

Raiding for Women in the Pre-Hispanic Northern Pueblo Southwest?

A Pilot Examination

Timothy A. Kohler and Kathryn Kramer Turner

Department of Anthropology, Washington State University, Pullman, WA 99164-4910, U.S.A. (tako@wsu.edu)/Mark Twain National Forest, Salem Ranger District, 1301 S. Main, Salem, MO 65560, U.S.A. (kktturner@fs.fed.us). 29 VI 06

Spatial data on sex ratios through time from archaeological sites in the late pre-Hispanic northern U.S. Southwest reveal significant regional and subregional departures from the expected values. In the eleventh century AD, Chaco Canyon and its subregion contain more women (or, possibly, fewer men) than expected, as does Aztec and its subregion in the thirteenth century AD. At Aztec the female bias is coupled with a contemporaneous male bias in the Mesa Verde subregion to the northwest. Consideration of possible explanations for these discrepancies suggests that there is strong evidence for raiding for women in the thirteenth-century northern Southwest. This is also a possible explanation for the eleventh-century Chacoan discrepancies, though in this case other explanations cannot be ruled out.

Chaco scholars have a long history of posing dichotomous organizational possibilities for the emergence (or fundamental nature) and the operation of the Chacoan system (Sebastian 2006, 404–5). These include such oppositions as hierarchical versus nonhierarchical, competitive or coercive versus communal, and, most recently, politically versus ritually controlled. We are not surprised that archaeologists have been unable to agree which option in each pair best describes the system; it would be surprising if such an extensive and long-lived system did not embrace both possibilities in each of these dichotomies in various aspects of its operation. For example, an organization that appears to be dominated by cooperative forces internally may fund its operation in part through external coercion. Moreover, the relative weights of these possibilities could easily have changed over the more-than-200-year span of Chaco's existence.

In this report we wish to call attention to previously unrecognized patterns in existing data on human remains that bear on the extent to which Chaco's initial solidification and the later operation of one of its follow-on societies to the north

involved coercive and extractive relationships with its neighbors.

Background Considerations

The AD 900–1300 history of the eastern Puebloan Southwest (the Pueblo II and III periods) is defined in great measure by the rise of the Chacoan system around AD 900, its variable expansion over the next 200 years (including the rise of a replacement or competitive center in the north at Aztec in the early 1100s), the collapse (or at least a sharp decrease in the influence) of the entire system after AD 1135–40, and the variable response of the regions formerly under its influence to this putative relocation and subsequent decline.

The Chacoan system is defined by “great houses” (recognizably similar masonry structures, almost always multistoried, that reach their most overengineered, monumental proportions in Chaco Canyon itself [Lekson 1986; Mahoney 2001]), a system of “roads” that seems at least symbolically to link the centers near the canyon to “downtown” Chaco and more distant outlying centers to their local landscapes, and the importation into the canyon of large quantities of wood for construction, pottery, lithic materials (including both chert and turquoise), and at least some maize (Benson et al. 2003; Cameron and Toll 2001; English et al. 2001). The area encompassed by this system at its peak is frequently depicted as about 400 km from north to south and 300 km from east to west, with Chaco Canyon itself (fig. 1) slightly offset to the northeast of the center of this rectangle (e.g., Cordell and Judge 2001, 7).

There is considerable uncertainty as to whether this system was ever politically centralized. To what extent, for example, are the similarities of the sites recognized as Chacoan (which should not be overstated [see Van Dyke 1999]) due simply or primarily to shared beliefs (Yoffee 2001), presumably supported by shared ritual (Judge 1989)? It seems that nearly all Chaco scholars are now convinced that “rituality” played a key role in integrating this large region (see Mills 2002). In Yoffee's forceful characterization, following Geertz, of nineteenth-century Bali, “Ritual was not reflective simply of social order or a device for exploitation, it was the embodiment of order, a structure of thought as much as a structure for domination” (2001, 67). The first question we wish to explore with our data is whether we can find any evidence for aspects of Chaco's operation that cannot be accommodated within the rituality model. Accepting that rituality provides a cogent explanation for some aspects of Chacoan organization, we still may be able to identify ways in which political power and coercion supplemented and supported it.

A related question surrounds the aftermath of the decline or demise of Chaco Canyon around AD 1135. One influential model suggests that in the early 1100s the Chacoan elite relocated north to Aztec in the Totah area (Lekson 1986), where they attempted to retain the pomp and power long associated

