VIII <APPROACH TO SETTLEMENT PATTERN ANALYSIS ON CEDAR MESA>

<Introduction>

Now that we have developed site classifications, we are ready to investigate the nature of settlement patterns on Cedar Mesa. We have discussed our initial ideas about the various Anasazi occupations and the development of the methodology we will use to test these ideas. We have not, however, indicated how we expect these ideas to be expressed in the Cedar Mesa setting. In this section we examine the determinants of settlement patterns in general, and the alternatives possible on Cedar Mesa. The intersection of the Cedar Mesa possibilities and the ideas presented earlier will be used to investigate the settlement patterns of the three occupations in the following chapters.

<Settlement Pattern Determinants>

Settlement type and location, in general, can be seen to be dependent on subsistence and non-subsistence cultural factors. Subsistence factors include proximity to resources, possession of tools and facilities to process those resources, and the presence of domestic facilities designed to maintain the community. We will show that even aspects of defence can be thought of as part of the subsistence strategy.

Non-subsistence cultural factors, such as ritual behavior and ideological factors such as community arrangement and ideological competition are those that cannot be empirically tied to subsistence. In principle, at least, subsistence

related factors can be tested by checking for correlation with environmental factors believed to be important to subsistence tasks; the non-subsistence factors are a very different kind of problem. How then, are we to discover what are the important determinants of settlement type and location on Cedar Mesa?

The answer is relatively straightforward. Upon examination non-subsistance aspects appear not to be very important at the smallest scale and most simple human societies while they are extremely important in large scale societies. Since the prehistoric inhabitants of Cedar Mesa were, at best, small scale agriculturalists closely tied to their farming activities given the settlement distribution demonstrated in Chapter IV, subsistence factors should dominate settlement type and location. The residuals, as it were, that cannot be explained by economic/subsistence activities would be the phenomena that should be examined for possible ideological factors. We are suggesting a hierarchical procedure where ecological/subsistence factors will be tested against the observed settlement variations with the aspects that pass through this filter examined using appropriate cultural hypotheses.

The general location model minimizing efforts and effects of distance, has been described previously and will not be repeated here. Instead the general subsistence factors and their predicted effects on location will be described. The

most important <a priori> subsistence activity is that of agriculture. Thus sites, both small and large, ought to be usally located with respect to <arable land> which is the next section of this chapter. <Wild Food> and other natural resources should also be important, and ideas related to their use are discussed under that heading. The reasons why <defense> can be treated as an aspect of subsistence strategy are also discussed below. <Non-economic cultural factors> are discussed in the final section of this chapter. This order of settlement determinants is in rough order of their expected overall importance in creating the settlement patterns observed on Cedar Mesa.

<Arable Land>

Agriculture was a very important subsistance activity for the prehistoric Anasazi. Because of this we expect that most sites on Cedar Mesa will be located adjacent to or directly upon arable land, that is land suitable for the maize-bean-squash horticulture of the Pueblo Indians. Arable land cannot be defined on the basis of nearby archaeological sites, however, since other resources also affected settlement location. What is needed are independent measures of arable land. This will be approached in a hierarchical fashion, examinig first the criteria necessary for successful agriculture followed by an evaluation of how these prerequisites might be met for maize cultivation on Cedar Mesa. We will then list specific expectations for different

climatic conditions.

The fundamental prerequisites for plant growth include sunlight, nutrients, moisture and length of growing season. Since maize is descended from a tropical plant, Teosinte (Beadle 1980), it is adapted to the lesser hours of sunlight found during summers in the lower latitudes. Teosinte will not flower in the long summer days found in more northerly parts of the United States. So sunlight may be over abundant rather than in short supply. Evidence from maize plots on Cedar Mesa and from Schuster's (1981) work in the Delores River valley of southwestern Colorado, suggests that depletion of soil nutrients does not appear to be an important limiting factor, at least in the short run. The soil in general has enough nutrients to grow at least several crops of maize under the low density planting found in dry farming. After a number of years, however, soil nutrients may be become depleted, causing a shift in field location. At this point we have no information on whether this is a factor or if different soil types vary in this characteristic. Sunlight and nutrients, then, are treated as givens on Cedar Mesa. The other two factors, moisture and length of growing season, are critical to Cedar Mesa agriculture. Both of these are minimal for maize horticulture today on much of the Colorado plateau, and turned out to be critical for our test plots and for Schuster's. Moisture will be examined first.

