an example of a strong pattern not clearly associated with much social complexity.

Agricultural intensification is also evident in other places where population density increased, such as the Hohokam core area, where canal systems were extended and improved, and Chaco Canyon, where smaller but very sophisticated irrigation works were constructed. In fact, these two areas were the sites of important developments that took place concurrently with the establishment elsewhere of some local patterns and the florescence of others. Two large regional systems were initiated: the Chacoan system and that of the Salal-Gila Colonial and Sedentary period Hohokam. Both systems had considerable impact on large sections of the Southwest, but apparently little influence on each other (Croom and Judge 1991). The two large regional systems were organized differently and probably developed for different reasons. The Chacoan system evolved out of a need to manage the scarce resources of the San Juan Basin and incorporate communities in the surrounding areas, while the Hohokam system served to manage the abundance of the Lower Sonoran desert.

On the Colorado Plateaus and over much of the Mogollon area conditions were favorable to village agriculturalists: increased groundwater supplies, declining erosion, and increased precipitation. The improved climatic regime has often been viewed as contributing to the development of new traditions and the florescence of already established ones, the increase in population, the growth of large regional systems, and the establishment of permanent villages in areas that were previously used only seasonally.

The social orders that characterized the large regional systems and the more localized, simpler traditions are difficult to assess and have been a subject of great controversy (Tainter and Plog, this volume). The geographic extent of the large systems and of their exchange networks—and in the case of Chaco the obvious central planning of large towns—indicates a level of information sharing that required a high degree of coordination. The extensive regional systems were not simply aggregations of smaller local traditions but were qualitatively different in organization. Throughout the extent of each regional system a degree of peace must have prevailed, suggesting political ties as well as ideological and economic unification in these areas.

Some polities of Mesoamerica, such as Tula, were in an expansionist mode, and there was a vigorous northern Mexican frontier where, as in the Southwest, there was expansion into many areas that were unoccupied earlier (Phillips 1989). The groups along the west side of the Sierra Madre Occidental had numerous Mesoamerican characteristics, progressively weaker with the increase of distance from central Mexico. The Hohokam may be regarded as the farthest north, with the least Mesoamerican cast, of these many groups. Pyrites, mosaic mirrors, copper bells, and scarlet macaws provide firm evidence of Mesoamerican contact with the Hohokam at this time. Macaw remains are scarce, however, compared with those in Anasazi country, and the style of bell differs greatly between the two regions, suggesting different pathways of Mesoamerican contact (Nelson 1980).
The half-century from AD 1000 to 1050 has been called the Differentiation period because of the contemporaneous existence of many different sociocultural forms (Cordell and Gumerman 1989:10-11). Not all changes, however, involved increased variation. For example, much of what was called Mogollon had now lost a great deal of its distinctiveness, and some scholars refer to it as Anasazi. In the Cibola area a fusion of those two traditions took place, leading to widespread patterns that seem to exhibit fairly continuous evolution until the fifteenth century, and, in the case of Zuni, until the historic period.) Nevertheless, it is the range of complexity from simple organizational forms in some areas to much more complex ones in others that is striking.

AD 1140 TO 1200

This period coincides in the upland areas of the Southwest with a time of secondary environmental stress. Water tables declined slightly, and precipitation decreased rather uniformly over the Colorado Plateaus. There was a reorganization of population centers: striking abandonments (such as the Virgin Branch area and northeastern Black Mesa), cultural retreatments (as in the case of Mimbres), the collapse of the Chacoan system, the transformation of the Hohokam system, and the appearance of new areas of florescence such as Mesa Verde and parts of the Rio Grande valley. Sites throughout the Southwest were now more clustered, as the previous period of expansion and growth in complexity gave way to one of considerable territorial reduction and, in places, a marked decrease in organizational complexity. The manner in which the Chacoan system collapsed suggests that the system was never highly integrated throughout its extent at the height of its florescence. Whereas the system collapsed around 1140, Chaco Canyon itself was not abandoned, and there was new construction, albeit in a different form, with affinities to Mesa Verde. Furthermore, the Chacoan outliers at the extreme peripheries of the system continued to function as Chacoan-style communities for some time after 1140. Indeed, in the very remote communities, even at the height of the Chaco phenomenon, there was little evidence of sustained contact with Chaco Canyon (Lekson et al. 1988).