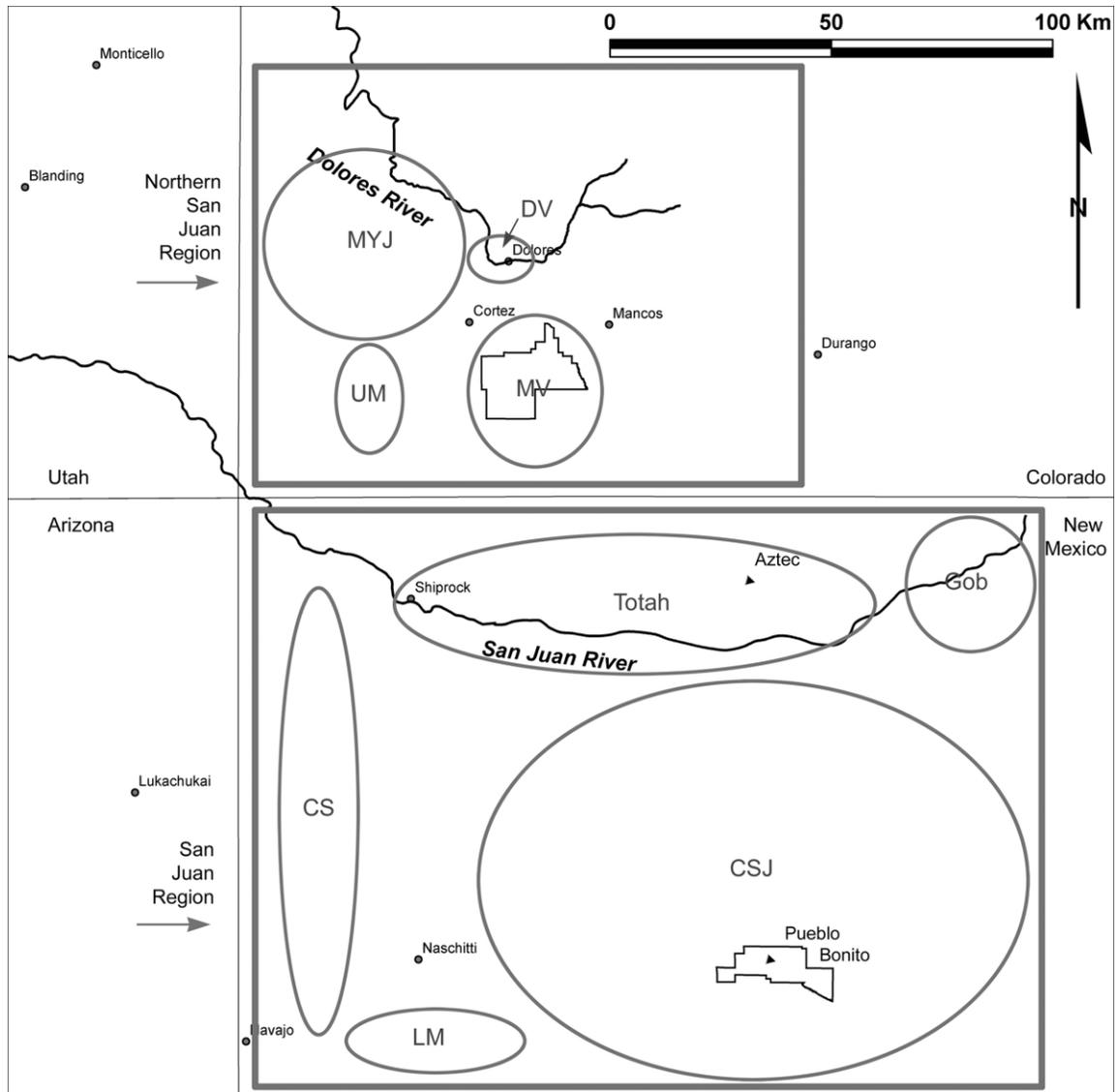


Figure 1. General locations of the portions of the Northern San Juan and San Juan regions sampled in this research. Contemporary towns are marked with circles, prominent archaeological sites with triangles. The Puerco of the West subregion, south and west of the Lobo Mesa and Chuska Slope subregions, is not shown. CS, Chuska Slope; CSJ, Central San Juan; DV, Dolores Valley; Gob, Gobernador; LM, Lobo Mesa; MV, Mesa Verde; MYJ, McElmo/Yellow Jacket; UM, Ute Mountain.

with them. Even if this assertion is substantially correct, these immigrants do not appear to have been completely successful. Some researchers believe that a polity centered in Chaco Canyon retained much of its power through at least the 1100s (Wilcox 1999, 136). Others point out that if the construction of Chaco-style great houses indicates the timing and extent of Chacoan influence, then the Northern San Juan region appears to have been outside Chacoan influence after about 1140 (Lipe 2006).

It is of course undeniable that Aztec and the Totalah were very densely occupied by large and imposing sites in the twelfth and thirteenth centuries (Stein and Fowler 1996). Indeed, such clusters of large sites seem to be a hallmark of the Pueblo III period throughout much of the Puebloan Southwest. In some areas, such as the Great Sage Plain of Southwest Colorado, these large sites seem to cluster together much more than would be warranted by what we believe we know about the distribution of potential agricultural productivity (Kohler

2000). In this same case, by the twelfth century a large unoccupied zone had developed between this cluster and the Aztec/Totah cluster to the southeast. Our second question, then, is what the relationship was between these clusters of sites and whether it holds any clues for the operation of Chaco in its prime. Our approach to these questions requires that we first consider the various ways in which warfare might be recognized in the local archaeological record.

Recognizing Warfare in the Pre-Hispanic Southwest

Thanks largely to the work of a few insistent scholars (e.g., Haas and Creamer 1993; Wilcox and Haas 1994), Southwestern archaeologists have come to acknowledge that warfare—defined broadly here as potentially lethal conflict between social groups—was an important part of the lived experience of ancient Southwestern peoples, though its prevalence was certainly variable in time and space (Kuckelman, Lightfoot, and Martin 2000; Lekson 2002).

Warfare in the Southwest has typically been recognized through architecture and site location, artifacts, burned structures, rock art, and no-man's-lands (Haas and Creamer 1993; 1996; Keeley 1996; LeBlanc 1999). Skeletal evidence is important as well, particularly direct physical evidence such as human bone containing projectile points or showing scalping marks and other evidence of perimortem violence. The context for skeletal remains has also been considered, for example, in making the case that the inhabitants of the Sand Canyon and Castle Rock sites in southwestern Colorado were massacred in the mid-late AD 1200s (Kuckelman, Lightfoot, and Martin 2002).

Less commonly, sex ratios have played a role in the argument. (The sex ratio is formed as $[(N \text{ males} \times 100)/N \text{ females}]$, and therefore ratios greater than 100 indicate a male bias.) Turner, Turner, and Green (1993) found that burials from sites in the Largo-Gallina region had an extremely high male bias—of the 31 adult skeletons whose sex could be determined, 26 were male—and suggested that women and children had been taken captive and therefore removed from the local burial population. More generally, LeBlanc (1999, 86–87) sketches two scenarios in which sex ratios might support an inference of warfare. A higher number of young men and lower number of women and children in a burial population might identify a community that had been attacked, with many of the women and children being taken captive and removed to another location. Alternatively, a burial population containing fewer young men than expected could result if men had been killed away from their village. These scenarios suggest that warfare might result in sex ratios biased in either direction and in a high variance in the proportions of sex ratios by site within particular regions and periods or between regions in a particular period, with the spatial scale at which variance is maximized indicating the spatial scale of the contests.

Raiding for women, often accompanied by the killing of

males, was of course common worldwide in nonstate societies (Keeley 1996, 83–87):

It is extremely uncommon to find instances among nonstate groups of recognizing surrender or taking adult male prisoners. Adult males who fell into the hands of their enemies were usually immediately dispatched. . . . The capture of women was one of the spoils of victory—and occasionally one of the primary aims of warfare—for many tribal warriors. . . . In general, nonstate groups preserved the lives of captives only when some material benefit would accrue; this approach generally limited the persons spared to women and children.

Raiding for women and children has been carefully and thoroughly documented by Brooks (2002) for the early historic Southwest. Although polygyny appears to have been relatively uncommon among Pueblo peoples in the historic period, in the Pueblo rebellion of 1680 the leaders of Galisteo Pueblo promised that “the Indian who shall kill a Spaniard will get an Indian woman for a wife, and he who kills four will get four women, and he who kills ten or more will get a like number” (p. 54). Significantly for some interpretations of Chacoan organization (e.g., Wilcox 1993), this explicitly connects successful warriors with polygyny. Turner and Turner (1999, 71–77) collect several published oral renditions of the destruction of the Hopi town of Awatovi around 1700 which concur that the attackers spared only young women and children, having agreed before the attack on how the women and lands of the pueblo were to be divided. The version of this legend assembled by Malotki adds that some of these women were subsequently killed as this agreement unraveled after the attack (2002, 186–89).