<Moisture>

Rainfall farming. Direct precipitation comes during the growing season in the form of monsoon rains. As in much of the west the amount of precipitation on Cedar Mesa is directly related to altitude. While these thundershowers tend to be localized, today only the higher elevations on Cedar Mesa come close to regularly having sufficient rainfall for successful maize growth. If the soil moisture for the later part of the maize growing season is dependent on the summer monsoon rain and if the amounts of rainfall during the Anasazi occupation were similar to those of today, only the higher elevations on Cedar Mesa should have been practical for rainfall farming. The summer monsoon does not arrive until sometime in July, far too late to initiate plant growth as maize must be planted in May or early June to complete its growth before the fall frosts. Therefore, plant growth during the first portion of the growing season must depend on moisture stored from the winter precipitation. As demonstrated earlier, there is a definite spring drought on the northern plateau so direct precipitation in the spring is unlikely and certainly cannot be depended upon.

Storage capacity and exposure are the two important factors for capturing moisture from the winter. The storage factor is relatively straightforward as only deep soils have the capacity to store much water. Most soils on Cedar Mesa consist of sandy loam, so storage capacity is controlled simply by soil depth, either to sandstone bedrock or to an

impervious caliche horizon. Deep soils are capable of storing moisture from the winter despite the draw down by surface evaporation and by plant transporation. Deep soils also have the capacity to store monsoon rains if they are not torrential. Thus a few long, gentle summer rains, would provide sufficient moisture in areas of deep soil. Where shallow soils exist, the lack of storage capacity means that regular rain would be necessary for successful agriculture, even if the spring drought could be avoided.

While not as obvious, exposure is also important in soil moisture storage. Northeast exposures tend to hold snow longer. This is due to the southwest concentration of sunlight during the winter and spring months resulting in the northeast slopes having less thermal input from the sun and more snow from drifts piled up by the prevailing southwesterly winds (Erdman, Doublas and Marr 1969). As a consequence soil on northeast slopes are fully charged later in the spring, thus providing more moisture for maize during the spring drought. Soil moisture measurements by Erdman, Douglas and Marr (1969) indicate this is empirically the case on Mesa Verde. This factor was apparently well understood by prehistoric inhabitants on Mesa Verde, because 75% of the farming terraces located on Wetherill Mesa talus slopes have northeast exposures and almost all of the more extensive "contour" terraces are on northeast facing slopes as well (Erdman, Douglas and Marr 1969:58).

In sum, when combining the two aspects of rainfall and soil moisture storage, for farmers using rainfall dry farming techniques the most arable land should be found on northeast facing slopes, relatively high in elevation and with deep soils. Erdman, Douglas and Marr(1969) argue that the northeast slopes do not seem to be cooler or to lack in sunlight during the growing season, perhaps because of the usual summertime pattern of clear mornings and cloudy afternoons.

Monsoon Water Collecting Strict rainfall dry farming, however, is not the only possible agricultural strategy. Increased amounts of water can be delivered to the farm plot in the monsoon season by planting in areas where runoff from a catchment collects. This strategy can be divided into three main types, sheet wash farming, flood water farming and slickrock rainfall collecting.

Sheet Wash Farming This strategy is a compromise procedure practiced in areas that ought to have sufficient rain for rainfall farming. Fields are located either in a small broad drainage, or at the foot of a hill to collect the sheet runoff from an immature or very localized drainage. This system probably works best with short but torrential rains which run off rapidly. Some kind of spreader dam to slow the water flow might be expected on fields planted on slopes.

Flood Water Farming When relying on this technique, a

significant portion of the summer moisture for the crop comes from floods which originate at a higher elevation catchment located some distance from the field. This farming technique might be considered to have two possible subtypes based on whether fields are located atop mesas or along canyon bottoms.