The Salt-Gila Hohokam network also declined. There was a contraction of the northern extent of the Hohokam and the completion of the abandonment of much of the Phoenix Basin nonriverine areas, which had begun a half-century earlier. The Tucson Basin Hohokam regional system began to develop, and elements of the Salado pattern began to appear in the core Hohokam area. Ballcourts were no longer constructed, and Hohokam platform mounds took on residential functions for the elites. Some of the hallmarks of earlier Hohokam, such as palettes, censers, and carved bowls, were no longer made, and many of the crafts took on a more uniform, mass-produced character. Far to the south, Tula collapsed, but the concurrent development of many large polities in western Mexico may have had a major effect on the Southwest (McGuire et al., this volume).

The Mesa Verde region underwent a major population expansion during this period, a dramatic increase in other areas (Cordell, Doyel major building activity in the Many of the Western lands (Fish et al., this volume) population movement around the Grand Canyon, northeastern Black Mesa depopulated. Some Pueblo had before (McGuire et al).

The 1140-to-1200 period is one of environmental and cultural experimentation with new ideas. The early 1200s (Wilcox et al., this volume) a cases of nutritional stress.

AD 1250 TO 1300

This was a period of dramatic aggregation and agricultural intensification. The last quarter of the environmental stress on the perhaps even a lowering of conditions. The Southwest saw much larger sites, resulting in a high population density. Across the San Juan area and Mesa Verde began before 1250 and into the century. Across a long period from the Verde Valley to have started a few decades earlier. At Casas Grandes, the Southwest was occupied by the Hohokam. Even while this period Southwest, there was large Mesa Verde collapsed, and Anasazi area was abandoned. The Hohokam region, used for year-round occupation, the White Mountain area occurred with the Classis widespread phenomenon.
period, a dramatic increase in construction, and an increase in interaction with other areas (Cordell, Doyel, and Kintigh, this volume; Rahn 1989). There was also major building activity in the Sinagua area near Flagstaff (Plog 1989).

Many of the Western Anasazi localities were abandoned, especially in the uplands (Fish et al., this volume), and there appears to have been a great deal of population movement and social experimentation. In some places, for example around the Grand Canyon, large areas were abandoned; in other places, like northeastern Black Mesa (Gumerman and Dean 1989), much smaller areas were depopulated. Some Pueblo groups moved farther out onto the Plains than they had before (McGuire et al., this volume).

The 1140-to-1200 period seems to be one in which, for reasons both environmental and cultural, there was a series of failures of existing lifeways and experimentation with new ones. Warfare became more prevalent and intensified in the early 1200s (Wilkox and Haas, this volume), and there were also more active cases of nutritional stress and trauma (Martin, this volume).

AD 1250 TO 1300

This was a period of dramatic change, with an acceleration of the tendency toward aggregation and agricultural intensification that began in the earlier period. During the last quarter of the thirteenth century, however, there was also severe environmental stress on the Colorado Plateaus, including the "Great Drought" and perhaps even a lowering of temperatures, which would have shortened the already marginal growing season.

Throughout the Southwest there were major relocations of population into much larger sites, resulting in a frenzy of construction (Cordell, Doyel, and Kintigh, this volume). Across a northern belt that includes the northern Kayenta Anasazi and the San Juan areas, such construction in both cliff shelters and open areas began before 1250 and terminated with large-scale abandonments at the end of the century. Across a long and broad central swath of the Southwest, stretching from the Verde Valley to the Rio Grande basin, the tempo of construction seems to have started a few decades later than in the north. In the extreme south, for example at Casas Grandes in Chihuahua and the Trincheras of Sonora, the acceleration in construction seems to have occurred even later, about 1300.