Years ago, Divale and Harris (1976) suggested another, more subtle way in which sex ratios might be affected by and therefore betray the presence of warfare. They argued that a “male supremacist complex” develops in the presence of endemic warfare and that, given the high value of males in such contexts, among its consequences is female infanticide. Significantly male-biased sex ratios among adolescents and (perhaps) young adults, then, might indicate substantial underinvestment in female children or infanticide accompanying endemic warfare. And yet cross-cultural work by Melvin Ember (1983) noted high *female*-biased sex ratios in a random sample of 21 warfare-practicing societies. Since subadults were not distinguished from adults in his samples and these sex ratios appear to be influenced by high male mortality rates in many of these societies, his results do not necessarily undermine Divale and Harris’s proposal.

We will be examining our two questions, then, from the novel perspective provided by the spatial distribution of sex ratios through time. Specifically, we will be interested to see whether these ratios (or, equivalently, the proportions of males) provide any insight into either the internal operation of the Chaco Canyon-based system or its external relationships in its first two centuries and whether we can see sex-

ratio anomalies that might inform us on the relationship between the post-Chaco Pueblo III site clusters in the Northern San Juan. We will also use variation of sex ratios within regions and probabilities of death by age-class as ancillary data in some of our arguments. The data on which we base these analyses are summarized in table 1; see also Kramer (2002) and references therein. [Tabulation of the data will be found in the electronic version of this issue on the journal's web page.]

Methods

Kramer (2002) collected data on human remains from publications, site files, and the "gray literature" where it could be accessed for those portions of two large regions—the Northern San Juan and the San Juan Basin—that fall within the present states of Colorado and New Mexico (fig. 1), as well as for the northernmost subregion of the Northern Rio Grande, the Gallina area. To keep this pilot study to a manageable size, we excluded the more southern and western portions of the Pueblo world. We are more familiar with the northern portions, and they appear to have larger samples of human remains in the Pueblo I–III periods.

These regions were divided into subregions as noted in table 1 and figure 1. On the basis of the data available for each site and in some cases for each set of human remains within a site, dates for human remains were divided into six rather large categories: the 200 years from AD 600 to 799 and each century thereafter to AD 1300. We do not consider this a comprehensive study, although Kramer used all sites within these time limits and regions for which she could find data in the late 1990s. We recognize that these temporal categories should be refined, where possible, by future work; for example, it would be useful to try to distinguish the first 35–40 years of the 1100s from the remainder, given the decline or collapse of the system based in Chaco Canyon around that time.

The resultant total sample size was 1,353 sets of human remains of which slightly less than half—606—were sufficiently mature and well preserved to be identifiable as male

or female (see table 1). Kramer relied on published indications of sex and age. The San Juan Basin is the best represented in our sample and the Gallina subregion the most poorly represented; in fact, given its small samples, we will not be discussing the Gallina further here. The sample overall has about equal numbers of males and females. Analyzing the burials by subregion makes most of the samples too small to be useful, so we will discuss sex ratios primarily at the regional level, noting unusual subregional trends where we can. Kramer (2002) reports a number of contributing analyses and constructs life tables for the regions by period.

We acknowledge that differential sampling at the sites we use, changes in the way in which sex and age have been determined for skeletal materials over the years, varying levels of expertise in making those assignments, possible differential burial practices for different sexes or other groups, and a host of other factors that we cannot control could, in principle at least, affect our results. For these reasons, as well as the generally small sample sizes, our incomplete sampling of Chaco's periphery, and our somewhat coarse temporal assignment (by Southwestern standards at least), we present this as a pilot examination of these questions with these data. We think it would be as irresponsible to avoid using these data because of their possible deficiencies as it would be not to be frank about them. We depend on further research in terms of the models presented here to determine the value of these models and samples.

Results

In the San Juan Basin, sex ratios are neutral or slightly male-biased for the last four centuries of the first millennium AD. For the next three centuries the ratios become female-biased (fig. 2). In general these departures from the expected .5 proportion of males are not significant, though the proportion of males *is* significantly less than .5 in the AD 1000s for the entire region (the 95% confidence interval for this period does not enclose .5). Periods with low proportions of males exhibit high standard deviations in those proportions across sites,

Table 1. Subregions and Sample Sizes by Region

Region	<i>n</i> Sites	<i>n</i> Males	<i>n</i> Females	Subregions
Northern San Juan	47	107	95	Dolores Valley McElmo/Yellow Jacket Mesa Verde Ute Mountain
San Juan Basin	89	172	202	Total Chuska Slope Lobo Mesa Puerco of the West Central San Juan Gobernador
Northern Rio Grande	16	16	14	Gallina
Total	152	295	311	

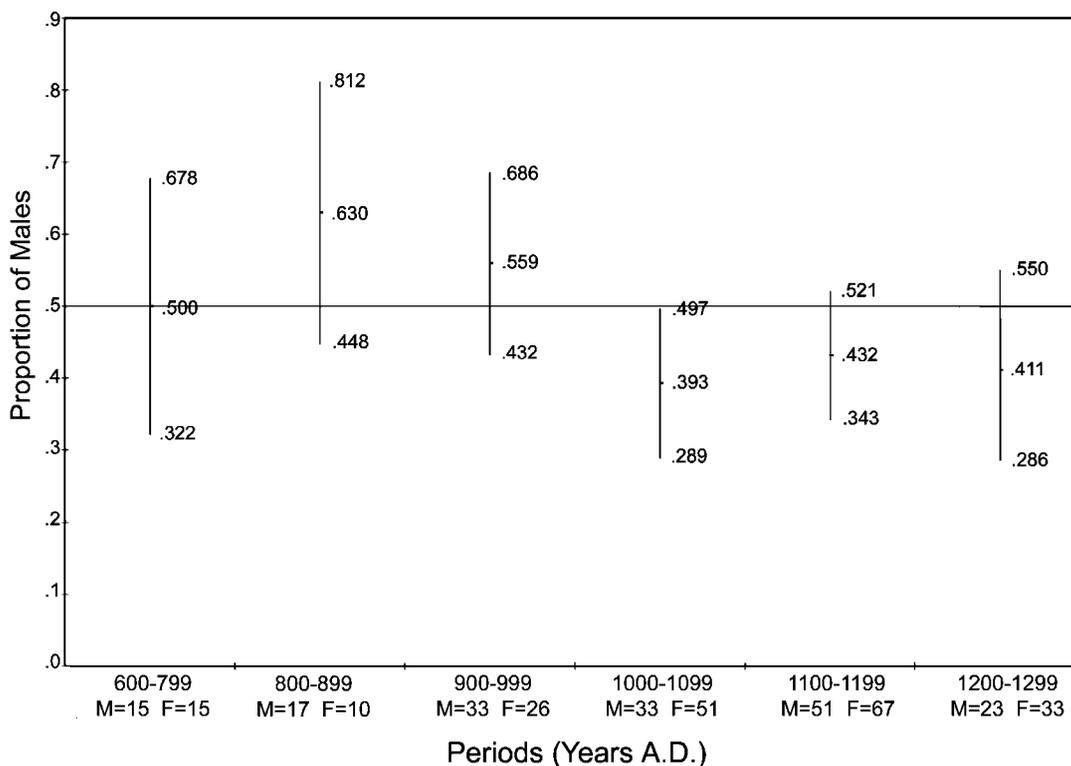


Figure 2. Sex ratios in the San Juan Basin through time. Vertical bars display 95% binomial confidence limits around observed proportions of males. Confidence intervals not enclosing the expected value of .5 are considered evidence of significant sex bias.

indicating that the “excess” females in the region (or, perhaps, the deficits in males) are not widely shared (fig. 3).