Canyon bottom farming utilizes alluvial patches in the canyons. Direct rainfall is not relied on as much as floods from upstream and nearby mesa-tops. Deep soil is still necessary to store moisture from the winter and between floods. Dams might also be expected as part of this method. Mesa-top floodwater farming might be carried out on the sagebrush flats just before drainages entrench into deep canyons. One might expect a quantity of moisture from direct rainfall, but not as much as in the highest elevation areas. Floods still should occur at relatively regular intervals because of the large upstream mesa-top catchments and some kind of dam to slow down and spread the water over the plot might again be expected. This kind of farming could only be practiced if erosional arroyos were not present. Today, both the lower sagebrush flats and the canyon bottoms have large arroyos making these practices impossible.

Slickrock rainfall collecting consists of locating a field below a slick rock area rather than along a drainage track. When rain occurs there are rapid and large runoffs from the barerock because of its almost total lack of storage capacity. This strategy uses the immediate catchment and so is limited

to areas of at least moderate rainfall. Deep soil is again needed to store the winter moisture. Probable areas where this strategy could be used include the colluvium in the upper reaches of canyons and at the foot of high elevation mesa-top remnant escarpments. This strategy resembles the sheetwash farming strategy outlined above and might be considered a variant of it.

<Exteme Water Storage>

Despite all the above strategies, if the monsoon rains are too late, the crops are likely to fail, either because the plants have died in the drought or because they have failed to mature before the fall freeze. As an alternative, it is possible to mitigate this possibility by planting crops, as some Hopi do, next to sand dunes. Dunes can be charged by winter precipitation and release the moisture slowly over a long period of time, particularly if they sit on an impervious layer. This is a specialized form of rainfall farming possible in only a few areas on Cedar Mesa. Within the five sample drainages, sand dunes are limited for the most part to the lower elevation mesa-top portions of Hardscrabble and West Johns. A very few exist at the very lowest part of the North Road drainage as well. The only large dunes are in Hardscrabble, right at the edge of the survey area. Since sand dune areas are found only in the lowest elevations, such areas would be resistant to late freezes in the spring and early ones in the fall which would be more destructive at

higher elevations.

<Growing Season>

Today Cedar Mesa is not only marginal in precipitation but also in length of growing season for maize. Growing season length is compounded with amounts of precipitation since the higher, wetter areas, tend to have shorter growing seasons. Local topography such as cold air sinks are also important in determining length of growing season. Erdman, Douglas and Marr (1969) found very definite cold air sinks in canyons, while Schuster (1981) reports a similar problem with her experimental fields in the Dolores River Valley.

If the length of the growing season was critical for successful farming we would expect measures to mitigate this by planting in areas less susceptible to frost. The major macro-factor would be elevation, so fields would be planted at lower elevations, such as the sand dune areas mentioned above.

Local topography is another factor and cold air drainages, such as drainage bottoms, would be avoided. As Billings (1954) as pointed out for the Great Basin, temperature inversions account for the lower limits of pinyon-juniper zones as sagebrush is more cold tolerant. This temperature inversions in lower elevations is apparently a widespread phenomena in the Great Basin and it has been noticed, at least on occasion, on Cedar Mesa. The presence of sagebrush in low lying areas on Cedar Mesa may be in part the result of this factor. If this association of temperature inversion with the

sagebrush filled valleys is generally the case, and we think it is, then fields would be planted away from these areas if frosts were a problem.

If length of growing season were a problem, we would expect fields to be planted on ridge tops at moderate elevation and on colluvial slopes, to avoid cold air drainage and the colder, higher elevations. Flood water farming locations on drainage bottoms would be avoided with the possible exception of the deepest canyons, whose floors were far below the mesa-top. Sand dune farming, as indicated above, would also be a viable alternative.