Even while this period of construction was still underway in most of the Southwest, there was large-scale regional abandonment (Fish et al., this volume). Mesa Verde collapsed, and the San Juan Basin and much of the northwestern Anasazi area were abandoned, as was the Sinagua region around Flagstaff. Even in the Hohokam region, areas that emphasized upland agriculture were no longer used for year-round occupation. Parts of the central belt—namely the northern Rio Grande, Cibola, the Hopi Mesas, the central Little Colorado River valley, and the White Mountain areas—had clusters of large sites. The Salado pattern, which occurred with the Classic Hohokam pattern in central Arizona, developed into a widespread phenomenon that would have an increasingly great impact over the
southern belt, involving the clustering of large sites and the production of distinctive ceramics that would be widely traded and copied.

This is a period of strong patterns, which would continue in some areas until the 1450s and in others until much later. Many of the numerous cultural systems of this period exhibit strong internal cohesion. For example, there are highly patterned relationships within communities, as indicated by such things as architectural arrangements (Cordell, Doyel, and Kintigh, this volume) and by design styles on artifacts. This does not mean, of course, that all communities grew and were organized in the same way.

As well as strong internal cohesion within communities, there was intense interaction between communities. Often there were central sites that served as social, economic, and religious centers for nearby settlements. On a wider geographic scale, pan-Southwestern interaction intensified despite the greater distance between communities that resulted from aggregation and regional abandonment. Design style similarities and exchange items indicate sustained and intensive contact (Upham, Crown, and Plog, this volume). Many of the exchange networks centered on items with high symbolic content, such as design styles associated with the katsina cult of the Anasazi, which became widespread about this time. The scarlet macaw and its artistic representation became even more important than in earlier periods. Sites were spaced at regular intervals that seem to relate to communication and travel time (Jewett 1989).

These long-distance relationships undoubtedly involved instances of competition and conflict as well as cooperation and alliance. Casas Grandes in Chihuahua and Gallina in northeastern New Mexico were the locations of two widely separated groups that were both in a state of warfare with their neighbors (Wilcox and Haas, this volume). Skeletal remains also indicate a major increase in multiple pathologies and dental disease (Martin, this volume). The turkey, which had long been an important aspect of prehistoric Southwestern life, reached the apex of production at this time.

Direct Mesoamerican contact seems greatest during this period, even though Mesoamerica appears to have become decentralized in the wake of the Toltec collapse. The nature of the interaction with the south, however, is still a matter of great dispute (McGuire et al., this volume). The Hohokam continued to exhibit many Mesoamerican traits, and the katsina cult complex of the Anasazi has many southern characteristics, some of them perhaps already traceable in Mimbres ceramics. Copper bells from Mexico were now much more uniform in style across the Southwest than in earlier periods, suggesting a common source (Nelson 1986:161). Hohokam contact was intense with groups along the Lower Colorado River (the so-called Yuman area), and there was much trade in shell coming by a northern route from California to the Anasazi.

The issue of the existence of hierarchical social forms continues unresolved (Tainter and Plog, this volume; Upham, Crown, and Plog, this volume). The arguments for and against egalitarian or hierarchical types of sociopolitical organization have foundered on the use of categorical classifications such as tribe,
chieftain, or big-man forms of organization, and such categorization has proved of little help in understanding the development and organization of the variety of economic, social, and ideological systems in the Southwest (Tainter and Plog, this volume). What is apparent to all scholars is that there were various groups in the Southwest that differed in complexity and that their societies underwent processes of development and collapse in various places at various times. The argument should center around questions of how (and, if possible, why) the forms evolved when and where they did, something of the character of their organization (which might or might not fit into the usual categories), and the processes by which some of them collapsed.

It is during this period that the question of the relationship of prehistoric behavior to historic and ethnographic descriptions becomes of great concern, especially in the north. The kinds of inferences that can be made about the past, given the rich descriptions of living peoples whose cultures have been greatly transformed but still have obviously close ties to the past, have been hotly debated (Levy 1989, 1990). Following an era in which too much trust was placed in using ethnography, early history, and tradition to interpret the archaeological record, it is unfortunate that there was a reaction that went too far in the opposite direction. It would be useful to return, with caution, to the use of such materials. A simple example is provided by the techniques suggested by Murdock (1949) for the reconstruction of prehistoric social organization in ways that present some analogy with linguistic reconstruction (Levy 1990). These considerations apply even more to the succeeding period.