The AD 1100s are heavily influenced by sites in the Central San Juan subregion, which makes up 63% of the regional sample and has a proportion of males of only .283, significantly less than .5 (fig. 4). This subregion contains “downtown” Chaco and its halo of nearby outliers, and this is the century in which the Chacoan system reached full strength. The proportion of males at Pueblo Bonito during this century

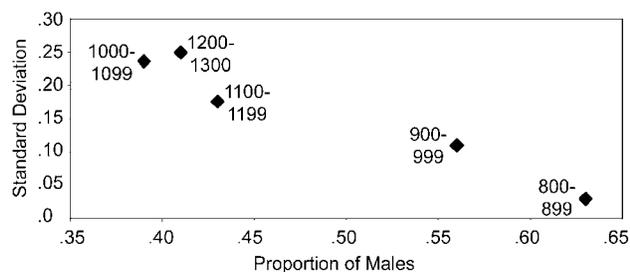


Figure 3. Proportion of males versus standard deviation in proportion across sites in the San Juan Basin (all periods).

is .35. As is well known to students of Southwestern prehistory, eleventh-century Pueblo Bonito contains the most unambiguous evidence for elite burials in the Puebloan world (Akins 2001; Neitzel 2000, 148; Pepper 1920).

If these anomalous proportions are due primarily to an excess of females, it is not clear where they are coming from. In our sample, significant male biases first appear in the Gobernador (Navajo Reservoir area) in the late AD 800s or early 900s (Dittert, Eddy, and Dickey 1966). This could be associated with the earliest rise of Chaco, although it appears to predate significant female bias in the Chaco skeletal assemblages. There are male-biased ratios in the eleventh century in the Lobo Mesa and Puerco of the West subregions of the San Juan Basin and, to a limited degree, in the Mesa Verde subregion of the Northern San Juan, but the sample sizes are small and the findings are not statistically significant. Notably, values for probability of death by age-class in the 1000s in the San Juan Basin are very similar to the death probabilities pooled for all centuries (Kramer 2002, 58). High death probabilities in young adults could signal that the anomalous sex ratios we note were connected with conflict. Throughout the AD 1000–1300 period (at the end of which this area was

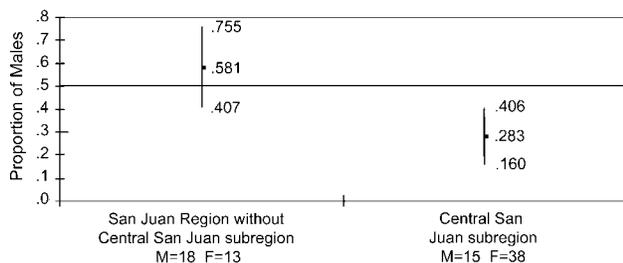


Figure 4. Sex ratio in the San Juan region in the AD 1000s, excluding the Central San Juan subregion, compared with the sex ratio of the Central San Juan subregion. Vertical bars display 95% binomial confidence limits around observed proportions of males.

depopulated) the sex ratios remain female-biased, though after AD 1100 not significantly so.

In the AD 1200s the Totah subregion of the San Juan Basin, considered separately from its larger region, has a significantly female-biased sex ratio (fig. 5). Almost 80% of the individuals in our regional sample are from the Totah subregion, with most of those (77%) coming from LA 45 (Aztec Ruin). During this period there is also significantly higher mortality between the ages of 6 and 25 than in the San Juan Basin as a whole when data are pooled for all periods. The mortality rate for individuals between the ages of 26 and 30 is also higher than in the region as a whole, though not significantly so.

North of Totah, in the Northern San Juan region, the proportion of males is about .5 through all periods until the AD 1200s, when it jumps to a significantly biased proportion of .64 (fig. 6). This is coupled with another anomaly in this century: higher mortality is seen in children and adults until age 25 than earlier in this region (Kramer 2002, 91). The Mesa Verde subregion supplies most of the human remains for the Northern San Juan sample in the AD 1200s for which sex could be determined, and here the proportion of males is also .64. In contrast to the San Juan Basin, in the Northern San Juan there is no correlation between the proportions of males and the standard deviations of those proportions (fig. 7), indicating that the apparent depletion of females tends to be spread evenly among the sites in our sample. In the last century of the occupation of the northernmost portions of the eastern Puebloan Southwest, then, there is either an excess of males or a shortage of females or a little of each.

In summary, then, we seem to see *more* women than would be expected in and around the regional centers of Chaco and Aztec, with the degree of female bias apparently corresponding to the times of the greatest influence of these centers. [See figures in the electronic version of this issue on the journal's web page.]

Discussion

Many explanations for these patterns are possible. Fortunately,

other archaeological data and general ethnographic analogy both suggest some limits of plausibility. We cannot, for example, think of mechanisms consistent with anything we know that would explain the male-biased sex ratios in the Northern San Juan as due to a surfeit of men rather than a deficit of women. We assume that a "male supremacist complex" (Divale and Harris 1976) would take many decades to form, and the changes around AD 1200 toward male bias seem too rapid to be explainable in that fashion. (It would, however, be worthwhile to refine and expand this analysis, using a finer temporal resolution, to estimate the rate of change more accurately.) For the Central San Juan the case is not so clear. Perhaps the female-biased sex ratios of the 1000s and early 1100s are due in part to export of young men in favored lineages to found scion centers (many such centers appear in the Northern San Juan in the late 1000s, for example). Alternatively, they may reflect, in part, the loss of numerous warriors in the field.

