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Recent Research on Chaco: Changing Views on Economy, Ritual, and Society

Barbara J. Mills¹

Current research on Chaco Canyon and its surrounding outlier communities is at an important juncture. Rather than trying to argue for the presence or absence of complexity, archaeologists working in the area are asking different questions, especially how Chacoan political, economic, ritual, and social organization were structured. These lines of inquiry do not attempt to pigeonhole Chaco into traditional neoevolutionary types, but instead seek to understand the historical trajectory that led to the construction of monumental architecture in Chaco Canyon and a large part of the northern Southwest in the 10th through 12th centuries. This review discusses the conclusions of current research at Chaco including definitions of the Chaco region, recent fieldwork, histories of Chaco archaeology, chronology, paleoenvironmental reconstruction, demography, political organization, outlier communities, economic organization, social organization, ritual, violence, and the post-Chacoan reorganization. Although many issues are hotly debated, there is a growing consensus that power was not based in a centralized political organization and that ritual organization was a key factor in the replication of Chacoan architecture across a vast regional landscape. Exactly how ritual, social, and political organization intersected is a central question for Chaco scholars. The resolution of this problem will prove to be of interest to all archaeologists working with intermediate societies across the globe.

KEY WORDS: Chaco Canyon; complexity; political organization; ritual; social organization; economy; Southwest archaeology.

INTRODUCTION

Chaco Canyon is generally considered an enigma in the archaeology of the Greater Southwest. It contains large structures or great houses that are bigger than any other structures in the contemporaneous Ancestral Pueblo world. The large

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size, degree of planning, expertise, and complexity shown in great house construction is very different from that found among the ethnographic Pueblos. Except for a few unusual burials, however, the construction of great houses was not accompanied by obvious signs of status and hierarchy, such as social ranking, palaces, limited access to long-distance goods, or a means of controlling the staple economy. A high proportion of materials consumed at Chaco were transported over long distances, but there is little evidence for what went out in exchange. The stark landscape appears too inhospitable to have supported a large, aggregated population. And finally, Chaco Canyon was physically and culturally linked to communities with Chacoan-style great houses throughout the San Juan Basin (if not beyond), forming a "phenomenally" large regional system, but without clear-cut evidence of precisely how interaction was structured between outlying communities and the central canyon.

The above statements about Chaco can be found in the popular and professional literature on Chaco Canyon of the past couple of decades. However, the most recent literature shows that considerable progress has been made in understanding how these seemingly contradictory statements about Chaco fit together. These interpretations do not result from an increased pace of new field research. Instead, there has been a considerable amount of reinterpretation and synthesis of older excavations coupled with an expanded view of the overarching method and theory used by Southwestern, and other, archaeologists to interpret the past. These new interpretations have begun to rewrite the Chacoan past. This essay reviews current research at Chaco at what is an important juncture, pointing out how the standard interpretations have begun to change, problems with some of the new interpretations, and new research directions that might be taken. My task was to review the recent literature of the last 5 years, but because of the publication of several pivotal volumes in the early 1990s (Crown and Judge, 1991; Doyel, 1992a; Sebastian, 1992a; Vivian, 1990), I have included these works and those that postdate them. Earlier work on Chaco is voluminous, and I have of necessity been more selective in including earlier literature on Chaco, concentrating on those publications that help situate current research.

DEFINING THE CHACO REGION

A vast amount of the Colorado Plateau is generally considered to be part of the Chacoan regional system during the 10th through 12th centuries (Crown and Judge, 1991; Doyel and Lekson, 1992; Fig. 1), potentially encompassing an area of 120,000 km² (Lekson, 1996a, p. 82). This area includes the San Juan Basin in northwestern New Mexico and its surrounding uplands in northwestern New Mexico, northeastern Arizona, southeastern Utah, and southwestern Colorado. However, considerable variation is present among archaeologists in how the boundaries of the Chaco region are drawn. One of the most widely used maps is that of Doyel

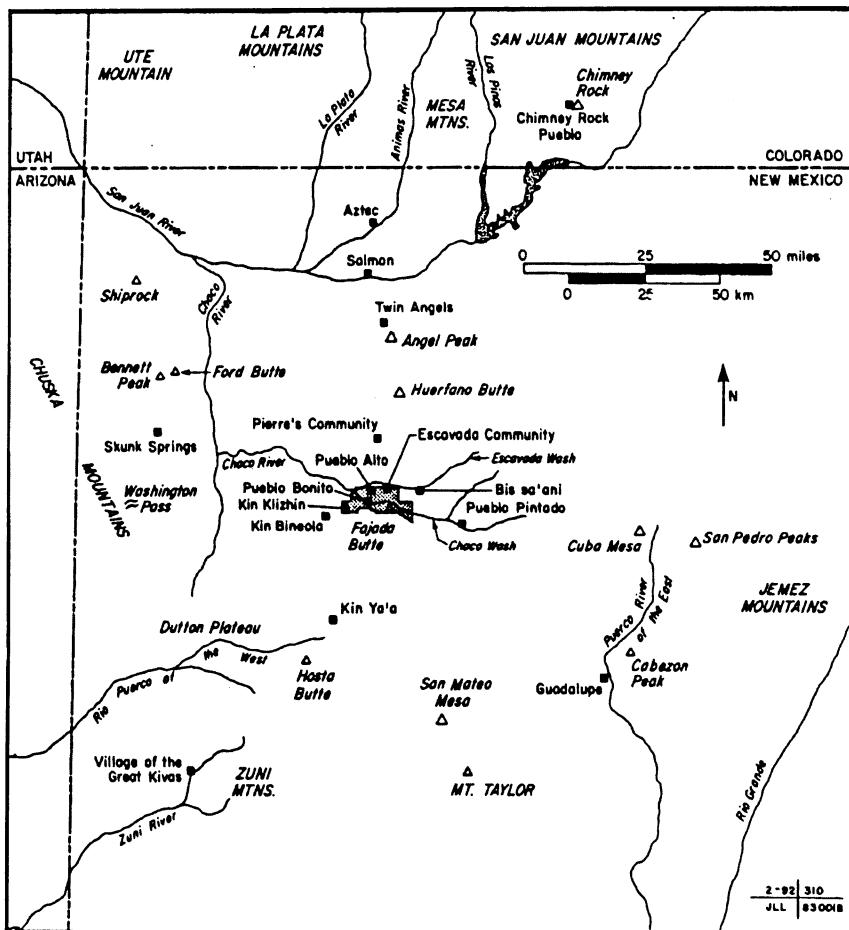


Fig. 1. Location of Chaco Canyon within the San Juan Basin. (After Mathien, 1997, Figure 1.1) (NPS Archives)

and Lekson (1992). This map provides a maximum extent, and the authors even refer to it as the “Anasazi Regional System” (see also Lekson, 1991). It has been used by most scholars studying outliers (e.g., Kantner, 1996, 1999; Mahoney and Kantner, 2000, Figure 1.2; Wilcox, 1999), and a version even hangs in the Visitor Center at Chaco Culture National Historical Park.

However the boundaries of the Chaco area are drawn, they are based on the regional distribution of roads, great houses, and great kivas. Chaco roads are different from trails in that they are both straighter and wider, ranging from 8 to 12 m in width. In addition, they were intentionally constructed with raised beds, berms, borders, bridges, gates, grooves, stairways, ramps, and landings, rather than

simply being the result of repeated use over the same route (Vivian, 1997a). Great houses are variously defined, but the one attribute that stands out most is that they are bigger than other sites and most are multistoried (Lekson, 1991). They also evidence a higher degree of planning and distinctive masonry styles. Great kivas in the Chaco area are circular, suprathousehold subterranean or semisubterranean structures that are at least 10 m in width, with many exceeding 20 m in width.

Unfortunately, critical evaluation of the data on which these outlier maps depend has not been done, resulting in an overly large distribution of things Chacoan. The Chaco region is indisputably greater than the San Juan Basin, but arguments abound about the edges. Great houses and great kivas have long been known from southwestern Colorado, but only recently have they been recognized in southeastern Utah (Jalbert and Cameron, 2000). Dean (1996) is quick to refute the idea that Chaco was ever a part of Kayenta-area social, political, or economic organization. Great kivas are absent in the Kayenta area (Dean, 1996, p. 40), and the western extent of great house construction appears to be in the Puerco West and Chinle valleys (Gilpin and Purcell, 2000; Stein and Fowler, 1996). Circular great kivas are present at sites in the Mogollon Rim region of east-central Arizona (Herr, 1999), but great houses are absent and the great kivas there are distinctive enough from Chacoan great kivas to argue for a frontier area rather than direct participation in a Chacoan regional system, however it may be defined. Possible Chacoan roads as far south as the Quemado area in west-central New Mexico have been shown to be historic Pueblo trails and wagon roads (Berlin *et al.*, 1993; Hart and Othole, 1993), although indisputable great houses do occur in the area (Fowler *et al.*, 1987). Thus many of the differences in how the Chacoan region is defined depend on whether great houses, great kivas, or roads are used. The differences in definition also are dependent on the kinds of models used by archaeologists to understand the social and political organization of Chaco Canyon proper, especially the degree of centralization in power and authority. These issues are addressed below.

RECENT FIELD PROJECTS

Despite the importance of Chaco, very little new archaeological fieldwork has taken place within the boundaries of the Chaco Culture National Historic Park (Fig. 2) in over two decades. As Wills (2000) points out, Chaco scholars are inevitably working with the same collections and publications, many of which were produced in the early to mid-20th century. A major exception is the University of New Mexico/National Park Service's (UNM/NPS) Chaco Project excavations in the 1970s that included large-scale excavations at one great house, Pueblo Alto, and several smaller sites within the canyon. Descriptive summaries of this excavation program are now largely complete (Mathien, 1991a, 1992a, 1997; Mathien and Windes, 1987; McKenna, 1984; McKenna and Truell, 1986; Truell, 1992; Windes, 1987a,b, 1993a,b). A grand synthesis of the Chaco Project work is in progress,

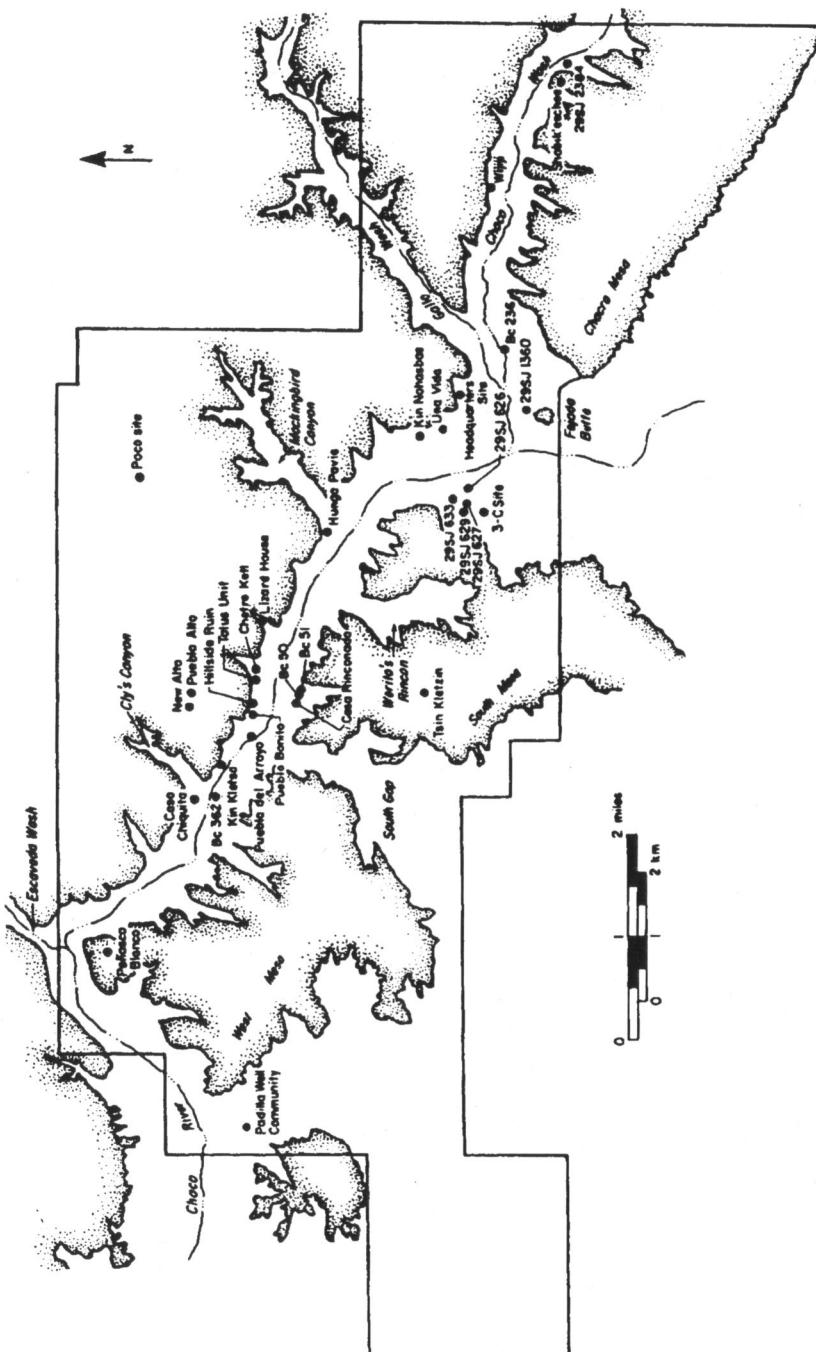


Fig. 2. Location of key archaeological sites within Chaco Canyon. (After Mathien, 1997, Figure 1.2) (NPS Archives)