AD 1425 TO 1490

This was a period of very rapid change. Because it is closest to the historic period, it should have the most detailed data; ironically, however, it is replete with contradictions and unanswered questions (Kintigh 1990a). Huge areas were abandoned around this time: the Verde Valley, the central Little Colorado region, the White Mountains, the Salt-Gila Basin, and the Casas Grandes region, as well as a wide stretch of territory between the last two areas. If we were to adopt a broader definition of the Southwest, like the “Greater Southwest” of Carroll L. Riley (1987), we would also include among the casualties of the fifteenth century the Trincheras culture of the Altar and Concepción valleys of Sonora and the pueblos along the Rio Grande below the Jornada del Muerto and above the region of the junction with the Conchos River (“La Junta”). Note that with that inclusion the areas of abandonment and cultural retrenchment remain contiguous. We would also count among the survivors some villages of La Junta, as well as Riley’s “Serrana Province,” which covers Ures and part of the Sonora River valley.

The fact that all these areas are contiguous suggests the abandonments were related, but imprecise dating and the lack of evidence for causes inhibit our understanding of the population dynamics of the late prehistoric period. Because of the lack of accurate dates, even gross population figures are difficult to estimate.
(Dean, Doelle, and Orcutt, this volume). Some of the abandonments might have occurred as early as 1375 or as late as 1520.

It is not possible to understand to what extent the profound changes that took place in or just after the fifteenth century were the result of internally generated factors or of factors impinging from outside the Southwest. The Athabaskan intrusion cannot be completely excluded as a cause of abandonments, nor can a precocious Spanish impact through the spread of exotic diseases. The majority view seems to be that the major changes took place before the possible arrival of Spanish diseases and before the appearance of the Athabascans, although there is no conclusive evidence on which to base an opinion.

The environment in the north continued to be difficult for agriculturalists. Water tables were low, arroyo cutting persisted, and at the beginning of the period precipitation was below normal. Hopi, Zuni, Acoma, and the Rio Grande region were the only areas that remained occupied in the north.

The process of aggregation continued throughout the Southwest (Cordell, Doyel, and Kintigh, this volume), and communities became even larger. Also, there was a decline in the tendency toward local abandonments, accompanied by the building of new settlements, that had characterized the previous period (see Kintigh 1990a for the situation at Zuni). Episodes of flooding in the Salt-Gila drainage, which may have destroyed irrigation networks, have been postulated to explain the changes that are observed in Hohokam country. The Salt-Gila Basin was depopulated, but the Tucson area apparently retained much of its population (Doelle and Wallace 1991), albeit with altered cultural patterns. The Salado and Classic Hohokam cultural patterns disappeared, and Casas Grandes collapsed (Dean and Ravesloot 1988). Warfare apparently played a part in the Hohokam abandonment.

The large areas between the clusters of pueblos in the north may have been "no-man’s land" or, as Dean has quipped, "every-man’s land"—a type of commons for the use of natural resources. This was a period of major competition among the eastern Pueblos for trade with the Plains groups, although there is also evidence for the existence of "alliances," perhaps corresponding to the "provinces" identified by the conquistadores.

The connectivity between clusters of sites in the late prehistoric era, which is evident in exchange patterns, artifact distribution patterns, and design motifs, has been attributed to a variety of factors, including interaction between elite groups (Lightfoot 1984; Upham 1982), economic and social alliances (Upham, Crown, and Plog, this volume), religious cults (Adams 1991; McGuire 1986), and social, ideological, and economic control from the south (Di Peso 1974a; LeBlanc 1986). In any case, the later fifteenth century was an era of few—but intensified—social, economic, and religious networks.

ELEMENTS OF STABILITY AND CHANGE

Throughout the world there tends to be a correlation among the following elements: growing population, intensification of food production, sedentism, in-

creased diversity of sociopolitical and social relation and the connections among them.

In a very general way, the Southwest was a region of similarity in social behavior, but it is also a region of high variability. The patterns of occupation and abandonment reflect the interaction of local and regional factors, and the resulting diversity is evident in the archaeological record.

There are, of course, similarities in the ecology and economy of the Southwest, but the diversity of regional cultures and environments is striking. The general consensus in the first half of the 1980s (Martin and Plo 1982; Martin and Plo 1982) was that these similarities are the result of a complex interaction of cultural factors, including climatic change, environmental resources, and social and political organization.