Although we find it attractive to seek an explanation for these anomalies that encompasses both regions, we admit that there could be important changes through time in the mechanisms causing these sex biases over the almost 300 years from AD 1000 to the collapse of the northern Southwest. The mechanisms we consider plausible for explaining these anomalies fall into two broad groups. First, women may be over-represented in places like Chaco and Aztec because of female choice. This encompasses several possibilities: (1) a flow of women toward elites (hypergyny, possibly coupled with elite polygyny), (2) more demand for women or more desire by women to participate in ritual practices centered first on Chaco and perhaps later on Aztec, and (3) recruitment of especially skilled groups of women from outside to work as specialized producers for some class of items, for example, pottery or jewelry. Alternatively, if the excess women represent captives from raids who became slaves or wives or tribute from within the system, their presence would presumably not have been entirely a result of choice. In theory at least, internal

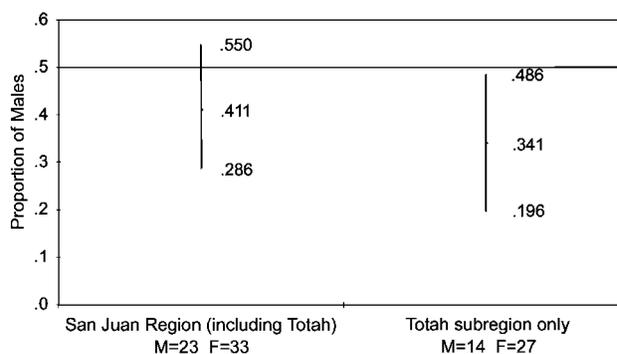


Figure 5. Sex ratio throughout the San Juan region in the AD 1200s compared with the sex ratio of the Totah subregion of the San Juan. Vertical bars display 95% binomial confidence limits around observed proportions of males.

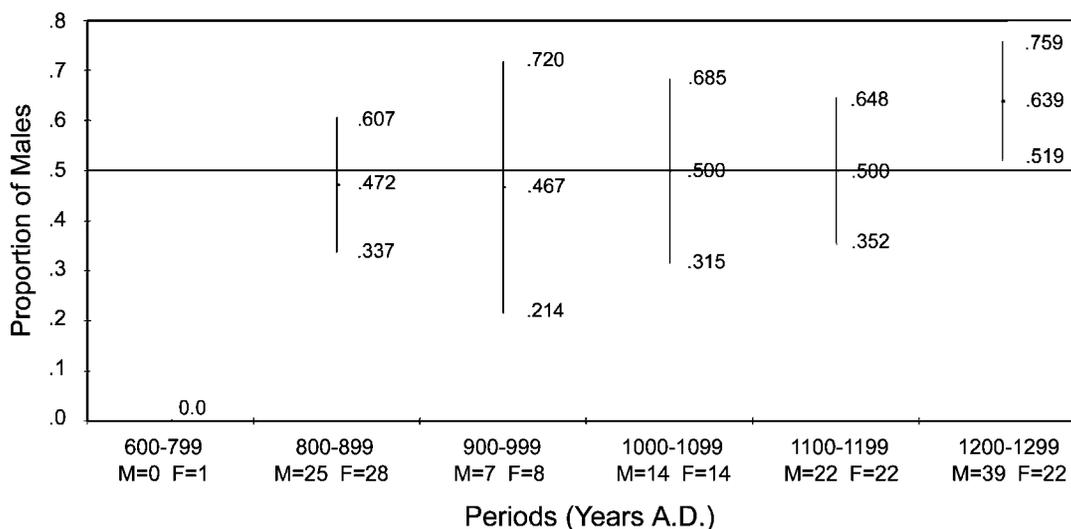


Figure 6. Sex ratios in the Northern San Juan region through time. Vertical bars display 95% binomial confidence limits around observed proportions of males.

social pressures or traditions might have been sufficient to move women to Chaco or Aztec, and it may be difficult to differentiate such movement from forcible removal.

John Speth (1991, 20–22) has suggested that hypergyny might have characterized pre-Hispanic Plains-Pueblo relationships, with Plains women choosing to move to the eastern Pueblos. He believes that this might have set up competition among males in the Plains groups, perhaps resulting in increased intermale competition that manifested itself in more hunting. Anything beyond low levels of hypergyny is logically accompanied by polygyny, in which some men have more than one wife. Polygyny, of course, has considerable worldwide prevalence, occurring in 850 of the 1,170 societies in Murdock's (1967) *Ethnographic Atlas* (Bergstrom 1996). Simple economic models of marriage markets strongly suggest

that “societies that allow polygamy and have stable property rights will usually have positive bride prices and some polygynous marriages” (Bergstrom 1994). Bride-prices, ultimately funded by corn and labor flowing into Chaco from the provinces and paid in political and ceremonial support to the provinces, may have been one of the mysterious quantities flowing out of Chaco that have been so difficult to identify in the archaeological record (Mills 2002, 86).

Another possible explanation is that women were differentially attracted to and incorporated into the religious systems that appear to have been centered on Chaco and Aztec, since these key centers have anomalously high proportions of females. James Farmer (2003) in fact argues this case for Pueblo Bonito, making specific connections between the Hopi women's ceremonies of Lakón and Márawu and some elements of Bonitan architecture and iconography. Assuming, however, that these rituals were performed primarily by pilgrims, this explanation does not clarify to our satisfaction why these women ended up in death assemblages in Chaco and Aztec.

Finally, we should consider whether groups of skilled women specializing in some production might have been attached to these centers in some fashion. Although downtown Chaco, especially, contains abundant evidence for the production of specialized ritual paraphernalia, we are unaware of any evidence connecting a special “guild” or neighborhood with such production. Cameron and Toll (2001, 11) report a consensus among Chacoan specialists that production of goods was household-based; they see little evidence for elite control of production of special goods (i.e., wealth finance).

In any case, in our view these sorts of explanations are

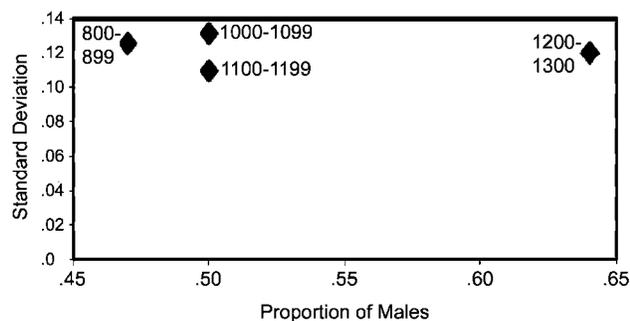


Figure 7. Proportion of males versus standard deviation of proportion across sites in the Northern San Juan region (all periods). AD 900s excluded because of small sample sizes.