and papers presented at a series of symposia funded by the National Park Service have begun to appear in print (e.g., Cameron, 2001; Cameron and Toll, 2000, 2001; Cordell and Judge, 2000, 2001; Cordell *et al.*, 2001; Earle, 2001; Hagstrum, 2001; Lekson, 2000a,b; Mahoney, 2000a, 2001; Mathien, 2001; Peregrine, 2001; Renfrew, 2001; Toll, 2001; Varien, 2001; Vivian, 2000a; Windes, 2001; Windes and McKenna, 2001). Thomas Windes of the NPS has conducted extensive new coring of architectural wood at numerous great houses (including Pueblo Bonito, Pueblo del Arroyo, and Aztec), a few small houses, and a few early Navajo sites (Windes and Ford, 1996). In addition, NPS staff have conducted extensive surveys of Chacoan communities lying just outside the park or in areas that were added to the park (Van Dyke, in press; Windes, in press; Windes *et al.*, 2000).

Instead of new fieldwork within Chaco Canyon, the recent literature emphasizes work conducted in the surrounding San Juan Basin or on reinterpretations of older excavations within the canyon. Much of this research has been conducted through cultural resources management (CRM) projects and is not widely available except in regional repositories or through government agencies. In the early 1990s, two large pipelines—the ENRON Pipeline Project and the El Paso Natural Gas Project—were constructed across the San Juan Basin and impacted many sites contemporaneous with the period of great house construction in Chaco Canyon. Excavations and analyses are published in multivolume reports that include extensive descriptive information and useful summary volumes (Kearns and McVickar, 1996; Winter, 1994).

Other CRM projects in the area include a number of road improvement projects sponsored by the Navajo Nation (the major landholder of areas surrounding Chaco Canyon), the State of Arizona, and the State of New Mexico (Billman and Ruppé, 1996; Damp, 1999; Fletcher, 1994; McKenna and Toll, 1992). One of the largest of these was the widening of the La Plata Highway, which impacted a number of Chacoan and post-Chacoan sites in the Totah area just north of the San Juan River in the Animas-La Plata region (McKenna and Toll, 1992). Many recent dissertations have been completed on Chaco Canyon architecture (Bustard, 1996; Cooper, 1995; Durand, 1992; Kievit, 1998; Kovacik, 1996, 1999), and Chaco outlier subsistence, architecture, and community organization (Kantner, 1999; Meyer, 1999; Roler, 1999; Van Dyke, 1998). Finally, two university-based excavation projects have been conducted at Chaco outlier communities in the 1990s, one by the University of Colorado at the Bluff Great House in southeast Utah (Jalbert and Cameron, 2000) and the other by Fort Lewis College at Puzzle House in the Lowry area of southwest Colorado (Kendrick and Judge, 2000).

HISTORIES OF CHACO ARCHAEOLOGY

Archaeological research has been conducted at Chaco long enough to have generated several historians of Chaco archaeology. Marietta Wetherill lived with

her husband, Richard Wetherill, at Chaco from 1896 to 1910 and her biography (Gabriel, 1992 [1997]) contains firsthand accounts of the Hyde Expedition excavations at Pueblo Bonito. A highly readable account of Neil Judd's excavations at Pueblo Bonito in the 1920s appears in Melinda Elliott's *Great Excavations* (Elliott, 1995). Florence Lister's autobiography describes her participation in the UNM Field School at Chaco as well as the contributions of her husband, Robert Lister, who directed the UNM/NPS Chaco Project in its earliest years (Lister, 1997).

Two historical works on the UNM Field School at Chaco Canyon have been published (Joiner, 1992; Mathien, 1992b). The latter compares the participation of women in the School of American Research/UNM Field School (1929–1937) to that of the UNM/NPS Chaco Project (1971–1978). Mathien's research shows that Chaco was an important training ground for female archaeologists in the early part of the 20th century, even more so than later projects in the area. Most recently, James Snead (1999, 2001) discusses the social context of excavations conducted by the Hyde Exploring Expedition at Chaco, emphasizing the importance of patronage and the pivotal role of private museums in the sponsorship of Southwestern archaeology. Both Snead (2001) and Fowler (1999, 2000) point out how professional competition over who would conduct excavations at Chaco created personal and institutional rivalries that affected all Southwestern archaeology in the early 20th century.

CHRONOLOGY

Although periods and phases are problematic, they are still widely used for regional comparisons and are especially useful for the analysis of surface materials. Subdivisions of periods into phases differ slightly from project to project and even within single projects through time (Fig. 3). The Bonito phase (A.D. 920–1220) generally refers to the time of Chaco great house construction and is the phase emphasized in this essay. This phase covers the entire Pueblo II period of the Pecos classification and parts of the Pueblo I and III periods. Important contributions to the earlier archaeology of the Basketmaker II (Matson and Dohm, 1994) and Basketmaker III (Reed, 2000) periods have been recently published. Vivian's summary chapter in the latter volume points out that the architectural and social variability seen in the Bonito Phase was not created *de novo*, but has strong foundations in Basketmaker III architecture, including the construction and use of great kivas (Vivian, 2000b).

A variety of dating techniques has been used to develop the Chacoan chronology. Tree-ring dating was pioneered at Chaco Canyon, and to date over 16,000 pieces of wood have been documented from Chaco area structures (Windes and Ford, 1996, p. 295). These samples are particularly valuable for understanding great house construction sequences (Lekson, 1983; Wills, 2000; Windes and Ford, 1996), cross-dating of ceramics (Goetze and Mills, 1993; Toll and McKenna,

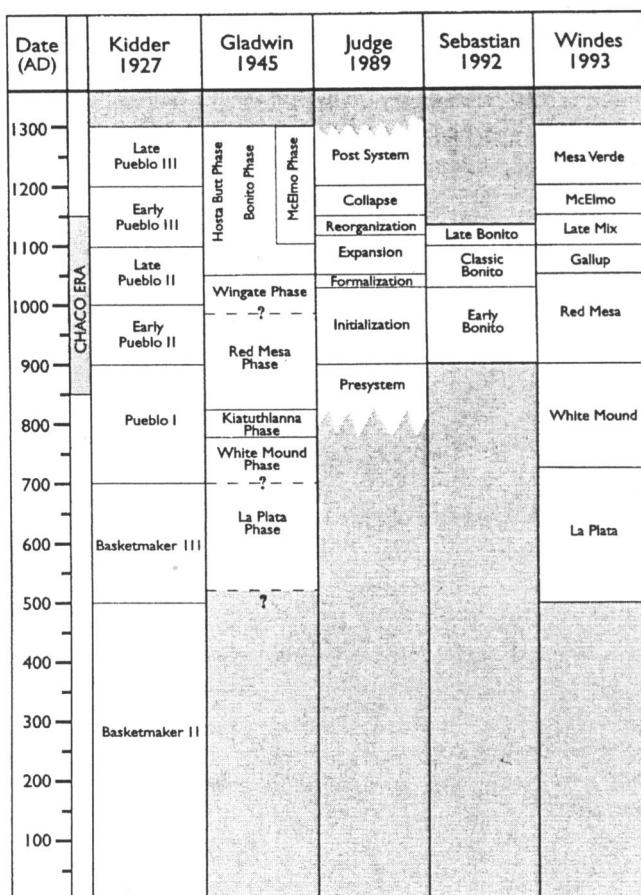


Fig. 3. Chronologies of Chaco Canyon. (After Figure 1.1 from *Great House Communities Across the Chacoan Landscape*, edited by Kantner and Mahoney. Copyright © 2000 The Arizona Board of Regents. Reprinted by permission of the University of Arizona Press.)

1997; Windes, 1993b), and verification of other chronometric techniques such as archaeomagnetic dating (Doyel and Eighmy, 1994). Radiocarbon dating is not as widely used for known post-Archaic deposits. Ceramic cross-dating in the Chaco area allows relative chronological placement of Chaco area assemblages to as short as 50-year intervals, but more usually to about 100 years (Goetze and Mills, 1993; Reed *et al.*, 1998; Toll and McKenna, 1997; Van Dyke, 1997). The excellent stratigraphic data collected by NPS excavation at Pueblo Alto provided a means of verifying ceramic technological and stylistic changes. Multiple data sets from the Chaco area, analyzed with both absolute and relative techniques, now provide the basis for one of the best-known chronological sequences in the Southwest.

Nonetheless, there are many problems with the dating of specific and often pivotal features and deposits because of mixed assemblages, excavation prior to the development of chronometric techniques, uneven wood preservation, and, in the case of tree-ring samples, the reuse of beams by NPS stabilization crews in sites other than the ones that the wood originally came from (Windes and Ford, 1996).

Within the canyon, the construction histories of the great houses of Pueblo Bonito (Lekson, 1984; Neitzel, *in press-a*; Windes and Ford, 1996), Pueblo Alto (Windes, 1987a,b), and Chetro Ketl (Dean and Warren, 1983; Lekson, 1983) are the best-known. Recent tree-ring resampling of architectural elements at several Chacoan area sites, including Pueblo Bonito, has been the goal of the NPS's Chaco Wood Project directed by Thomas Windes and Dabney Ford. Their project refines the work of Lekson (1984), showing that the earliest construction at Pueblo Bonito dates to the A.D. 800s (Windes and Ford, 1996). Construction histories for great houses outside the canyon are not well known, and only a few have been excavated with modern methods. Both relative and absolute dates suggest, however, that even though some initial great house construction outside of Chaco Canyon occurred in the A.D. 900s, and perhaps as early as the A.D. 800s, it was not as intensive as within the canyon until the mid- to late A.D. 1000s. This contrast is significant because it demonstrates that great houses in outliers had very different occupational and social histories than those in the central canyon.

PALEOENVIRONMENTAL RECONSTRUCTIONS

Chaco Canyon and the surrounding San Juan Basin often strike visitors as highly inhospitable. Indeed, portions of the San Juan Basin are desolate, but springs and the availability of seasonal runoff create a patchy environment. Dean (1992) provides an excellent overview of the stability, variation, and change in the Chaco environmental record. Although environment was only one of many factors that affected Chacoan communities, long- and short-term trends are discernible in the paleoclimatic record. Some, but certainly not all, of these trends have been correlated to great house construction additions and even sociopolitical change at Chaco (e.g., Schelberg, 1992; Sebastian, 1992a; Windes, 1993a; Windes and Ford, 1996). Sebastian (1992a) used decadal precipitation averages in her simulation of production potential, which may have masked some more fine-grained variation. Windes (1993a) used extreme deviations from Palmer Drought Severity Indices, with 3-year moving averages, and known great house construction events to show some important correlations (Fig. 4). The excellent paleoclimatic record generated from tree rings could be further exploited using time-series analyses and short moving averages.