The result is a complex interplay of factors that have shaped the development of the Southwest. The region has been characterized by a high degree of diversity, with a wide range of cultural traditions and social organization. The result is a complex interplay of factors that have shaped the development of the Southwest. The region has been characterized by a high degree of diversity, with a wide range of cultural traditions and social organization.
creased diversity of social roles, and the institutionalization of long-distance economic and social relationships (Johnson and Earle 1987). The detailed reasons for the connections among these phenomena are not altogether clear, however.

In a very general way, the similarities that have been observed in the evolution of Southwestern societies can be attributed to some combination of three kinds of factors: universal processes, which can be expected to take place anywhere under similar natural and cultural conditions; the diffusion of behavioral patterns from one region to another; and local historical accident. It is likely that all three types of factors reflect the reality of Southwestern prehistory.

There are, of course, those scholars who do not recognize broad patterns of similarity in Southwestern prehistory but concentrate instead on the evidence for idiosyncratic behavior. It is certainly true that the degree of variation across the Southwest fluctuated dramatically, and it is those very perturbations that provide some insight into the processes of cultural transformation.

The general consistency of the earliest definable Southwestern patterns, recognizable in the first centuries AD, has often been noted (Haury 1962a; LeBlanc 1982; Martin and Plog 1973). These early parallels might be a result less of interactions throughout the region than of the generalized and informal nature of the artifacts and structures and the requirements imposed by the environment and the state of technology. House forms are simple and similar, but that is common in many parts of the world shortly after a reliance on agriculture begins (Gilman 1987), with increasing residential stability stemming from greater predictability of subsistence resources. Pottery is technologically well made, but forms and decorations are simple, often with designs obviously derived from basketry patterns. The colors are gray to reddish brown, again a worldwide phenomenon. In short, a simple technology (e.g., unslipped ceramics and elementary, partially subsurface dwellings with brush and dirt superstructures) limits material expression, and artifacts and structures will take on an appearance of similarity that may not be the result of diffusion—although the large amount of marine shell, especially from the Sea of Cortés, does indicate widespread interaction.

In the centuries leading up to the end of the first millennium, there was a slow development in all the major Southwestern environments, from the high and low deserts to the central mountain zone. The century and a half from AD 1000 to 1150 saw a tremendous increase in social differentiation throughout the entire Southwest and the establishment of the first very large polities. But how do we account for the great diversity of social organizational forms?

The increase in variety of social conventions is in many ways analogous to the "Cambrian explosion" in biological evolution, a time when large numbers and many kinds of multicellular organisms evolved. This is in striking contrast to the preceding period, when there were many fewer life forms, with a much greater degree of similarity. The sudden appearance and diversity of life forms in the Cambrian has been attributed to the occupation of a "vacant ecology," an environment that was largely unoccupied and receptive to evolutionary experimentation (Morris 1989). In a somewhat analogous process, there was such a great increase
in population and range expansion across the Southwest that almost every niche was filled by AD 1100 (Fish et al., this volume). Furthermore, numerous types of social organization were experimented with and succeeded for at least a short time. As has been said for the Anasazi, given the open spaces and the ameliorating environment of the period, any of a number of adaptive strategies would have worked—and did (Flag et al. 1988).

As examples of the diverse types of social—and probably political and ideological—organizations that could be accommodated under the general rubric of Anasazi during a time of benevolent environmental conditions, we may consider those of the Chacoan system, northeastern Black Mesa, and the Hopi Buttes.

The Chaco Canyon tradition in the arid and environmentally homogeneous San Juan Basin is epitomized by nine elaborately designed massive multistoried pueblos, numerous great kivas, and a network of “roadways” extending far into the countryside (Vivian 1990). The Chacoans reached a level of complexity unknown in other parts of the Anasazi world until centuries later. Certain roadways link Chaco Canyon to some of the large sites, called outliers, which had structures related to the great houses in or near Chaco Canyon. What is known as the Chacoan regional system apparently impacted a huge area of the northern Southwest and, at least in the San Juan Basin and its periphery, involved coordination in the social, economic, and presumably religious spheres (with a significant emphasis on astronomy). The variation in the Chacoan sites in the hinterland suggests that they maintained different kinds of relationships with the center in Chaco Canyon itself.