plausible only for the apparent excess of women in the eleventh-century Central San Juan, when the probability of death among young adults remained at background levels. They are problematic as explanations for the sex-ratio anomalies of the 1200s in the north, which are accompanied by high levels of young adult mortality in what we consider the source and destination areas. Moreover, there is independent though inconclusive evidence that even in the eleventh century the expansion of the Chacoan system into the Northern San Juan was achieved amid violence. Cole (2006) has collected and tabulated incidences of skeletal trauma that she infers to be due to warfare by 14 periods from AD 600 to 1300 in the central portions of the Northern San Juan. Kohler, Cole, and Ciupe (2006) show that from AD 600 to about 1000 the relationship between inferred warfare and population size in this region nicely matches a model proposed by Turchin and Korotayev (2006) in which (1) population growth leads, with a lag, to increased warfare, (2) high incidence of warfare suppresses population size, (3) given lower populations, warfare declines, with a lag; and finally (4) the cycle begins anew with increased population growth. But in the eleventh century, these relationships are reversed. Growth in violence slightly *leads* growth in population in the first half of the eleventh century and strongly *leads* it in the second half, when the earliest Chacoan great houses appear in this area (Lipe 2006). This seems to suggest that the Chacoan expansion was resisted, though other observations temper that inference. Kramer (2002, 84) has documented significantly *lower* probabilities of death in the 16–20-, the 21–25-, and the 26–30-year age-groups during this century in the Northern San Juan than for the period of farming occupation as a whole. She also found no evidence of missing women in the Northern San Juan during this century.

Nevertheless, as a working model to be examined elsewhere and with fresh data, we suggest the general hypothesis that for 300 years male elites in powerful San Juan Basin communities extracted women from weaker communities to the north (and perhaps elsewhere on the Chacoan periphery). That women may have been moving out of other places not included in our analyses is suggested by the fact that the significant depletion of females in the Northern San Juan began much later than significant addition of females to the San Juan Basin. We accept the possibility that social or political mechanisms short of raiding may have been sufficient to generate these flows in the 1000s. We think it is likely, however, that by the AD 1200s the patterns we noted in the Totah subregion of the San Juan Basin and in the Northern San Juan were caused by raiding for women that was either incidental to other forms of violence or an end in itself.

If indeed women were captured, some of them may have become slaves. Admittedly, slavery is not part of traditional anthropological and popular images of Southwestern Pueblo societies, but there is ample documentation from the early historic period of slave economies operating within and between indigenous peoples and Spanish colonists (Brooks

2002). Debra Martin (1997; Martin and Akins 2001) also documented a pattern in the late pre-Hispanic archaeology of the Totah in which two groups of women can be differentiated.¹ Some, buried in the common flexed or semiflexed position and accompanied by grave goods, have a low incidence of osteological trauma. Others are loosely flexed, prostrate, or sprawled, with no grave goods; this group invariably exhibits cranial trauma and often other forms of osteological trauma as well. Martin and Akins interpret this as evidence for an “indentured subclass” (p. 244) obtained through raiding and abduction or through immigration. Given the mirror symmetry of their sex ratios in the 1200s and the elevated death rates among young people in both areas, we suggest that societies in the Totah obtained these women from Northern San Juan societies to the northwest through raiding and abduction.

Implications for Understanding Chaco and Its Aftermath

We note an interesting congruence between our finding that Chacoan burial assemblages became female-biased in the 1000s and Wilcox’s (1999, 129) view that Chaco underwent a major internal reorganization around 1030 that included a great increase in trachyte-tempered pottery and Washington Pass chert from the Chuskas, a rapid change from Red Mesa to Gallup Black-on-white ceramics, the rapid construction of Chetro Ketl, with over 5,000 wooden beams, and the burial of two adult men in “full, glorious regalia of turquoise and shell . . . beneath the floor of Room 33 in the oldest part of Pueblo Bonito.” Massive additions to storage capacity in downtown Chaco followed (Wilcox 1999, fig. 10.7). Wilcox interprets these changes, which many term the “Chaco Florence,” as signaling a change from a “segmentary state” (Southall 1988) based on kinship to one organized in terms of a tributary mode of production.

If the anomalous sex ratios we identify for the Central San Juan Basin subregion are due to excess women rather than a deficit of men, we should attempt to understand how these “extra” women were employed. Did they, for example, help process tributary maize and turn it into feasts for pilgrims? Sebastian (2006, 13) suggests that we may be looking in the wrong place if we expect political power at Chaco to be manifested by large differences in material wealth. Wealth in *people*, she proposes, may have been at least as important as a marker for political power in such societies. Women could have been valued as much for their ability to maintain trade relationships over broad areas or for their specialized skills or ritual knowledge as for their productive capacities. Oral tradition recalls that some women were spared in the Awatovi massacre because they were society initiates who claimed

1. From published accounts, we can determine that these women died sometime in the A.D. 1100s or 1200s, but we cannot make finer temporal distinctions.

knowledge of rain making (Malotki 2002, 188). Perhaps we should be monitoring sex ratios in sites of middle-range societies—just as we do variation in exotic and high-input goods, architecture, diet, health, stature, and so forth—as information on differences in social power and the way this power is deployed.

In the end, our interpretation of Chaco as being either internally repressive (the tribute model), externally aggressive and extractive (the peripheral raiding model), or attractive to women for positive reasons (any of the female-choice models) hinges critically on where these apparently extra women came from, whether (and how) they were treated differently from local women in Chaco as they seem to have been in the Totah, and whether their source areas lost them amidst violence. We hope that this pilot study will encourage future researchers to examine these possibilities, for example, using enamel isotope data (Ezzo et al. 1997) or metric and nonmetric skeletal variation (Schillaci 2003).

We think that the interpretation of the Aztec/Totah anomalies is clearer. In the thirteenth century at least, we suggest that this cluster of communities was extracting women from the clusters of Pueblo III communities on Mesa Verde proper and on the Great Sage Plain. We do not know whether this was a conscious attempt to carry on Chacoan practices at Aztec in the twelfth and thirteenth centuries or merely the outcome of competition between the tightly packed Pueblo III communities in the Totah and in the central Mesa Verde subregions, separated by no-man's-land, with no Chacoan restraints to keep them from armed conflict.

Conclusions

This paper documents—for the first time to our knowledge—the probability that there was an interregional movement of women in the late pre-Hispanic Southwest from the Northern San Juan (and perhaps other areas) into the San Juan Basin. For the thirteenth century the main mechanism of this movement appears to have been raiding with the taking of women either as a goal or as incidental to other ends. This conclusion is strengthened by other data documenting violence in both areas and the apparent presence of a contemporaneous group of subjugated women in the Totah.

Similarly, we have documented female-biased sex ratios in the AD 1000s in the Central San Juan Basin. Here we lack ancillary evidence for violence (Akins 2001, 185–86), significant contemporaneous male biases that would help identify source areas, and evidence for a subjugated group of women, so we are less confident that this pattern is due in part or entirely to raiding for women. Perhaps some relatively non-coercive system resulting in excess women in the Central San Juan basin had degenerated, 200 years later, into the forcible appropriation of women at Aztec. Even for the eleventh century, though, we think that raiding for women needs to be a candidate explanation for this female bias.