Stream entrenchment is another environmental factor that archaeologists have used to look at the potential for farming in Chaco Canyon because of the importance of runoff for agricultural production. Seasonal runoff from the mesa tops

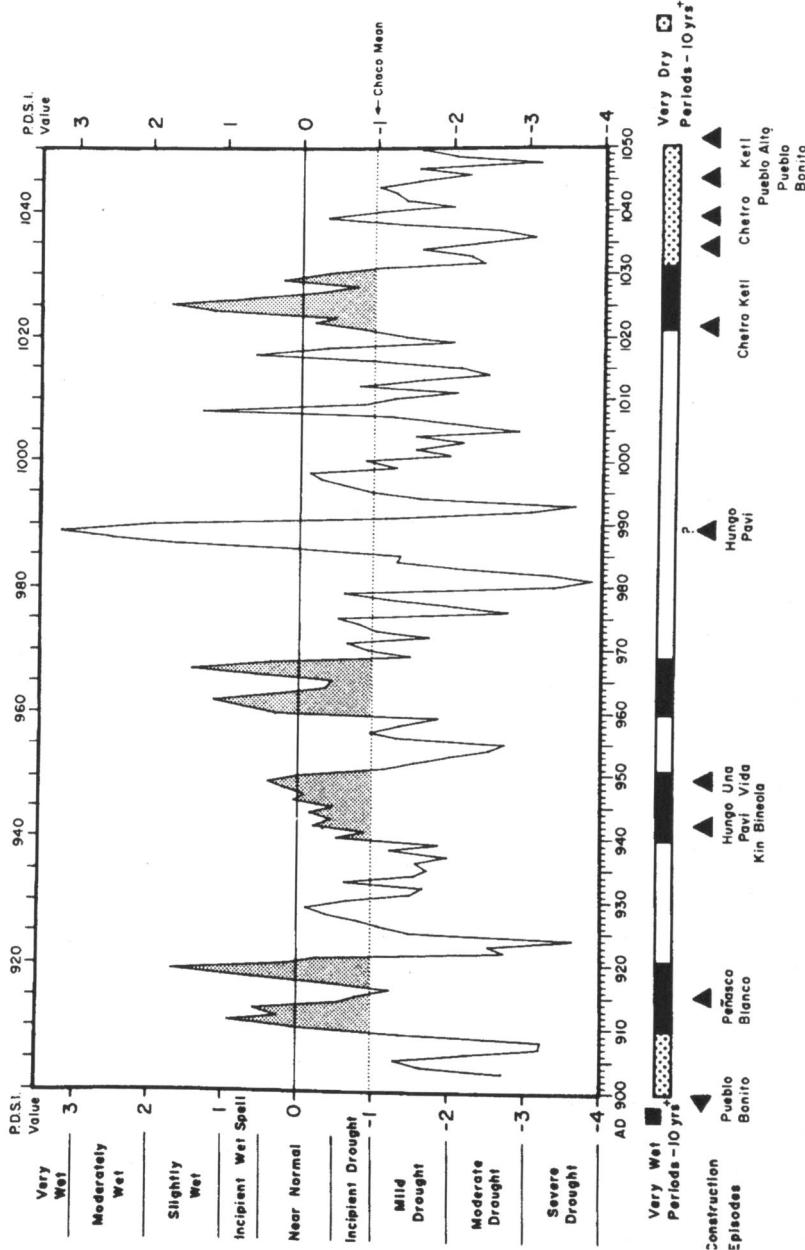


Fig. 4. Yearly precipitation in the San Juan Basin from A.D. 900 to 1050 on the basis of 3-year running averages of the Palmer Drought Severity Index, compared to construction episodes at major Chaco Canyon great houses. Stippled peaks and black bars show decade-long wet periods. (After Windes, 1993a, Figure 2.6) (NPS Archives)

to the north and south was clearly distributed to agricultural fields, as evidenced by an extensive system of agricultural features (Vivian, 1992). That the earliest great houses in the canyon (Pueblo Bonito, Una Vida, Kin Nahasbas, and Peñasco Blanco) are all located at the confluences of large tributaries with the Chaco Wash is further evidence that water control was an important factor (Dean, 1992, p. 38; Lekson, 1991; Vivian, 1991). However, the timing of stream aggradation and entrenchment is a crucial factor in farming in Chaco Canyon and is undergoing some revision. Although Kirk Bryan's reconstruction of a period of aggradation in the 10th century that continued until a major period of arroyo cutting in the 12th century (Bryan, 1954) has been widely accepted (e.g., Gillespie, 1985, p. 35), new research by Eric Force, Gwinn Vivian, Tom Windes, and Jeffrey Dean suggests that the pattern may have been more variable (Force, 2002). They suggest that at the time that great house construction was initiated in the late A.D. 800s, a short period of aggradation began, which was followed by arroyo cutting in the late 900s and then filling during the middle 1000s. The period of entrenchment corresponds with Lekson's hiatus in architectural construction at Chaco Canyon great houses between A.D. 960 and 1020 (Lekson, 1984, p. 66). The 11th century aggradation may have invigorated the construction and use of water control features on the north side of the canyon. In addition to these new conclusions, Force's research suggests that a large dune on the western end of the canyon may have formed a dam and that a lake was present during some portions of the Bonito phase. The breaching of this dam may have had important implications for arroyo cutting and filling in the canyon.

A severe downturn in environmental conditions clearly took place between A.D. 1130 and 1180. This period corresponds to the end of great house construction in the canyon and is generally thought to be a contributing factor to the reorganization of the regional system at this time (Dean *et al.*, 1994, p. 66).

DEMOGRAPHY

Current reconstructions for the peak population within Chaco Canyon range between 2000 and 3000 persons (Adler, 1996, p. 104; Dean *et al.*, 1994, Figure 4.6; Lekson, 1999a, p. 21; but see Wilcox, 1999). This low figure contrasts sharply with estimates for the entire San Juan Basin at about 55,000 people, ca. A.D. 1000 (Dean *et al.*, 1994, Figure 4.6). This regional population estimate may be in need of some revision. As Cordell and Judge (2001) recently argued, the occupational histories of all Chacoan structures in the region need to be taken into account before accurate estimates can be made.

Windes's research was instrumental in the downsizing of population estimates for Chaco Canyon great houses and, hence, the canyon as a whole (Windes, 1984, 1987a). Based on the low number of rooms with hearths and other domestic features at Pueblo Bonito, Pueblo del Arroyo, and Pueblo Alto, he suggested that the number

of residential suites and corresponding populations were low. Four major problems are present with the demographic reconstructions. First, only a few Chaco great houses have been professionally excavated. Second, many upper story rooms in great houses that could have been living rooms have now collapsed and not counted in room estimates. Third, many hearths in Chaco Canyon structures are more ephemeral than those found in other Ancestral Pueblo living rooms and may have been missed in earlier excavations. In fact, Vivian (in press) argues that heating pits, which average half the volume of fire pits, replaced the latter "in wood-poor and winter-chilled Chaco Canyon." And last, if room block kivas at great houses were ever used for residential purposes, population estimates have been underestimated because these rooms are not figured into the equation. As Varien (2001) points out, we simply cannot estimate great house population sizes in the same way that we can at other sites.

To avoid some of the above problems, Bernardini (1999) suggested that room suites could be identified based on historic Hopi analogs of vertical stacking of living rooms over storage rooms. He analyzed each construction phase at Pueblo Bonito and concluded that the number of families never exceeded 12 households and 72 people: slightly smaller than Windes's estimate of 18 households and 100 people, but still emphasizing both the small size of the residential population as well as the overabundance of storage rooms at the site. Although the use of the Hopi architectural analog can be debated, the convergence of population estimates at the lower end of the scale and the close spacing of sites in Chaco Canyon supports the interpretation that canyon residents were part of a single community (Lekson *et al.*, 1988; Vivian, 1990; Wilcox, 1999). The presence of a single community does not rule out that different groups of people with different social identities might have been present (e.g., Vivian, 1990).

Population size is an important lynchpin to arguments for the complexity of Chacoan social and political organization. Kosse (1990, 1994, 1996) and Lekson (1985, 1990, 1996a) both conducted cross-cultural research on population size and the size of the largest settlement to argue that Chaco must have been on the cusp of something more complex than an egalitarian village. Their research fits within the same general demographic approach as presented in Johnson's influential and much cited commentary on the Southwest (Johnson, 1989). He argued that the population size of Chaco implied a hierarchy, but that in comparison to Mesopotamian towns, leadership positions were more likely to have been sequential rather than simultaneous.

Although it is clear that certain population thresholds can be tied to changes in sociopolitical complexity (Feinman, 1995; Feinman and Neitzel, 1984), several problems are present with demographically based arguments for the presence, degree, and kind of complexity at Chaco. First, such arguments tell us that there has been a possible societal shift or threshold reached, but they do not tell us how this shift occurred other than in functional terms. That is, the models suggest that

new leadership positions developed because there was a need for more nodes in the information-processing hierarchy (Sebastian, 1992a, pp. 65–68), but not how the hierarchy was structured. A high degree of variation can be present in both sequential and simultaneous hierarchies, and none of the demographic models can be used to explain why or how alternative forms of sociopolitical organization were adopted. These problems lead to broader consideration of models of leadership and authority at Chaco.

MODELS OF CHACO POLITICAL ORGANIZATION

Models of social evolutionary theory have undergone considerable change in the last decade, commensurate with archaeologists' discomfort with traditional neoevolutionary frameworks. These newer models point to a diversity of trajectories of change in political organization (Blanton *et al.*, 1996; Hayden, 1995; McIntosh, 1999a; Mills, *in press*; Price and Feinman, 1995; Yoffee, 1993, 2001) and reject categories such as tribes and chiefdoms to describe the variation in social formations between small-scale foragers and states. Above all, these models have prioritized the need to explain the tremendous diversity in nonstate societies. Instead of focusing on the presence or absence of complexity, researchers, including those working on Chaco, are now asking "How were they complex?" (Nelson, 1995, p. 599; see also Sebastian, 1992a, p. 68). Especially important is the decoupling of scale, centralization, and hierarchy, and the varying emphasis placed on the role of human agency in understanding how sociopolitical complexity arises. The archaeology of Chaco Canyon and its surrounding communities frequently looms large in these discussions. Chacoan society defies simplistic use of ethnographic analogy from any of the historic Pueblos and challenges researchers, Southwestern and non-Southwestern alike, to consider alternative models of social, political, and economic organization.

Nearly all summaries of Chacoan archaeology address the topic of political organization, but few explicitly decouple the different dimensions mentioned above. Most early explanations for Chacoan political organization hinged on interpretations that assumed linkages between leadership, centralization, and hierarchy. These linkages were the legacy of earlier neoevolutionary typologies as well as the many ethnographic descriptions of Pueblos characterizing them as autonomous, egalitarian societies (see Wilcox, 1981, for an early critique of the latter). Hierarchical leadership, where it did exist, was often viewed as the imposition of Western political institutions, especially those of the Spanish and American governments. "Revisionist" interpretations of Puebloan society provided alternative reconstructions that point to much greater complexity and hierarchy in the ethnographic Pueblos than previously acknowledged (e.g., Brandt, 1994; Eggan, 1991; Levy, 1992; Upham, 1982; Whiteley, 1988), and opened up the possibility of greater complexity in the past. Some models assumed linkages between hierarchy and

centralization, but recent decoupling of these two dimensions has provided the basis for new approaches to Ancestral Pueblo political organization (Feinman, 2000; Feinman *et al.*, 2000; Kintigh, 2000; McGuire and Saitta, 1996; Mills, 2000a; Plog, 1995).