<Summary>

I. With all the farming techniques arable land is always confined to deep soils.

II. If length of growing season is not a problem: 1.<Rainfall Farming> on high elevation ridges with a predominance of northeast exposures would be expected. 2. <Sheet Wash Farming> on high elevation ridge tops would occur. 3. <Flood Water Farming> in canyons and on mesa-top would be viable. 4. <Slickrock Rainfall Collecting> would be practical. 5. <Extreme Rainfall Storage> on low elevation sand dunes would protect against the late arrival of the monsoon.

III. If the length of the growing season is a problem: 1. <Rainfall Farming> on high elevation ridge tops, but lower than above should be possible. 2. <Flood Water Farming> would be possible in the lowest elevation canyon bottoms.

3. <Slickrock Rainfall Collecting> would be practical where it was not in a cold air drainage. 4. <Extreme Water Storage> farming in low elevation sand dunes should also be practical.

<Wild Foods And Other Natural Resources>

While the Anasazi were primarily an agricultural people, they also used nondomesticated foods. There is some debate as the importance of wild foods with suggestions that they were most important during Basketmaker II period and the late Pueblo III period (Hill and Hevly 1968). According to several investigators (Ford 1984, Bye 198) an important side effect of maize agriculture was the creation of new environments on current and abandoned fields. In these areas natural foods such as edible weeds and useful successional plants, as well as mammals such as rabbits and deer, were much more abundant than in adjacent undisturbed areas. While in some senses these resources can be considered as natural or wild foods, we will consider their exploitation on current or abandoned fields as part of the agricultural complex.

One reason for this consideration is that these concentrations result from agricultural activities and are difficult to separate from agriculture. For example, is a weedy chenopod whose leaves are used as greens and whose seeds are used as grain, which is tolerated, if not cultivated, in a maize plot a wild food or a domesticated one? Either way its presence in the cultivated field makes its part of the

agricultural complex. Another reason for considering this procuring of non-domesticated plants and animals on farm plots as "agricultural" is pragmatic, since they are taking place on agricultural fields, they have no locational or settlement pattern consequences separable from other more traditional agricultural activities. Finally, since many of these field activities not only occur at the same time and same places as the traditional agricultural activities, but also with the same tools, it would be difficult to separate these activities on the basis of tools. The use of natural foods located on present or past agricultural plots, then, is best considered as part of the agricultural procurement system in Flannery's (1968) terms.

While some wild foods occur in abundance on agricultural plots, all occur in other situations, and many only in these. Prehistoric Anasazi used wild foods away from fields and this use would have an effect on settlement patterns. If agriculture is as important as generally considered, we would expect the location of arable land to explain or predict the location of both habitation sites and those limited activity sites which were agricultural field stations. Wild foods, then would be considered in terms of residuals, habitation sites and limited activity sites that do not fit in with these agricultural expectations. The use of wild foods would be expected to have different locational effects on habitation sites than on limited activity sites.

According to the formulation first put forward by Plog and Hill (1971) limited activity sites ought to be located adjacent to or on the resources exploited. Multiple activity sites, on the other hand, would be located in a compromise position, minimizing the total distance involved with procuring a number of different resources. This perspective leads to the expectation that limited activity sites using wild food resources would be located immediately adjacent to them, while habitation sites would show only a minor trend at best, assuming that agriculture is the main subsistence activity. Locations of habitation sites ~~e~~affected by wild food then, might be best examined in the form of differences between temporal periods, rather than in terms of obvious synchronic relationships with wild food resources.

One way of evaluating the effects of wild resources on settlement patterns is to contrast sites located away from arable land with sites located upon or adjacent to arable lands. Sites that are positioned away from arable land can be examined in the "residual" sense discussed above. If most sites are located near arable land, the obvious interpretation is that most of the sites may be agricultural in function. Sites located away from arable land however, may have some other settlement factor involved. We can discover if this second group of sites ~~are~~ is related to natural food procuring by examining site location and artifactual assemblages. If these sites are located adjacent to resources which are

ethnographically important we can be fairly sure that they were located to exploit those resources. Examples of wild plant foods that are ethnographically important are Indian Rice grass, which is most abundant in lower elevation grassy areas, and certain sections of canyons which have abundant buffalo and service berry plants.