Until we know more about the mechanisms achieving these

movements, it is premature to tie these too closely to specific theory. As we have seen, men covet women for productive reasons (either for labor or for knowledge that facilitates labor) and for reproductive reasons. Reproductive logic explains why, worldwide, wealthy and powerful men practice polygyny more than wealthy and powerful women practice polyandry: men increase their fertility much more by having several wives than do women by having several husbands. The suggestion that both the productive and the reproductive interests of an elite were served in the cases at hand is consonant with other suggestions that Chaco and Aztec may have been among the few places in the ancient Southwest where elite interests were extremely influential in social and political process.

In closing we would like to return to the concept of “rituality.” It is our impression that Southwesternists invest this concept with an unwarranted positive valence, implicitly at least connecting it to feasting and other normally cooperative activities that help make everyone better-off. We would do well to recall Gramsci’s broad definition of hegemony (e.g., 1973) as the domination of one class over others achieved by a combination of political and ideological means. Hegmon (2005, 228) reminds us that even when ritual is the basis for leadership, as it may well have been in these societies, “the resulting inequalities should not be assumed to be minor or materially insignificant.” Rituality is not just a subtext of participation but can become a means for control; it is not an alternative but a complement to political hierarchy.

Moreover, if rituality was a strongly uniting force for Chaco, we are ultimately required to consider how it can have this power. By elucidating how within-group altruistic norms can be maintained, how prosocial emotions that commit us to these norms were able to evolve, and how symbols marking in-group and out-group membership can be manipulated so that allegiance to a series of scaled social groups of increasing size can be achieved, cultural group selection models (e.g., Gil-White and Richerson 2002) seem to us to hold great promise. Not only do they explain this power; they also show how it can be connected specifically with intergroup conflict. Put another way, although elites in these societies may have been powerful, it seems likely that to the extent that women were not moving of their own choice, this movement not only served elite interests but also successfully exploited symbols of group identification and evolved prosocial norms that made these activities appear in the group’s best interests as well. Therefore much recent research on ritual landscapes (e.g., Van Dyke 2004) and on cosmological correlates of roads and other features of the built environment (e.g., Stein, Suiter, and Ford 1997) is not necessarily at odds with the ultimate explanations suggested here.

Acknowledgments

We are indebted to many people for help with this project, including David Johnson and Michael Spitzer for aspects of production and Andrew Duff, Bill Lipe, Debra Martin, Ann

Stodder, and David Wilcox for comments. None should be held responsible for our interpretations, of course. This material is based in part upon work supported by the National Science Foundation under Grant BE/CNH 0119981.

References Cited

- Akins, Nancy J. 2001. Chaco Canyon mortuary practices: Archaeological correlates of complexity. In *Ancient burial practices in the American Southwest: Archaeology, physical anthropology, and Native American perspectives*, ed. D. R. Mitchell and J. L. Brunson-Hadley, 164–90. Albuquerque: University of New Mexico Press.
- Benson, L., L. S. Cordell, K. Vincent, H. E. Taylor, J. R. Stein, G. L. Farmer, and K. Futa. 2003. Ancient maize from Chacoan great houses: Where was it grown? *Proceedings of the National Academy of Sciences, U.S.A.* 100:13111–15.
- Bergstrom, T. C. 1994. On the economics of polygyny. Technical report, University of Michigan, Ann Arbor.
- . 1996. Economics in a family way. *Journal of Economic Literature* 34:1903–34.
- Brooks, James F. 2002. *Captives and cousins: Slavery, kinship, and community in the Southwest borderlands*. Chapel Hill: University of North Carolina Press.
- Cameron, Catherine, and H. Wolcott Toll. 2001. Deciphering the organization of production in Chaco Canyon. *American Antiquity* 66:5–13.
- Cole, Sarah M. 2006. Population dynamics and sociopolitical instability in the Central Mesa Verde, A.D. 600–1280. M.A. thesis, Washington State University.
- Cordell, Linda S., and W. James Judge. 2001. Perspectives on Chaco society and polity. In *Chaco society and polity: Papers from the 1999 conference*, ed. Linda S. Cordell, W. James Judge, and June-el Piper, 1–12. Albuquerque: New Mexico Archaeological Council.
- Dittert, A. E., Jr., F. W. Eddy, and B. L. Dickey. 1966. LA 4195: Sambrito Village. In *Prehistory in the Navajo Reservoir District, northwestern New Mexico*, ed. F. W. Eddy, 230–54. Museum of New Mexico Papers in Anthropology 15.
- Divale, W., and M. Harris. 1976. Population, warfare, and the male supremacist complex. *American Anthropologist* 78: 521–38.
- Ember, Melvin 1983. Warfare, sex ratio, and polygyny. In *Marriage, family, and kinship: Comparative studies of social organization*, ed. M. Ember and C. Ember, 109–24. New Haven: HRAF Press.
- English, Nathan B., Julio L. Betancourt, Jeffrey S. Dean, and Jay Quade. 2001. Strontium isotopes reveal distant sources of architectural timber in Chaco Canyon, New Mexico. *Proceedings of the National Academy of Sciences, U.S.A.* 98: 11891–96.
- Ezzo, J. A., C. M. Johnson, and T. D. Price. 1997. Analytical perspectives on prehistoric migration: A case study from east-central Arizona. *Journal of Archaeological Science* 24: 447–66.
- Farmer, James D. 2002. Astronomy and ritual in Chaco Canyon. In *Pueblo Bonito: Center of the Chacoan world*, ed. Jill E. Neitzel, 61–71. Washington, D.C.: Smithsonian Books.
- Gil-White, F., and Peter J. Richerson. 2002. Cooperation and conflict, large-scale human. In *Encyclopedia of cognitive science*, ed. L. Nadel, 828–37. Hampshire: Macmillan.
- Gramsci, Antonio. 1973. *Letters from prison*. Trans. Lynne Lawner. New York: Harper and Row.
- Haas, J., and W. Creamer. 1993. *Stress and warfare among the Kayenta Anasazi of the thirteenth century A.D.* Fieldiana: Anthropology, n.s., 21.
- . 1996. The role of warfare in the Pueblo III period. In *The prehistoric Pueblo world, A.D. 1150–1350*, ed. Michael A. Adler, 205–13. Tucson: University of Arizona Press.
- Hegmon, Michelle. 2005. Beyond the mold: Questions of inequality in Southwest villages. In *North American archaeology*, ed. Timothy R. Pauketat and Diana DiPaolo Loren, 212–34. Malden: Blackwell.
- Judge, W. James. 1989. Chaco Canyon—San Juan Basin. In *Dynamics of Southwest prehistory*, ed. Linda Cordell and George Gumerman, 209–62. Washington, D.C.: Smithsonian Institution.
- Keeley, Lawrence H. 1996 *War before civilization: The myth of the peaceful savage*. New York: Oxford University Press.
- Kohler, Timothy A. 2000. The final 400 years of prehispanic agricultural society in the Mesa Verde region. *Kiva* 66: 191–204.
- Kohler, Timothy A., Sarah Cole, and Stanca M. Ciupe. 2006. Population and warfare: A test of the Turchin model in Puebloan societies. In *Pattern and process in cultural evolution*, ed. Stephen Shennan. Santa Fe Institute Working Papers 06-06-018. http://www.santafe.edu/research/publications/wp_list/2006.
- Kramer, K. 2002. Sex ratios and warfare in the prehistoric Puebloan Southwest. M.A. thesis, Washington State University.
- Kuckelman, Kristin A., Ricky R. Lightfoot, and Debra L. Martin. 2000. Changing patterns of violence in the Northern San Juan Region, A.D. 950–1300. *Kiva* 66:147–65.
- . 2002. The bioarchaeology and taphonomy of violence at Castle Rock and Sand Canyon Pueblos, southwestern Colorado. *American Antiquity* 67:486–513.
- LeBlanc, Steven A. 1999. *Prehistoric warfare in the American Southwest*. Salt Lake City: University of Utah Press.
- Lekson, Stephen H. 1986. *Great Pueblo architecture of Chaco Canyon*. Albuquerque: University of New Mexico Press.
- . 2002. War in the Southwest, war in the world. *American Antiquity* 67:607–24.
- Lipe, William D. 2006. Notes from the North. In *The archaeology of Chaco Canyon: An eleventh-century Pueblo regional center*, ed. Stephen H. Lekson, 261–313. Santa Fe: School of American Research Press.
- Mahoney, Nancy. 2001. Monumental architecture as conspicuous display in Chaco Canyon. In *Chaco society and polity: Papers from the 1999 conference*, ed. Linda S. Cordell,