Sebastian's book-length work (Sebastian, 1992a) was the first contribution to move away from neoevolutionary typologies as a framework for discussing political organization at Chaco (see also Sebastian, 1991, 1992b). She asked the fundamental question of how leaders achieved and maintained their authority. Sebastian brought focus to the possibility of competitive leadership funded by surplus production at Chaco during highly productive climatic periods. Her simulation model showed that construction peaks did not always correlate with higher-than-normal precipitation (but see Windes, 1993a) and, therefore, that leadership likely drew on more than simple economic sources of power.

Sebastian's research contrasts with the dominant model developed by the NPS Chaco Center archaeologists, which has become more widely known as the pilgrimage fair model (Judge, 1989; Lekson *et al.*, 1988; Toll, 1985). The pilgrimage fair model was developed because the classic redistribution model earlier proposed by Judge (1979) could not be supported with the extant evidence: there was no evidence of materials going out of Chaco Canyon (but see Lekson, 1999a, and Tainter and Plog, 1994, for holdouts for a redistributive model). In the pilgrimage fair model, Chaco Canyon is interpreted as a relatively empty ceremonial center that received periodic influxes of population from the surrounding San Juan Basin. Although those in charge did gain some economic benefits and may have controlled the flow of some rare resources such as turquoise, this model replaced economic leaders with ritual leaders. As Wills (2000, p. 21) points out, most subsequent models also see Chaco leadership as centered in ritual authority, much like ethnographic descriptions of Pueblo society—revisionist and nonrevisionist alike.

Major exceptions to these interpretations are those who still see Chaco as a complex, centralized political system that was close to statelike in its organization (LeBlanc, 1999; Wilcox, 1993, 1999). In this view, great houses are not empty centers, but the residences of elites who wield power throughout the region by a combination of economic and military authority, including standing armies and exaction of tribute. In a shift away from his earlier coauthorship of the pilgrimage fair model, Lekson (1999a) describes a scenario that is more similar in its theoretical underpinnings to statelike models than to the pilgrimage fair model because it depends on a highly hierarchical leadership system and regional hegemony by the Chaco Canyon community. Such reconstructions are difficult to square with the low population size in Chaco Canyon (especially in contrast to the large regional population), and the overwhelming lack of evidence for such state-level accoutrements as a record-keeping system and standardized units of weights and measures. In addition, current research on Chaco outliers does not suggest direct control by a centralized polity (see below).

Critics of the pilgrimage fair model compare the situation to Mesoamerican archaeology, where notions of empty ceremonial centers were later dispelled after pedestrian surveys revealed much higher residential populations in the centers (Feinman, 1992; Tainter and Plog, 1994). However, intensive surveys in Chaco Canyon have been conducted (Hayes *et al.*, 1981; Van Dyke, *in press*), and, as noted above, estimates for the population size of the Chaco Canyon community have actually declined. The strong contrast in the population size between Chaco Canyon proper and the surrounding San Juan Basin provides demographic support for Chaco being some kind of empty ceremonial center. The question remains as to the social and political scope of Chaco relative to the surrounding region, which only research on Chacoan outliers can answer.

Proponents of the ritual center model dominate the recent literature on Chaco. However, within this general model are those who view leaders as obtaining followers through competitive action (Kantner, 1996; Van Dyke, 1998, 1999a) and those who see hierarchically organized ritual leaders who cooperatively manage the labor of others (e.g., Nelson, 1995; Saitta, 1997, 1999; Vivian, 1989, 1990). Vivian (1990; see also Wilcox, 1999) proposes that small and great houses were the residences of ethnically distinct social groups, one with dualistically based leadership in a rotating sequential hierarchy (living in great houses), the other more lineage-based (in small houses). Saitta's dialectical approach describes a "communal mode of production" that highlights the potential complexity of the competitive and overlapping social relationships subsumed within the otherwise homogeneous concept of corporate groups (Saitta, 1997, 1999). Nelson (1995, p. 615) characterizes Chaco as a collaborative chiefdom (*sensu* Renfrew, 1974), contrasting it to the competitive or exclusionary chiefdom that he infers at the site of La Quemada in Zacatecas. Interestingly, Renfrew (2001) himself has recently commented on Chacoan political economy and considers Chaco to be a "location of high devotional expression." But unlike most other ritual center models, Renfrew explicitly regards Chaco as an egalitarian enterprise. The emphasis on ritual also resonates in Yoffee's characterization of Chaco as a "rituality" (Yoffee, 2001), a term from Robert Drennan (Yoffee *et al.*, 1999; see also Drennan, 1999). In using this term Yoffee underscores that ritual organization was "the fundamental component of the existence of Chaco" and that "the ritual nature of Chaco cannot be reduced to its being the handmaiden of economic and/or political institutions" (Yoffee *et al.*, 1999, p. 266). Still others specify the power of ritual, but do not talk about how that ritual authority was organized, except spatially (e.g., Stein and Lekson, 1992).

The major dissenter from a ritually based model for leadership is Wills (2000, 2001), who points out several flaws with the ritual-specialist-as-leader model. First, he points out that ceremonial goods are relatively rare and are found largely in Pueblo Bonito (but see Vivian *et al.*, 1978). Second, the leaders-as-ritual-specialist model depends on structural analogies with ethnographic Pueblos, yet ritual specialists who can marshal large labor pools are rare in Pueblo society and tend to manage scarcity, not surplus (see also Levy, 1992; McGuire and Saitta, 1996).

Instead, Wills suggests that labor for architectural construction is pivotal (see also Dean, 1992) and that leadership likely revolved around the construction of non-ritual architecture on an annual basis. The presence of suprahousehold leadership is evident in the scale of construction units and the degree of advanced planning required. If the resident population of Pueblo Bonito was as low as both Windes (1984, 1987a) and Bernardini (1999) suggest (see above), then it is clear that this labor had to have drawn from more than the Bonito residential population. Wills suggests that this cooperative leadership was organized at the lineage or residential group level.

Thus, although there is still little agreement about the political organization of Chaco communities, few archaeologists care to argue about whether Chaco was a tribe or a chiefdom and instead are looking into the ways in which political leadership was organized. There are several interesting axes of variability in the proposed models: ritual and secular leadership, competitive and communal power, and the extent of canyon control over regionwide populations. This reflects the wide range of alternative models and approaches to political organization now present in the general archaeological literature. Models that consider how societies with a high degree of nucleation are organized without institutionalized hierarchies, but whose governance is through associations, assemblies, councils, and other horizontally structured organizations (e.g., McIntosh, 1999b, p. 77), will likely be the most informative for understanding Chaco political organization. Such interpretations are consistent with models that posit the importance of corporate leadership within either hierarchically or nonhierarchically organized polities (e.g., Blanton *et al.*, 1996; Feinman, 1995, 2000; Feinman *et al.*, 2000), and which decouple centralization from complexity (Blanton, 1998). For example, Mahoney (2001) points out that centralized political structures are not necessary for large-scale irrigation systems or the construction of monumental architecture. Monumental architecture such as great houses, could instead be the result of materialization of collective decision-making organizations. Nonetheless, all of these models are difficult to apply to Chaco without understanding how Chaco Canyon relates to the region as a whole and how the different dimensions of social, economic, and ritual organization were structured.

CHACO OUTLIER COMMUNITIES

As the above discussion indicates, most interpretations of political organization in Chaco Canyon hinge on the relationship of the canyon community with the region as a whole. Since the 1970s, archaeologists have realized that Bonito phase population in the San Juan Basin was clustered into what are known as Chacoan outlier communities. Chaco outlier communities are usually composed of a great house surrounded by a number of small pueblos, also known as "Prudden units." Roads and great kivas may help identify Chacoan structures outside of Chaco

Canyon, but alone are insufficient criteria. The single most important attribute of a Bonito phase Chacoan outlier is the presence of a great house, which is identified on the basis of one or more of the following attributes: larger building size and labor investment than contemporary structures within its community, multistoried construction, symmetry of layout, evidence of planning in the form of large-scale foundation units, core-and-veneer wall construction, and banded masonry. Many of these attributes were not characteristic of the earliest great houses, i.e., pre-A.D. 1000. However, nearly all great houses have surrounding small houses that are used to define an outlier community. Although the designation of "outliers" has recently been called into question because it implies that these communities were peripheral to Chaco Canyon (Kantner and Mahoney, 2000, p. 6; Wilcox, 1993, 1999), this term is still useful for expressing the discontinuous, clustered pattern of communities with structures that are similar to Chaco Canyon great houses.

Research on the regional distribution of features of the Chaco built environment across the Southwestern landscape has intensified in the past decade, at least in part because of the difficulties in conducting excavations within the Chaco Culture National Historical Park. Recent studies build on the now classic works of the 1970s and 1980s, when archaeologists working in the San Juan Basin and its surrounding upland areas documented the distribution of Chacoan great house communities, great kivas, and roads (Kincaid, 1983; Marshall *et al.*, 1979; Nials *et al.*, 1987; Powers *et al.*, 1983). Although the locations of most outlier communities are now known (and perhaps too generously drawn as noted above), few have been accurately mapped, still fewer excavated, and many road segments have yet to be verified on the ground. Systematic examination of ceramic assemblages has only been done at a few communities. Thus considerable effort has been spent by a new generation of Chacoan scholars on these outlier communities (Kantner, 1999; Kantner *et al.*, 2000; Mahoney, 2000b; Meyer, 1999; Van Dyke, 1997, 1998, 1999a,b,c, 2000). A recent Chaco conference on outlier communities yielded a database that describes variation in a number of subareas of the Chaco region (Mahoney, 2000a). However, because many site locations surrounding the great houses have not been verified, systematically sampled, mapped, or even relatively dated, considerable work remains to be done at even a descriptive level to make these data comparable.

Cumulative data on the production and distribution of goods as well as many new studies investigating Chacoan outlier architectural variability have contributed to greater understanding of how outliers related to each other and how they were connected to the Chaco Canyon community. From this research it is clear that some outlier communities were more connected to Chaco than others and these patterns shifted through time (Cordell, 1996, p. 229; Cordell and Judge, 2001; Meyer, 1999; Toll, 1991; Van Dyke, 1998, 1999a; Varien, in press; Wilcox, 1999; Windes, 2001). Varien (2001) points out that the density and distribution of northern outlier communities is underappreciated and that depending on what time period one is interested in, Chaco Canyon may not even be at the center

of the region. All Chaco scholars are aware of the dense distribution of outlier communities on the eastern slope of the Chuska Mountains, but except for limited surface mapping (Marshall *et al.*, 1979) this area is not well investigated. The regularity or periodicity of interactions between Chaco Canyon and its outliers and in what social, political, and economic contexts they took place are currently issues being debated by Chaco scholars.

An oft-cited basis for considering Chaco as a system was the vast network of roads that connected Chacoan outliers within a regionwide system. As Vivian's review of Chaco roads research indicates, however, this interpretation was based on out-of-date and incomplete data (Vivian, 1997a,b). Both he (Vivian, 1997a) and Roney (1992) note that only three roads can be shown to extend outside the Chaco core area: the Great North Road, the South Road, and the Coyote Canyon Road. Thus the roads are neither a network nor are they regional in scale, because most extend away from Chacoan great houses and other community features in short segments. The majority of roads connect different portions of outlier communities with great houses, great kivas, or even prominent landforms such as Hosta Butte (Kantner, 1997). Roads that connect structures to great kivas or that lead to natural features of the landscape support an interpretation of cosmological significance or perhaps their use as ritual pathways (Fowler and Stein, 1992; Kantner, 1996, p. 84, 1997; Marshall, 1997; Stein and Lekson, 1992; Vivian, 1997b). Those roads that connect great houses with other community structures are suggested to have served an integrative function, linking populations over relatively small areas (Kantner, 1997, p. 57; Roney, 1992). Both the ritual and integrative interpretations challenge traditional assumptions that roads had a predominantly economic function, as in the transport of nonlocal materials (Kantner, 1997; Vivian, 1997b). Thus multiple functions for roads are suggested and their use in defining a unified political or economic "system" is inappropriate.