A potential problem to this approach is that sites might be located in areas were wild resources are common, yet not be functionally related to the resources. This can be checked, as least partially, by examining the artifact assemblage. If, for example, there is a class of Indian rice grass processing sites, ~~they~~ they should not only be located next to Indian rice areas, but also should have relatively homogeneous tool assemblages different from those found at agricultural field stations or habitation sites. The tool assemblage then, can be used to evaluate the existence of a separate function for a group of sites and perhaps indicate what function.

While sites located away from arable land clearly are not heavily influenced by agricultural activities, the converse is not necessarily true; sites located near or on arable land can be non-agricultural in character. A different procedure is needed to ferret out these kinds of site functions. One way of getting at this question is to examine the "residual" sites first, as outlined above. If there is a set of distinctive non-agricultural sites, one can check to see if there are any sites with similar artifact and feature composition within the

area of arable land. However, this procedure will not locate sites that are part of wild food procurement but located only in arable soil areas.

This "hidden" site class can be sought by examining the sites found in arable land in terms of tools and site facilities. Some of these may have distinctive non-field station tool profiles or local environments. Examples of artifact assemblages of non-agricultural functions are lithic reduction sites, which in earlier chapters we characterized by abundant cores, hammerstones, debitage and primary flakes, and hunting sites characterized by abundant bifaces and projectile points. Both of these site types also have specific locational expectations that differ from agricultural sites. Lithic resources in the northern part of Cedar Mesa are found in the canyons, while in the southern portions of the mesa they are located on the mesa escarpment (Keller 1982). Hunting sites elsewhere have been associated with "overview", the ability to overlook large parts of the surrounding terrain (Judge 1973 and Pokotylo 1978, 1983).

Notice that we have striven here to develop a procedure to get independent information to confirm the reality of different functions. This is one way to avoid the circularity of assigning a site a function based on its proximity to a resource, or conversely, to claim a resource is important because it is located adjacent to a prehistoric site.

It is clear that wild foods and other natural resources

not associated with farming, are "residual" functions in contrast to the agriculture system. The hierarchy is obviously first agriculture, then other resources. What remains after this process is not a "cultural" factor, but instead defense, which we will show can be clearly related to subsistence activities.

<Defense>

It may initially seem strange to argue that defence is part of the subsistence strategy, but we believe that good arguments can be made to consider at least certain aspects of defense in that manner. Defense here includes defense against theft, insects, rodents, as well as against other social groups. Dyson-Hudson and Smith (1978:36) have developed the view that "territoriality is a subject of resource-defense strategies, and resource-defense is in turn an aspect of subsistence strategies." We will first examine the underpinnings of this agrument and then discuss the implication for agriculturalists occupying Cedar Mesa.

Dyson-Hudson and Smith base their thesis on ecological theory, assuming that defense will occur where it yields a positive cost-benefit ratio and will not occur where the cost is too high. They point out that the cost-benefit ratio of a subsistence strategy is dependent on the distribution of resources with the important factors being predictability and abundance (Dyson-Hudson and Smith 1978:24). Predictability of a resource has both spatial and temporal aspects, with the

latter including factors such as the season of abundance. Resources whose availabilities are predictable are more apt to be defendable than those lacking this characteristic, since defending unpredictable resources results in lowered benefits. Likewise, resources that are abundant or occur in dense clusters can be defended efficiently, while sparsely distributed resources increase dramatically the costs of defense. Predictable and densely clustered resources then, are generally defendable and can ultimately result in territoriality (Dyson-Hudson and Smith 1978:26).

If one is uncomfortable applying a model derived from non-human ecology, similar, but less developed arguments have been made based on anthropological observations to explain the establishment of control over resources. Matson (1983) for example, developed a similar idea independently, and refers to other similar anthropological presentations. In these formulations predictability and abundance (using Dyson-Hudson and Smith's terms) are the key factors. Resources that are not abundant and predictable are not worth controlling or defending either in the natural world or within human societies.