- W. James Judge, and June-el Piper, 13–29. Albuquerque: New Mexico Archaeological Council.
- Malotki, Ekkehart. 2002. *Hopi tales of destruction*. Lincoln: University of Nebraska Press.
- Martin, Debra L. 1997. Violence against women in the La Plata River Valley (A.D. 1000–1300). In *Troubled times: Violence and warfare in the past*, ed. D. L. Martin and D. W. Frayer, 45–74. Roseville, N.S.W.: Gordon and Breach.
- Martin, Debra L., and Nancy J. Akins. 2001. Unequal treatment in life as in death: Trauma and mortuary behavior at La Plata (A.D. 1000–1300). In *Ancient burial practices in the American Southwest: Archaeology, physical anthropology, and Native American perspectives*, ed. D. R. Mitchell and J. L. Brunson-Hadley, 223–48. Albuquerque: University of New Mexico Press.
- Mills, Barbara J. 2002. Recent research on Chaco: Changing views on economy, ritual, and society. *Journal of Archaeological Research* 19:65–117.
- Murdock, George Peter. 1967. *Ethnographic atlas*. Pittsburgh: University of Pittsburgh Press.
- Neitzel, Jill E. 2000. Gender hierarchies: A comparative analysis of mortuary data. In *Women and men in the Prehispanic Southwest*, ed. Patricia L. Crown, 137–68. Santa Fe: School of American Research Press.
- Pepper, George H. 1920. *Pueblo Bonito*. Anthropological Papers of the American Museum of Natural History 27.
- Schillaci, Michael. 2003. The development of population diversity at Chaco Canyon. *Kiva* 68:221–45.
- Sebastian, Lynne. 2006. The Chaco synthesis. In *The archaeology of Chaco Canyon: An eleventh-century Pueblo regional center*, ed. Stephen H. Lekson, 393–422. Santa Fe: School of American Research Press.
- Southall, A. 1988. The segmentary state in Africa and Asia. *Comparative Studies in Society and History* 30(1):52–82.
- Speth, John D. 1991. Some unexplored aspects of mutualistic Plains-Pueblo food exchange. In *Farmers, hunters, and colonists: Interaction between the Southwest and the Southern Plains*, ed. K. A. Spielmann, 18–35. Tucson: University of Arizona Press.
- Stein, John R., and Andrew P. Fowler. 1996. Looking beyond Chaco in the San Juan Basin and its peripheries. In *The prehistoric Pueblo world, A.D. 1150–1350*, ed. Michael A. Adler, 114–30. Tucson: University of Arizona Press.
- Stein, John R., J. E. Suiter, and D. Ford. 1997. High noon at Old Bonito: Sun, shadow, and geometry in the Chaco Complex. In *Anasazi architecture and American design*, ed. B. H. Morrow and V. B. Price, 133–48. Albuquerque: University of New Mexico Press.
- Turchin, Peter, and Andrey Korotayev. 2006. Population dynamics and internal warfare: A reconsideration. *Social Evolution and History* 5(2). In press.
- Turner, Christy G., II, and Jacqueline A. Turner. 1999. *Man Corn: Cannibalism and violence in the prehistoric American Southwest*. Salt Lake City: University of Utah Press.
- Turner, Christy G., II, Jacqueline A. Turner, and R. C. Green. 1993. Taphonomic analysis of Anasazi skeletal remains from Largo-Gallina sites in northwestern New Mexico. *Journal of Anthropological Research* 49:83–110.
- Van Dyke, Ruth M. 1999. The Chaco connection: Evaluating Bonito style architecture in outlier communities. *Journal of Anthropological Archaeology* 18:471–506.
- . 2004. Memory, meaning, and masonry: The Late Bonito Chacoan landscape. *American Antiquity* 69:413–31.
- Wilcox, David R. 1993. The evolution of the Chaco polity. In *The Chimney Rock archaeological symposium*, ed. J. McKim Malville and G. Matlock, 76–90. U.S. Department of Agriculture, Forest Service, General Technical Report RM-227.
- . 1999. A peregrine view of macroregional systems in the North American Southwest, A.D. 750–1250. In *Great towns and regional polities in the prehistoric American Southwest and Southeast*, ed. Jill E. Neitzel, 115–41. Dragoon and Albuquerque: Amerind Foundation and University of New Mexico Press.
- Wilcox, David R., and Jonathan Haas. 1994. The scream of the butterfly: Competition and conflict in the prehistoric Southwest. In *Themes in Southwest prehistory*, ed. George Gumerman, 211–38. Santa Fe: School of American Research.
- Yoffee, Norman. 2001. The Chaco “rituality” revisited. In *Chaco society and polity: Papers from the 1999 conference*, ed. Linda S. Cordell, W. James Judge, and June-el Piper, 63–78. Albuquerque: New Mexico Archaeological Council.