Wilcox (1993, 1996a, 1999) approaches the regional organization of Chacoan great house communities by mapping circular territories with 22-mile radii around each great house. He bases this figure on Drennan's estimate that a person with a pack can travel up to 22 miles (36 km) a day (Drennan, 1984). Overlapping circles are interpreted as greater social and economic interconnectivity. Because of the overlap in inferred territories between Chaco and outliers to the south and west, these are argued to have been a single integrated polity. Different polities are argued to have been present in other areas, where communities are separated by more than 22 miles. Although only meant as a heuristic device, problems with this approach include the effects of topography, the assumption that settlement size indicates political importance, and the lack of sufficient excavation data to accurately assess the chronology and size of each great house and its community. Indeed, characterization of the Chacoan regional system is made difficult because connectivities shifted through time.

Other scholars investigating the regional distribution of Chacoan outliers emphasize their architectural diversity (Kantner, 1996, 1999; Meyer, 1999; Van Dyke,

1998, 1999a). A consensus is emerging that this diversity indicates a lack of direct control in the construction of outliers by the Chaco Canyon community. Even within the southern San Juan Basin, Kantner (1996) shows that community layout was highly varied with differences in the number, size, and relationships of great houses, great kivas, and small kivas. Meyer's detailed analysis of masonry identified three major syntaxes for the construction of Chacoan walls (Meyer, 1999). Several important conclusions result from his work, including the demonstration that Styles I–IV did not follow in strict chronological order. More importantly, he dismantles the idea that outlier great houses were constructed by the same masons working in the same masonry tradition as those who built great houses in Chaco Canyon. One criticism of his conclusions might be that differences in raw materials could condition the way that stones might be shaped, but his analyses show that there are differences within areas with similar sandstone types. Van Dyke (1999a) also took a technological style approach, but her units of analysis were whole sites, including their layout and incidence of banded masonry, rather than Meyer's detailed analysis of wall construction. She found striking differences between southern and northern outliers in her sample of 61 great houses in 55 outlier communities. Her results parallel Meyer's, and it is clear that great house architecture during the Classic Bonito phase was constructed differently among different subareas of the Chaco region. As Meyer notes (1999, p. 360), the spread of ideas, rather than people, accounts for structural similarities between outliers and between outliers and Chaco Canyon, "assuming functional equivalency."

ECONOMIC ORGANIZATION

Ever since Anna Shepard (1939) noted that there was an unusually high proportion of nonlocally produced ceramics in Pueblo Bonito assemblages, great attention has been paid to the kinds, proportions, and significance of nonlocal goods in Chaco Canyon. This attention overshadows the production and distribution of local resources and makes Chaco seem like a magnet for nonsubsistence goods, and without the means for either local subsistence or craft production. In fact, canyon residents would have had access to relatively large amounts of runoff that could have been diverted for agricultural production. Agricultural production technology is well documented at Chaco Canyon community through the recording of a variety of agricultural features, including check dams, gridded gardens, ditches, and gates (Vivian, 1991, 1992). This is also true of the closest outliers, often referred to as those in the "Chaco Halo" (Doyel *et al.*, 1984). These sites include the large site of Kin Bineola, with its dams and canals, and the smaller site of Kin Klizhin, with its well-known dam. Nonetheless, reconstructions of subsistence production that combine information on soils, storm patterns, crop types, yearly rainfall have yet to be conducted for the central canyon, much less Chaco's outlier communities.

There is little question that vast quantities of nonlocally produced materials were brought into Chaco Canyon. Considerable research has been conducted to

determine what items were imported to Chaco and where they were made, including ceramics (Bubemyre and Mills, 1993; Mills *et al.*, 1997; Neitzel and Bishop, 1990; Reed *et al.*, 1998; Stoltman, 1999; Toll, 1985, 2001; Toll and McKenna, 1997; Toll *et al.*, 1980; Zedeño and Mills, 1993), chipped stone (Cameron, 2001), turquoise and other ornaments (Bradley, 1993; Mathien, 1992c, 2001), wood (Cordell and Durand, 2000; Durand *et al.*, 1999; English *et al.*, 2001; Hatch, 1994), fauna (Akins, 1984), and even corn (Cordell *et al.*, in press). Several of these material classes appear to have been produced in the same areas at the same time in an embedded or nested pattern that indicates either intensive production by outlier communities, task groups from Chaco, or both. During the Bonito phase, the directionality of these trends in imports appears to have shifted from the southern San Juan Basin, then to the west (especially the Chuskas), and finally to the north.

The procurement of architectural wood has been well studied. An estimated 200,000 or more trees were procured for great house construction in Chaco Canyon (Betancourt *et al.*, 1986). Dean (1992; see also Betancourt and Van Devender, 1981) suggests that when the earliest Chaco great houses were begun, pinyon and juniper trees were present in the area immediately surrounding the canyon to harvest for architectural construction and for pottery firing, and that wood cutting outstripped local resources as early as the A.D. 910s. He proposes that the organizational means of procuring construction timbers from the upland areas that ring the San Juan Basin was a major factor in the amplification of differences between great houses and small sites at Chaco at this time. However, pinyon and juniper may never have been adequate for roofing the large rooms at Chacoan great houses, and longer timbers were required from the outset. Wills's recent reanalysis of the tree-ring data from Chetro Ketl shows that felling activity was on an annual basis, with probable stockpiling of timbers for large construction units (Wills, 2000). The distances these trees were moved indicate planning and specialized silviculture (Wills, 2000; Windes and Ford, 1996; Windes and McKenna, 2001). Changing patterns of wood species use and tree ages demonstrate that procurement distances increased after A.D. 1050 and again in the 1100s as wood resources were diminished by cutting activity (Windes and Ford, 1996).

Archaeologists working in the San Juan Basin generally agree that the construction wood used in Chaco Canyon came from the uplands that ring the basin. The Chuska Mountains is the favored source of many researchers (Windes and Ford, 1996, p. 305; Windes and McKenna, 2001), although Mt. Taylor and southern Colorado are other possible sources. Anecdotal data indicate that there is an expectedly large number of axes in the Chuskan area (Windes and McKenna, 2001). A promising new direction is the trace element analysis of geological formations and contemporary trees in several upland areas (Cordell and Durand, 2000; Durand *et al.*, 1999). Although the original study by Durand *et al.* (1999) did not include samples from the Chuska Mountains, and used two different labs for the analysis of architectural elements versus the modern tree and bedrock samples, the more

recent analysis did include samples from the Chuskas (Cordell and Durand, 2000). Trace element analysis has the potential for definitively identifying procurement locations once larger samples from architectural elements in Chaco Canyon have been included and systematically compared to trees from a wide range of upland areas. English *et al.* (2001) have done just that using $^{87}\text{Sr}/^{86}\text{Sr}$ ratios. Their results show that both the Chuskas and Mt. Taylor were sources of Chaco wood and, moreover, that trees from both locations occur in the same rooms built at the same times. This indicates that beams were stockpiled and the multiple communities collaborated in the procurement of wood.

The above temporal patterns for construction wood procurement can also be extended to pottery production. Wood for firing pottery was probably scarce in Chaco Canyon (Mills *et al.*, 1997; Stoltman, 1999; Toll, 1985, 1991), and locations of ceramic production may have been chosen near procurement areas for construction wood. During the Bonito Phase, nonlocal ceramics were brought into Chaco in frequencies that vastly outnumbered local production. Toll estimates that by the late A.D. 1000s, 90% of the gray ware and 50% of the white ware was made outside of Chaco Canyon (Toll, 2001). The best data relate to Chuskan wares because of their easy identification, but other areas also contributed extensively to Chacoan domestic and nondomestic assemblages. These trends, based on temper types, are supported by decreases in pottery production tools within Chaco Canyon sites (Toll and McKenna, 1997). Pinpointing specific locations of production outside of Chaco Canyon is hampered by a number of problems, including the apparent absence of kilns or firing locations. In addition, there are a number of problems related to chemical and petrographic provenance analyses such as the widespread use of sand and sherd tempers, large areas of geochemically similar clay resources, and the use of some tempers (e.g., the famous trachyte temper of the Chuskas) that swamp possible distinctions among clay sources when bulk analyses are used. Alternative techniques of chemical techniques that are not based on bulk analyses of samples, combined with petrographic analysis, still hold potential for more fine-grained identifications of production sources.

Increased road construction in the mid-A.D. 1000s, based on their association with great house construction, corresponds both to the shift to younger and more consistently aged trees and to the increased import of ceramics. The use of roads for transporting large quantities of beams seems so logical that the wider use of roads was not questioned until recently. Conversely, formal roads may not have been the only routes along which other goods, and perhaps even beams, were transported across the landscape. Kantner (1997) applied a trend surface analysis and GIS, and unexpectedly found that when he calculated the least-cost paths between communities in the southern San Juan Basin, the paths intersected at the locations of isolated structures and hamlets. He therefore suggested that these architectural features were waystations that were used during intensified exchange in the Lobo Mesa area of the southern San Juan Basin. GIS approaches to the

distribution of features such as small stone circles and isolated hamlets throughout the entire San Juan Basin might also reveal economically useful pathways if the appropriate survey data could be acquired.

An interesting question is the identity and scale of social groups who procured or produced nonlocal materials and brought them to Chaco: whether Chaco Canyon residents, residents of outlier communities, or both. Small work parties could have accomplished tree felling, preparation, and even transport of most architectural elements (Windes and McKenna, 2001). Similarly, ceramic production could have been done within the context of specialized household production, a pattern found in many areas of the Southwest (Hagstrum, 1995, 2001; Mills, 2000b; Mills and Crown, 1995). Because these different tasks may have been highly gendered activities (Hagstrum, 2001; Mills, 2000b), a particular household may have participated in both beam procurement and ceramic production. Snygg and Windes (1998) suggest that larger groups were involved in the procurement of supports for great kiva roofs. Elsewhere, surplus subsistence production is argued to be necessary to support the labor involved in tree procurement (Windes and Ford, 1996). The use of small work parties from Chaco Canyon on a regular basis (Wills, 2000)—at noncritical times in the agricultural cycle—would seem to get around this requirement. Thus the intensified procurement/production of these “staple” goods can be explained by either task groups traveling to the upland areas and/or by increased production by households in these areas. The same organization of production was probably not present for some other materials, such as turquoise used in ornament manufacture (Cameron, 2001; Earle, 2001; Mathien, 1997, 2001; Windes, 1992). Instead, these latter items were deposited differently from most ceramics and architectural elements and are better considered in the context of discussions of social identity and social status.

A final consideration in economic organization is exactly what might have gone out of Chaco Canyon in exchange for all of the material that was brought in. It seems unlikely that Chaco was producing subsistence goods in quantities great enough to produce surpluses for exchange throughout the San Juan Basin. Although Earle (2001) has recently suggested that Chaco was fueled by a system of staple finance, he does not imply that these goods were produced at Chaco, but rather, that Chaco controlled intensive agriculture throughout the Chaco region. Again, the question would have to be asked: what would compel communities throughout the San Juan Basin and beyond to bring corn to Chaco? Ceramic production increasingly was based outside of Chaco in the Bonito phase, probably because fuel for firing of ceramics was depleted relatively early in the Bonito phase, as noted above. In addition, there are only a few burials with ceramic tools of production, and few examples of potting clay have been recovered. Turquoise may have been worked by Chacoan artisans and then exchanged to other areas in the Basin, but the total quantity of turquoise ornament production debris in Chacoan sites is not large (Mathien, 2001; Peregrine, 2001). However, if these objects were

used in ceremonial contexts, even the small quantities that were produced may have been important, as Mathien (2001) argues. Thus, in the final assessment, it seems likely that the most important things that Chaco Canyon residents produced were relatively intangible, such as ritual knowledge, and the tangible objects used in the performance of those rituals. In addition, if periodic feasts were at the scale that many reconstructions suggest (e.g., Toll, 1985), their labor as cooks and ceremonial hosts may have been more important than the exchange of things (Hagstrum, 2001, pp. 52–53).