The Anasazi of northern Black Mesa responded to the improving environment after AD 1000 in a very different way from the Chacoans (Nichols and Smiley 1985). Instead of constructing a central hub, they filled nearly every small mesa, sage flat, and valley with five- to fifteen-room farming communities. Most of the villages had their own kivas or were located near sites with kivas, and there were no great kivas or other indications of a pan-community ideological system.

The Hopi Buttes area, immediately to the south of Black Mesa, was also characterized by a dispersed settlement system. Sites were small, each consisting of several pithouses, occasional surface rooms, and, in a few cases, kivas (Gumerman 1988b). Unlike Black Mesa’s relatively independent communities, however, the farmsteads of the Hopi Buttes were apparently integrated by a regional ideological system. A single large site served as a focal point for religious and probably economic activities. The site has an unusually high ratio of ceremonial rooms to dwellings and a large public plaza, serving the ceremonial and economic needs of the many scattered farmsteads.

In sum, these three traditions, all called Anasazi, took very different paths and each developed a distinctive character. Each path was successful for some period of time. But the three areas reacted differently and at somewhat different times to the increasing environmental stress after about AD 1140. The sociopolitical, economic, and ideological organizational forms they had developed under more benevolent environmental regimes conditioned their responses to periods of stress.

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CULTURAL EVOLUTION

ization into comparatively few "provinces," there was a reduced variety of social forms. This is not to say that there was uniformity in material culture, but that there were a few large polities, each of which practiced a degree of cooperation and coordination over a large area. The demise of many of the earlier types of sociopolitical organization tried out in the 1000-to-1150 period parallels the wave of biological extinctions at the end of the Cambrian era, which resulted in reduced morphological diversity.

There is a recognized, although poorly understood, relationship among the smaller numbers of social forms, the larger and more densely packed population centers, the presumably coordinated decision making, and the geographically extensive networks of cooperation and competition that linked the surviving polities. The polities, for the most part more complex and formally organized than many of the earlier ones, interacted with one another through an intertwining of religion, economy, and social organization. These relationships were not always stable, in some areas, such as the eastern frontier of the Southwest, some shifting of alliances and competition seems to have occurred.

CONCLUSION

About two thousand years ago, the Southwest was populated with scattered semi-mobile bands dabbling with the domestication of plants. Around four hundred years ago, the Spaniards found large sedentary communities, some with hints of statelike features, as well as unoccupied areas with the ruins of large public works. This is an overgeneralization, of course, which glosses over the remarkable variation from place to place in the evolving patterns of simplicity and complexity. The question is, How can the idiosyncratic pulse of change in each small locality be harmonized with the grander social transformations throughout the Southwest?

Proponents of synthesizing schemes prefer to focus on general trends: increasing population, population aggregation, an increasing number of adaptive strategies and then a reduction in their number, agricultural intensification, similar responses to environmental change, and the synchronous development or breakdown of regional systems. Those researchers who focus on the variety in the archaeological record recognize that imprecision in dating sometimes makes conditions seem more nearly synchronous than they are. They can point to different responses to similar environmental conditions, the role of historical accident, and the simultaneous existence of numerous cultural patterns throughout the Southwest. The two perspectives are, of course, not mutually exclusive.

In cultural as well as biological evolution, the scale of one's perspective determines the kinds of questions that can be successfully addressed. The premise of this volume is that it is worthwhile to take a broad perspective and consider the Southwest as whole—as a single but heterogeneous social entity. One can then study the evolution of culture from a hunting and gathering stage to that of ranked societies in these contiguous semiarid lands on the northern frontier of Mexico—lands inhabited by peoples with similar domesticates, roughly similar
technologies, and apparent synchronisms in settlement behavior and social transformations. The roles played by universal processes, diffusion, and local historical accident may become clearer as a result of such a unified approach.

Numerous agents of change have been postulated for Southwestern prehistory, including the natural environment, technological innovation, demographic factors, interaction with neighbors and invaders, and internal social conditions. Undoubtedly, all these factors—and combinations of them—have had a role in shaping the culture history of the region.

Traditionally, environmental conditions have been the most common explanation for cultural stability and change in the prehistoric Southwest. There can be no question that perturbations in the environment affected the cultural history of both small drainages and large provinces. The close correlation of only a few variables (such as the numbers, density, and distribution of population) with environmental conditions underscores the important role of environment in most schemes of culture change (Dean, Doelle, and Orcutt, this volume). Random historical accident, however, and the existing social, economic, and ideological conditions must also be taken into account in understanding the responses to changing environmental conditions, as the examples of Chaco, Black Mesa, and the Hopi Buttes indicate.

The conventional wisdom in our age of extremely rapid social change is that technological innovation drives social transformation. Leslie White (1959) provided a formal gauge for measuring the stage of cultural complexity on the basis of the capture of energy, and more recently, Wendel Osvald (1976) has tried to quantify the rank order of complexity on the basis of “techno-units.” There is no question that the consequences of the initiation of food production in the Southwest are reflected in the forms of societal metamorphosis that took place throughout the remainder of prehistory. The incorporation of domesticates from the south into the subsistence economy was the agent that made possible similar trajectories of change in different parts of the region.

Still, extractive technology changed very little in the prehistoric Southwest. It is true that the bow and arrow replaced the atlatl, permitting more efficient hunting from ambush; ceramics became widespread, allowing greater variety in cooking and food-storage techniques and enhancing nutrition; simple water control systems were introduced, permitting new areas to come under cultivation; and the two-handed mano and trough metate made the production of large amounts of cornmeal more efficient (Morris 1990). But these innovations occurred early in the first centuries AD, and their impact on Southwestern society could not by itself account for the many centuries of subsequent social change. Later, there were technological improvements, such as the use of malting bins to increase the efficiency of food preparation, the expansion and refinement of irrigation networks, and the development of building techniques that permitted the construction of multistoried structures. There is no evidence, however, of the introduction of dramatically new technologies.

The trend toward increasing complexity in the Southwest was a result not only of technological innovation but of changes in the organization and manage-
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ment of social relationships. Increasing populations (Dean, Doelle, and Orcutt, this volume), increasing dependence on domesticated plants, and concomitant changes in settlement and storage behavior (Wills and Huckell, this volume) required fundamental social changes. In later centuries, extensive and sophisticated irrigation systems, road construction and maintenance, the planning and building of massive structures and elaborate public architecture, the increasing scale of cooperation and of conflict or competition, and the concentration of the increasing population into larger communities demanded ever more complex and specialized forms of social relationships (Neitzel 1991).

Such changes must have involved increasing power differences. The management of large numbers of people to develop and maintain the complex systems required specialization in knowledge and skills. The existence of great kivas and of platform mounds and compounds, as well as the spread of the katsina cult, suggests that the organization of the increasingly diverse social roles in Southwestern society was accomplished largely through ideological means. The symbolic ordering of world view is sufficiently apparent in many architectural features (Fritz 1978; Sowaer, Marshall, and Sinclair 1989) to indicate that the pervasive ideological ordering of daily life in contemporary Pueblo society (Ortiz 1962) had its origins in prehistoric times.

As is indicated by numerous papers in this volume, there are disadvantages to individuals in the trend toward cultural complexity. The incidence of infectious disease increases, as does trauma. Access to information and other resources becomes more unequal. Individual or small-group autonomy is often sacrificed for benefits accruing to much larger groups. Nevertheless, the inequitable distribution of power, information, and other resources is embedded in a social system that serves the needs of the large number of individuals who constitute the society. Changes in complexity within different localities in the Southwest region indicate that some strategies were successful for some places at some times under certain environmental conditions. None was successful consistently.

In the future, explanations for trends in cultural evolution will, we believe, require a more balanced approach than has typically been the case in the past. Narrow ruling hypotheses must be replaced by ones that consider a wide range of cultural and natural variables and various combinations of them. We would like to see a concern for the straightforward description of what appears to have happened in prehistory, coupled with a willingness to explore a variety of forms of explanation. In addition, new analytical techniques, as well as the rehabilitation of old ones (as suggested by Levy 1989), can help to provide more realistic interpretations of culture change in the past.

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