SOCIAL ORGANIZATION, IDENTITY, AND STATUS

Intracanyon variation in social organization, including identity and status, have been a part of research on Chaco ever since the contemporaneity of small houses and great houses was established (compare Figs. 5 and 6 for examples of each class). Vivian (1990) proposed that the architectural and locational contrasts of small and great houses began with the migration of households from different areas of the Southwest, whose varying ethnicities were perpetuated in spatial terms within the canyon. Although few archaeologists agree with Vivian *en toto*, regional-scale analyses support both a high degree of immigration and variation in social identity in the Pueblo I period that could be foundational inferences for understanding differences in social organization within the canyon (Wilshusen and Ortman, 1999). Windes *et al.* (2000) discuss residential mobility in the eastern Chaco area that also added to social diversity within the region.

Differences between small and large sites have been approached through space syntax (Bustard, 1996; Cooper, 1995; Van Dyke, 1999b), bioarchaeological and faunal analyses (Akins, 1984, 1986; Akins and Schelberg, 1984), proportions of nonlocal goods (Mills, *in press*; Phillips, 1996; Toll, 1991, 2001), and absolute differences in the amount discarded (e.g., Toll, 1985). Great houses have proportionally more storage space and more restricted access to storage space (Bustard, 1996; Cooper, 1995). In the sites available for comparison, there was greater consumption of higher-ranked animal resources, especially deer, at the Pueblo Alto great house (the only great house excavated by the Chaco Project), than at contemporaneous small sites (Akins, 1984). Within the burial population, individuals from great houses were taller (Akins, 1984). Greater quantities of nonlocal goods, such as turquoise and imported chipped stone, were discarded at great houses (Cameron, 1997, 2001). Burial chambers in Pueblo Bonito contained large numbers of turquoise beads, but turquoise ornaments were manufactured in both small and large sites within the canyon (Mathien, 2001). Also of note are the caches of over 300 cylinder jars primarily recovered from two rooms within Pueblo Bonito (Toll, 2001). These caches contain unique forms that occur only rarely outside of Chaco Canyon, nearly all from great houses, and are decorated in a similar style

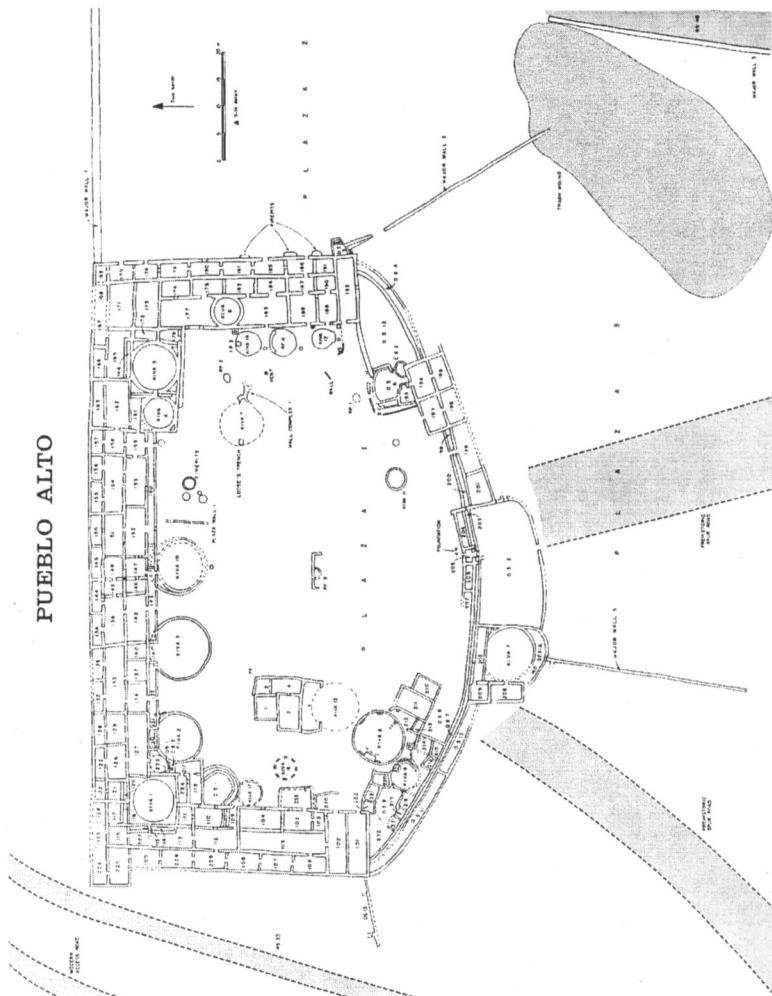


Fig. 5. Plan view of the Pueblo Alto great house based on Chaco Project excavations. Even though Pueblo Alto is the only great house excavated by the Chaco Project, it is unusual in being largely onemus. (After Windes, 1987a, Figure 1-4) (NPS Archives)



Fig. 6. Plan view of the Spadefoot Toad Site (29SJ629) in Marcia's Rincon. After Windes, 1993a, Figure 1.3) (NPS Archives)

(Neitzel, 1995, p. 407; Toll, 1990, 2001). Toll (2001) refers to these as votive offerings to emphasize how different their discard patterns are when compared to other vessels in the canyon. These analyses all suggest that the activities conducted in great houses were quite different from those in small houses.

The interpretation of variability in the consumption of nonlocal goods between great houses and small sites ranges widely. Both Neitzel (1995) and Phillips (1996, p. 336) assume that nonlocal materials represent high-status or prestige goods. In addition, the terms chiefs and chiefdoms in the archaeological literature are still found to refer to the control over and differential consumption of nonlocal goods at Chaco great houses (e.g., Cameron, 2001; Mathien, 2001; Neitzel, 1995). Problems with the use of this typological category discussed earlier in this essay suggest that other models are needed for understanding the differential consumption patterns noted here, including different models for what are often called “prestige items” (Saitta, 1999, 2000).

Although prestige-goods economies may indeed be present in some cases, we cannot assume that all social differentiation in past societies is strictly economic or

based on the exchange of nonlocal goods or preciosities. In particular, the model of a prestige-goods economy does not take into account the full spectrum of socially valued materials, especially those that are used in ritual contexts. We might take some cues from models of political organization that incorporate the concept of corporate leadership. In these models, goods are used to promote communal ritual and labor organization, rather than to promote individual prestige (Blanton *et al.*, 1996; Earle, 2001; Feinman, 2000; Mills, 2000b; Peregrine, 2001; Renfrew, 2001; Wilcox, 1999; Wills, 2000). Socially valued goods are used by leaders in communal ritual in ways that are not strictly economic, and these goods are not always made of nonlocal goods.

The special kinds of discard pathways (*sensu* Walker, 1995, 1998; Walker *et al.*, 2000; Walker and Lucero, 2000) for social valuables can be used to interpret the items discarded as objects of memory or inalienable possessions (Mills, 2000b, 2001; Weiner, 1992), rather than prestige goods used to enhance leadership among hierarchically organized peer polities. Further exploration of the kinds of objects with different discard pathways than that found in normal midden deposits would provide a better idea of what were considered to be social valuables, rather than concentrating exclusively on objects made of long-distance materials. Cylinder jars (Toll, 2001), altar pieces, staffs, dance wands (Vivian *et al.*, 1978), and turquoise (Mathien, 2001) are all likely ritual items with special discard pathways that were used to promote communal identity and leadership (Mills, 2001). Many of these objects were probably used in ritual contexts, highlighting the intersection of ritual and status in ancient Chacoan society, but without having to depend on their definition as prestige goods.

The social context of communal organization at Chaco is currently debated. Many archaeologists have assumed that Chaco had a matrilineal/matrilocal pattern similar to ethnographic Western Pueblos. Peregrine (2001) suggests that the pithouse-to-pueblo transition, which is marked at Chaco by the early construction of great houses in the 9th century, was a transition from patrilineal to matrilineal kinship. Ware (2001a) agrees that matrilineal descent groups have a long history in the northern Southwest, but argues elsewhere (Ware, 2001b) that during the Bonito phase there was an erosion of corporately based lineages and that bilateral kin groups emerged—the very kind of social organization found ethnographically among the Eastern Pueblos.

Bioarchaeological analyses add to our understanding of social organization at Chaco. Two different burial populations were demonstrated by Akins (1986), who found that the statistical clusters were correlated with two spatially distinctive burial groups in the oldest areas of Pueblo Bonito. Her findings were recently reconfirmed through the analysis of morphological traits, in which one cluster was more closely related to Eastern Pueblo and the other to Western Pueblo samples (Schillaci *et al.*, in press). But, in addition to showing the presence of two different groups, Schillaci and Stojoanowski (2000) used sex-specific phenotypic

variation to evaluate postmarital residence patterns. Although the sample sizes are small, their analysis suggests greater variation in the female sample from each cluster, which is counter to a matrilocal residence pattern. Instead, they suggest that Chacoans practiced a bilocal residence pattern more similar to Rio Grande Pueblos. Consistent with Ware (2001b), they challenge the idea that there was a clan-based matrilineal/matrilocal system at Chaco.

These bioarchaeological studies are particularly interesting given that the burials in these groups contain multiple individuals like family crypts. Unfortunately, these burial clusters were excavated by Neil Judd and George Pepper in the late 19th and early 20th centuries, and fine-grained contextual data to evaluate the depositional history of the clusters are lacking. Nonetheless, because these same burials were found with greater amounts of nonlocal items and were found in the same older sections of Pueblo Bonito as the caches of cylinder jars, they suggest that Chaco residents marked the locations of important corporate groups, and perhaps ritual leaders within the community, during rituals of commemoration.

The intersection of gender and status in Chacoan society has only recently received concerted study. This is largely the result of a single seminar on gender throughout the Southwest (Crown, 2000) drawing on a number of sources, including Akins's important bioarchaeological analysis of the burials from Chaco Canyon (Akin, 1986). Hegmon and coauthors (2000) point out that the contrast between small and great house architecture means that women living in the latter would have had greater prestige than women living in small houses. In her analysis of burial assemblages, however, Neitzel (2000; see also Akins, 1986) argues that Chaco shows evidence of a male-dominated gender hierarchy, but that this is crosscut by the presence of hierarchies in both male and female burials. When analyzed alone, small sites at Chaco show more evidence for a female-dominated hierarchy than do great houses (Neitzel, 2000, p. 160). Neitzel notes the problem of small sample sizes when divided by time period, sex, and/or site type, but that there is an increasing trend for female-dominated hierarchies after ca. A.D. 1030.

Like all aggregated communities, women and men at Chaco might be expected to have had greater nutritional stress than more dispersed communities (Martin, 2000; Szuter, 2000). The overall rate of anemia and the rate of infectious diseases was, however, much lower for burials within the Chaco Canyon sample than those from contemporaneous sites outside of Chaco Canyon (Martin, 2000, p. 287). Within Chaco Canyon, male and female residents of Pueblo Bonito were taller and lived longer than male and female residents of small sites, yet women at Pueblo Bonito had lower fertility rates (Martin, 2000; Nelson *et al.*, 1994). The presence of large-scale consumption events at Chacoan great houses may have been one of the factors in the overall better health of those buried in Pueblo Bonito.

Production of ceramics by women and turquoise ornaments by men are suggested from tools in burials and the contexts of production debris (Hagstrum, 2001; Mills, 2000b). Spielmann (2000) suggests that the procurement of turquoise from

long-distance sources was probably done by men, as was probably the case for procurement of wood used in architectural construction. Although the tasks of fuel and clay gathering may have been shared in the Chuskas, women probably produced most of the ceramics (Mills, 2000b) and engaged in the exchange of these vessels (Spielmann, 2000). The production and exchange of Chuskan ceramics may have lent status to these women, especially so if brought to Chaco in the context of ritual pilgrimages and used in feasting events (Lamphere, 2000, p. 396). Gendered ideology at Chaco is reflected in the production and use of stone objects that mostly depict females and occasionally depict males (Hays-Gilpin, 2000). The female images are interpreted as evidence for fertility symbolism.

Male burials have more ritual artifacts than do female burials, suggesting that the males were responsible for ritual practice and women in the preparation of food for these ceremonies (Akins, 1986). Lamphere (2000, p. 396) suggests that this is evidence for increasing differences between small and great house kin groups, and that male ritual specialists resided in great houses, who increased the status of the rest of their families.

RITUAL AND CEREMONIALISM

Although a majority of reconstructions of Chacoan political organization have at their basis ritual leadership, very few of these actually describe how ritual was structured. Some prefer to view Chacoan great houses as ritual rather than residential or political centers (e.g., Stein and Fowler, 1996; Stein and Lekson, 1992). These interpretations rest on new perspectives on great house architectural form and how Chacoan roads may have been used (Vivian, 1997a,b). As noted above, one of the most important changes in the interpretation of Chacoan roads is the recognition that there are many short segments that emanate from the great houses but do not appear to connect to any other discernible site. At least some of these were probably used for ritual, including processions and foot races, or as ritual pathways (Kantner, 1997; Marshall, 1997; Stein and Lekson, 1992; Vivian, 1997b).

Kantner (1997) identifies two models for the ritual use of roads. In the first model, roads are part of a ritual landscape, particularly where these short segments are present and accompanied by other features of the built environment such as berms. Later post-Chacoan roads that connect noncontemporaneous Bonito phase structures have been called "roads through time" (Fowler and Stein, 1992). These roads are viewed as symbolic links to the past within the ritual landscape model. The concept of roads through time was one of the most significant in changing the way Chacoan scholars view roads. It is also one of the most important contributions for understanding the perpetuation of great house architecture after the Bonito phase (see below). Roads through time are combined with interpretations of political power in Van Dyke's model that sees roads as one of the ways in which leaders maintained hegemonic control using competitive ritual. (Van Dyke, 1999a) They

also are seen as part of a “landscape of memory” that includes roads, great houses, and other features (Van Dyke, 2000).

The other model of ritual use of roads is cosmological and applies to the longer segments of roads emanating from Chaco Canyon as well as to the alignments of great houses (e.g., Marshall, 1997; Sofaer, 1997; Sofaer *et al.*, 1989; Stein *et al.*, 1997). The cosmological model used to interpret great house architecture depends on the identification of alignments of building walls that conform to astronomical events, especially those of lunar and solar cycles, and principles of symmetry along the cardinal directions. Some of these orientations should not be surprising for an agrarian society—what is surprising is the extent of these alignments within and outside of the canyon. They appear to include not just the alignment of walls of individual sites to solar events, but also alignments to a complex lunar cycle that would have taken nearly a generation to observe. Anna Sofaer’s Solstice Project has documented that five great houses in Chaco Canyon mark the solar equinox or solstice, and seven other buildings mark major or minor lunar standstills (Sofaer, 1997). Some of the walls that mark alignments date to the earliest phases of great house construction, indicating a long tradition in Chacoan architecture (Stein *et al.*, 1997).

As noted earlier, several non-Southwesternists have recently commented on Chaco and favor its interpretation as a ritual center (Earle, 2001; Renfrew, 2001; Yoffee, 2001). Earle (2001) emphasizes that the economic organization was based on staple finance rather than wealth finance, and that roads and great houses marked the extent of a corporate chiefdom that organized communal ritual. Renfrew (2001, p. 18) calls Chaco “a location of high devotional expression,” and compares Chaco to Neolithic Europe, with its monuments and absence of salient ranking. He draws wider comparisons to pilgrimage centers in other areas, which are often away from population centers and that host periodic gatherings. Yoffee (2001; see also Yoffee *et al.*, 1999) resists categorizing Chaco in terms of any kind of chiefdom and terms it a “rituality.” These archaeologists tend to see less status and more ritual in the past of Chaco Canyon, probably because of their own previous research in areas with considerably greater sociopolitical complexity, but also because of the scale of communal ritual expressed in Chaco’s monumental architecture and evidence for feasting in the trash deposits. Like Johnson’s commentary over a decade ago (Johnson, 1989), the perspectives of these outsiders looking in provide important comparative viewpoints for Southwestern archaeologists.

Feasting as one expression of ritual activity is now almost universally accepted for Chaco, paralleling renewed interest in this topic in the general archaeological literature (e.g., Dietler and Hayden, 2001; Potter, 2000). The pilgrimage fair model fits well with the interpretation of large-scale feasting at Chaco (e.g., Stoltman, 1999; Toll, 1985). However, as Hayden’s overview indicates (Hayden, 1995), there are many different kinds of feasts: competitive and cooperative, calendrical and critical, and all societies practice some kind of feasting. Most current interpretations of Chaco favor a greater emphasis on cooperative rather than competitive

politics and thus, communal feasts over competitive feasts (but see Kantner, 1996). No society is strictly one or the other, but the mix at Chaco seems heavily weighted toward consensual politics and feasting.

What is important to current models for Chaco as a ritual center is the evidence for the scale of feasting. Large-scale feasting is based on a number of lines of evidence but none is as important as the rate of trash disposal at Chaco great houses. Toll's analysis of ceramic discard at Pueblo Alto (Toll, 1985) and Windes' downsized population figures (Windes, 1984) were instrumental in the construction of the pilgrimage fair model proposed by the Chaco Center. This model is still popular and is supported by the scale of exchange and consumption of nonsubsistence goods (e.g., Stoltman, 1999), the scale of the resident population relative to architectural construction (compare Bernardini, 1999, and Wills, 2000), and the kinds of foods consumed in great houses versus small houses (Akins, 1984). Also interesting is that the number of storage rooms is in excess of residential units at Pueblo Bonito (Bernardini, 1999) and probably all other great houses. This suggests that storage may have been more centralized in these structures and that the scale of feasting was above that of the total site population itself.

Some cracks in the pilgrimage fair model are beginning to appear. Wills (2001), in particular, questions both the interpretation of seasonal depositional events and the basis of the original calculation of ceramic vessel accumulations that Toll (1985) made for the Pueblo Alto trash mound, both of which are critical for the ritual center model. Like Akins (1984, 1987), he does not view the many, discrete depositional events as necessarily produced on an annual basis nor the amount of fauna consumed to be exceptional in size for the number of households. Wills points out that Toll's methods for estimating the number of vessel equivalents from sherds depended heavily on accurate estimates of mound volume, but that many of the layers are attenuated. Moreover, he argues that the beginning and end layers are not well dated, making the duration of occupation difficult to estimate, and that many of the layers are composed of construction debris. As Toll (1985, p. 190) himself acknowledged, the accurate estimation of the number of sherds and vessels recovered from the mound trench depends on accurate assessment of what percentage of the mound was excavated. Wills concludes that the accuracy cannot be assessed given the amount that was excavated and that there are too many problems to use the Pueblo Alto mound as the entire basis for the ritual feasting model.

The distribution of great kivas in Chaco outliers does argue for the participation of some outlier communities in Chaco Canyon ritual organization. Those outlier communities closest to Chaco have significantly fewer great kivas (Van Dyke, 1998, 1999a). These communities traditionally have been called part of the "Chaco Halo" (Doyel *et al.*, 1984), because of their density and the fact that many of them have equally high proportions of nonlocal materials as sites in the central canyon itself. The participation of these communities in ritual activities centered

in Chaco Canyon might be responsible for both the relatively low number of great kivas as well as their similarly high proportions of imported ceramics and chipped stone.

VIOLENCE

One of the topics currently receiving a great deal of public as well as professional exposure is that of violence in the Prehispanic Southwest. Conflict at Chaco is no exception. From Douglas Preston's (1998) article on "Cannibals of the canyon" in *The New Yorker* to *Discovering Archaeology's* (May/June 1999) issue on "Cannibals, witches, and wars," the image of the peaceful Pueblos has taken another pendulum swing, in what Darling (1999a) calls "From Hobbes to Rousseau and back again." The public seems fascinated with this darker side of life in the ancient Southwest.

Two books (LeBlanc, 1999; Turner and Turner, 1999) are largely responsible for the changing view of the Pueblos as peaceful to one of unconstrained bullies. However, the extent to which Chacoans were involved in violence depends on one's definition of the Chaco region, evaluation of the formation processes and contexts, and how violence is recognized in the archaeological record. For example, Wilcox and Haas (1994) review evidence for conflict across the Southwest and conclude that there are only a few examples in the Chaco region, including possible palisades where berms are found encircling great houses. LeBlanc (1999) finds that the period between A.D. 900 and 1150 shows less evidence for warfare than earlier or later periods. He thus characterizes this period throughout the Colorado Plateau as "Pax Chaco" (after Lekson, 1992) but "with a twist" because some indicators for violence are still present. For example, some Chacoan communities are in defensible locations and have direct evidence of conflict from human remains that were thrown into rooms (LeBlanc, 1999, pp. 153–186). Burned structures also are present during this period, but clearly not as much as in earlier or later periods.

The work of Turner and Turner (1999) most explicitly addresses Chaco. Better known for its discussion of sites with a particular pattern of violence that they attribute to cannibalism, including several sites in Chaco Canyon, the heart of their argument is the origin of such violent behavior. They suggest that this pattern is the same as one seen in Mesoamerica and that its origins in the Southwest can be attributed to direct contact and colonization by Toltec "thugs" after the fall of Tula. The presence of at least one individual from Chaco with filed teeth is used to support the inference that Mesoamericans imposed themselves on Chaco and incited violence. The topic of Mesoamerican contacts with Chaco have all but disappeared from the literature (but see Lekson, 1999a), and the Turners' argument grasps at a meager straw. The filed tooth may be the result of fused teeth and for cosmetic purposes only (Gwinn Vivian, personal communication, 2001). Moreover, the Turners uncritically evaluate the contextual evidence for putatively cannibalized remains

and apply overly long time range assignments. The Chaco contexts postdate the Bonito phase and are from remodeled rooms with occupation in the A.D. 1100s and 1200s. Bustard (2000) reevaluated the contexts that the Turners' data were based on and found that most were post-A.D. 1150 and, therefore, post-Chacoan and, moreover, that most of the cases of cannibalism were in the Mesa Verde area and not Chacoan at all. Even if they were in the Chaco area, the connection with Toltec thugs wandering into the Southwest at the fall of Tula is spurious because Tula did not fall until ca. A.D. 1200, again postdating the Bonito phase by at least several generations.

Several archaeologists provide alternative explanations for unusual treatments of human remains throughout the Southwest, including mutilation associated with conflict (Bullock, 1991, 1992, 1998), witchcraft (Darling, 1999b; Walker, 1998), ritual violence (Walker, 1995), and gender-based slavery or violence against women (Martin, 1997; Martin *et al.*, in press). It is clear that multiple processes were at work, including at least two cases of cannibalism in the early to mid-1100s in the general Four Corners area (Billman *et al.*, 2000; Marlar *et al.*, 2000; White, 1992). Other archaeologists studying Chaco and surrounding areas in the Four Corners region recognize that violence was a force to contend with, but do not see it as extensive as the Turners and others make it out to be, nor consistently expressed through cannibalistic behavior (Dongoske *et al.*, 2000).

Wilcox's model of violence (1993, 1999) argues for small standing armies that moved across the landscape using Chacoan roads. These upholders of the Chaco order were housed in rooms like those found at Pueblo Alto that open to the exterior, rather than the interior plaza spaces. LeBlanc (1999, p. 183) calls this model the "central hegemony model" and adds to it the idea that elites used terrorism to expand their territory and quell uprisings. According to LeBlanc, if resistance was met, whole communities would have been threatened with death and unceremonious consumption. The latter idea is based on LeBlanc's uncritical acceptance of the Turners' data (Turner and Turner, 1995, 1999)—despite his own evaluation that there is little evidence for outright violence during the period between A.D. 900 and 1150.

In summary, it is certain that violence took place in some areas of the Southwest, that this violence often took the form of bodily mutilation and occasionally consumption, and that there was a high degree of variation in the kind and expression of these violent behaviors. What is particularly interesting is that for a short while during the Bonito phase there was a *decrease* in the extent of violence that again picked up during the harsh environmental deterioration of the early to mid-12th century (LeBlanc, 1999). How this decrease is interpreted and the extent of cannibalistic behavior in the 1100s will be a subject of continued debate in the next decade or longer. Further contextual analyses are badly needed to understand the timing, regional extent, and kinds of violence that were present in the northern Southwest before, during, and after the Bonito phase.

THE POST-CHACOAN REORGANIZATION

Today, Southwestern archaeologists are more apt to call the end of occupation of a particular area a reorganization or a migration, rather than a "collapse" (Cameron, 1995; Nelson, 1999, 2000; Spielmann, 1998). The reorganization of the Chaco system occurred in the mid-to-late 1100s, and new construction at great houses within the canyon ceased after A.D. 1130 (Roney, 1996, p. 156). Several Chaco researchers attribute at least some of these changes to a period of prolonged drought that affected a large area of the San Juan Basin (Cordell, 1996, p. 228; Dean, 1992; Dean *et al.*, 1994; Roney, 1996, p. 157; Sebastian, 1992a,b).

Chaco Canyon continued to be used by Ancestral Pueblo people after the late A.D. 1100s, but the nature and extent of this occupation are debated. Thirteenth-century ceramics are present at several sites in the canyon (Roney, 1996, pp. 156–157). However, Wilcox's interpretation of late A.D. 1100s ceramics at Pueblo Bonito as evidence that "the Chaco polity continued to be a major player until at least the beginning of the thirteenth century" (Wilcox, 1996a, p. 247) overstates the degree of Chacoan centralization and hegemony and understates the scale of reorganization. The depositional contexts of late ceramics need to be looked at more closely to ascertain whether they were the result of small-scale reoccupation on a limited basis or a small remnant population.

One of the most important shifts in thinking about what happened to Chaco is based on the recognition of great house communities of the A.D. 1150–1250 period that retain many aspects of Chacoan community organization, but are distinctively different from earlier Chaco communities (Fowler and Stein, 1992; Fowler *et al.*, 1987; Kintigh *et al.*, 1996; Stein and Fowler, 1996). Some of these post-Chacoan communities have more road segments than some Chacoan communities, great kivas that are unroofed rather than roofed, encircling walls rather than earthen berms, and are larger than many of the Chacoan era (Stein and Fowler, 1996, pp. 116–117). Post-Chacoan communities show clear continuities with earlier great house communities, especially when located close to Bonito phase structures and connected by short segments of Chacoan roads that Stein and Fowler call "roads through time" (Fig. 7). Some archaeologists prefer to emphasize continuity rather than change during this reorganization (Durand and Durand, 2000). Continuity in great house occupation after the mid-1100s occurred in many parts of the Chaco world (Lekson and Cameron, 1995). Partly because of the greater distance involved, Kintigh and his colleagues (1996) attribute the similarities in the use of Cibola area great houses and unroofed great kivas in the late 12th through 13th centuries to a process of ritual revitalization in the service of local political processes. Yet there is no question that these later great houses represent a major reorganization of Chaco society, ritual, economy, and politics.

One of the settlements with extensive post-Chacoan occupation is the Aztec community, located approximately 80 km north of Chaco Canyon. Although an

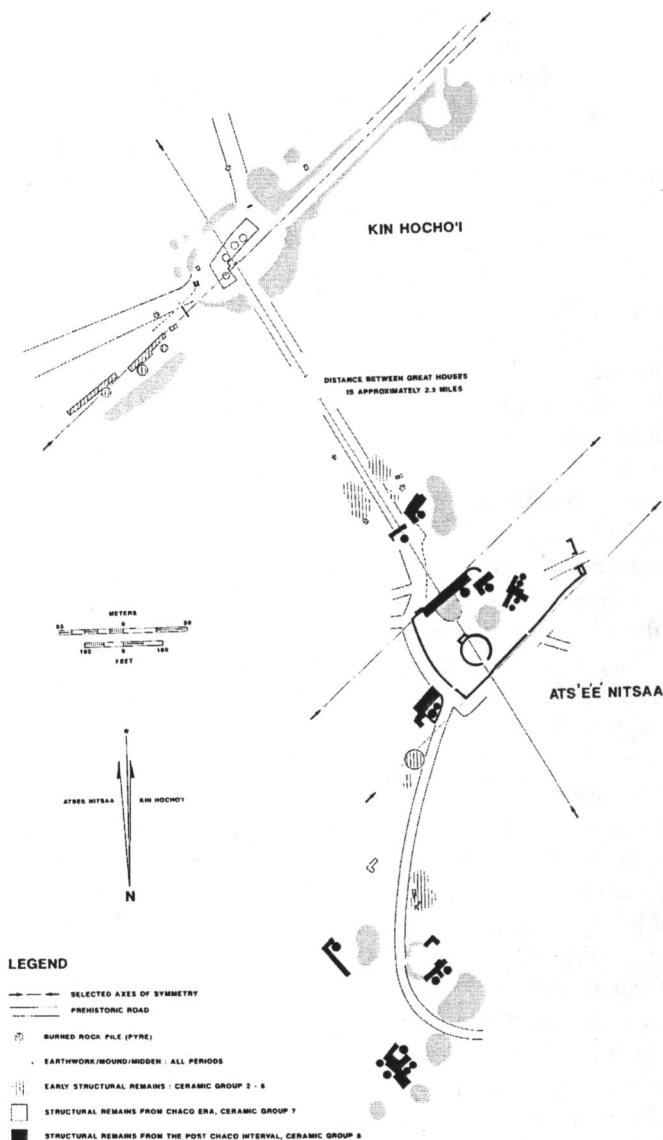


Fig. 7. Plan of Kin Hoco'I (Bonito Phase) and Ats'ee Nitsaa (Post-Bonito phase) components connected by a constructed road or “road through time” (After Fowler and Stein, 1992, Figure 9–11. Reproduced with the permission of The Maxwell Museum of Anthropology, University of New Mexico.)

earlier, Chaco period occupation is present at this community, the size and extent of the post-Chacoan occupation has only been recently appreciated, and it is clearly different from the Bonito phase occupation (McKenna and Stein, 1989; McKenna and Toll, 1992; Stein and Fowler, 1996). Lekson (1999a) has proposed an innovative idea that links Chaco, the post-Chacoan occupation of the Aztec community, and the still later site of Paquimé in the Casas Grandes (Mexico) area. His sweeping "Chaco Meridian" theory is based on the idea that the political center of the Ancestral Pueblo world shifted from Chaco to Aztec in the late 1100s and again in the 1200s to Paquimé. Lekson extrapolates a road connecting Aztec with Chaco, but even more significant to Lekson is that Aztec, Chaco, and Paquimé are three points along a perfect straight line or meridian. Chaco and Paquimé have a few architectural similarities such as bed platforms, stone disks, and so-called colonnades; stone disks also are present at Aztec. Although there is clearly a historical connection between Chaco Canyon and Aztec, Lekson argues that after Aztec, the political capital of the Puebloan world became Paquimé, with Puebloan people following a straight course across 630 km of rugged Southwestern landscape to found their new capital. He goes to great lengths to show that the alignment of these three sequential political centers has an extremely low probability of occurring by chance. Phillip Tuwaletstiwa (2000), a geodisist, agrees that it would have been possible for Chacoans to set such a course and to follow it with a low degree of error by sighting the sun at noon each clear day and adjusting the pathway accordingly.

Lekson's reconstruction depends on several assumptions, especially the interpretation of all three political centers as more politically centralized than most archaeologists would grant. David Phillips' (2000) point-by-point critique of the Chaco meridian theory includes evidence that (1) Aztec is actually 3.7 km west of the Chaco Meridian, (2) the Great North Road does not extend fully nor straight towards Aztec, (3) provisioning the migrants from Aztec to Paquimé would have been impossible given the duration of the trip that Lekson specifies, and (4) that the Medio period at Paquimé probably began well before a post-A.D. 1200s migration from Aztec Ruins. In addition, the requisite technological style continuities that underlie most inferences of migration currently used in the Southwest are absent from Lekson's argument. Finally, as Vivian (in press) points out, Lekson's theory is in need of stronger methodological linkages.

Other migration pathways out of Chaco Canyon have not been well investigated. Lekson and Cameron (1995) use Pueblo oral history to point out that several contemporary Pueblo groups, including Hopi, Zuni, and Acoma, have names for Chaco. They additionally suggest that "White House," prominent in many of the migration stories of the Rio Grande Pueblos, refers to Pueblo Bonito. Even more convincing is Schillaci *et al.*'s reanalysis of cranial metric variability (Schillaci *et al.*, in press) that shows that of Akins' two population groups at Pueblo Bonito (Akin, 1986), one is more similar to Hopi and Zuni site samples while the other group clusters with Eastern Pueblo samples (especially northern Rio Grande).

Today, the identification of migration pathways out of Chaco has an added political importance. It will help identify culturally affiliated tribes who will determine the disposition of materials excavated from Chaco sites, as mandated by the Native American Graves Protection and Repatriation Act of 1990. As Naranjo (1995) and others pursuing migration research in the Southwest have noted (e.g., Cameron, 1995; Duff, 1998; Herr and Clark, 1997; Nelson, 1999; Wilshusen and Ortman, 1999), mobility was a constant process in the Prehispanic and Colonial periods of the Southwest. The movement of populations at all social scales, from individual to community, and at various spatial scales can be regarded as a given. Understanding the specific migration pathways will give archaeologists and Native Americans even more reason for intensive consultation and consideration in the coming years.

CONCLUSIONS

At the beginning of this essay I made several statements about Chaco to underscore seemingly contradictory archaeological patterns. With new theories and new methods, these patterns can now be approached in ways that could not have been envisioned a decade or more ago. Nonetheless, as several researchers have pointed out, archaeologists interested in Chaco are working mostly with the same field data and collections that have been available for the past 20 years. The changes can be attributed to several factors, including increased work outside of Chaco Canyon and reevaluations of existing collections, data, and models using new intellectual frameworks. Within these frameworks, it is not implausible for Ancestral Pueblo people to have constructed immense, planned structures incorporating large labor pools; for some individuals and families to have greater access to subsistence and nonsubsistence resources; or for community organization to be replicated across a vast landscape without evidence of political hegemony or political centralization.

The apparent intensification in outlier construction during the 11th century produced a more complicated—and more complex—Chacoan society, with multiple webs of social, economic, and ritual interrelationships. It also became, at least for a time, a paradigm for community organization across the landscape of the San Juan Basin as other communities replicated some of the social and ritual organization seen in Chaco Canyon. Regional boundedness and integration changed through time at Chaco, as it does in all regional systems (Kowalewski *et al.*, 1983), and an understanding of the relationships between the Chaco Canyon community, communities in its “halo,” and more distant communities within the Chaco region is still much needed. How different groups established and maintained great houses at Chaco and across the Chacoan region will continue to be one of the areas for future research. Chaco Canyon was not politically, economically, or socially autonomous from the surrounding region, but how these connections were structured will need to be explored using models that do not assume centralization of all of these dimensions by Chaco Canyon residents.

What is particularly interesting in the new interpretations is that they have allowed new lines of research to be pursued. The idea of ritual landscapes, pilgrimages, roads through time, and landscapes of memory might once have seemed difficult to pursue—in any area. Yet these are at the very cusp of new research on Chaco. New research that looks at social identity, leadership, status, and ritual organization is just beginning. In particular, the model of Chaco as a ritual center will require more definition and critical evaluation. Debates now center on the sources of power that leaders drew upon, whether ritual or social (or *both*), how families maintained their authority, and whether they were communally or competitively structured. These debates are not unique to research on Chaco, but Chaco provides an excellent case study to test these theories in the future.

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