Dyson-Hudson and Smith (1978) also show how defense and territoriality can be integrated into a subsistence model in their discussion of the Karimojong a people living in subsaharan Africa, one of the three ethnographic groups they discuss in detail. The Karimojong grow sorghum, a dense and

predictable resource, and spend considerable effort to protect it against animals and insect pests. Dyson-Hudson and Smith (1978:34) write that, "during the critical period when the grain is ripening, the cultivator and her kin take turns standing on platforms in the field from drawn to dusk, defending crops against birds and against people who might cut and steal the succulent stalks". Harvested grain is stored in individually owned granaries inside stockaded settlements, and is protected by ritual means or guards who are often old people. "Defense of crop resources against other Karimojong involves primarily social contraints and has a very low energy cost" (Dyson-Hudson and Smith 1978:34). Obviously, in other societies when social contraints do not work, defense against other people becomes a more costly affair and can be a major determinant of settlement location.

Defensive protection of resources then, can be thought of as an aspect of subsistence strategy and as a locational determinant to be weighed with other locational factors. Where defense of resources is not important or where defensive locations are correlated with locations of arable land, this would not be an important factor. On the other hand, where defense is important it may override other locational factors.

We can infer from this argument that stored crops and possible fields would be defendable resources on Cedar Mesa. If stored food was defended, we would expect graineries to be placed in inaccessible places or behind defensive works.

Defended fields might show evidence of associated lookouts, or be closely tied to larger sites.

While the Dyson-Hudson and Smith model incorporates resource defense into the subsistence strategy, personal defense is another distinct matter. Personal defense can be incorporated into the settlement pattern through the idea of "refuging" (Hamilton and Watt 1970). Refuging is defined as the rhythmical dispersal from and return to a fixed point in space(1970:263), which on Cedar Mesa would consist of a defended settlement. This kind of territorial organization is contrasted with radial packs, which forage in a single group, such as Savanna dwelling baboons. Refuging can only occur where it is economically feasible, that is, where daily travel time is not too extensive, and where the social group is large enough to make defense feasible. Hamilton and Watt (1970:Table 1) present some weak evidence that suggests refuging does not occur unless at least 10 adults are present. Refuging appears to be compatible with Dyson-Hudson and Smith's (1978) home ranges, which they suggest occur when resources are both predictable and scarce. In sum, a refuge system might occur where personal or resource defense is of the highest importance, or where resources are predictable and scarce.

Given this broadly based conceptual background, how can these ideas be applied to Anasazi agriculturalists occupying Cedar Mesa. It was noted above that resources which are dense

and predictable, either in quantity and/or seasonality are also defendable. Among agriculturalists, cultivated fields and stored crops fit this category. While arable land might be conceptually predictable and sparse, the fields themselves are not, so refuging ought to occur only as the result of defensive needs and not as a byproduct of resource density. In addition to potential defense of crops and stored foods defense of other resources (localized and abundant) may also occur. The only obvious candidates on Cedar Mesa are domestic water sources in the form of perennial springs.

Arable land on Cedar Mesa is dispersed widely over the landscape, unlike the Karimojong where it is limited to certain alluvial terraces. As a consequence sites should not be clustered in a few locations accessible to arable soil. Instead, a more dispersed settlement pattern is expected, reflecting dispersal of arable land.

Refuging, on the other hand, should result in a much more agglomerated distribution of population at a few large sites, which might have obvious defensive structures or have defensible settings. If defense is important, sites may be located in places far from optimal in terms of access to arable land.

Coupland (1980) has pointed out that defense of agricultural fields and defense of stored foods have different implications, concerning the nature of the threat. He argues that with internecine warfare, "safe periods" occur, for

example, when all members of a group are participating in critical subsistence activities, such as spring planting or harvest.

In the Southwest the major shared subsistence activity is maize agriculture, and as in the Karimojong, both ripe fields and stored grains can be considered dense and predictable resources. Labor is critical during the harvest, so according to Coupland's model, this should be a "safe" period if internecine warfare was occurring. If members of other groups not practicing maize agriculture were involved in raiding the Anasazi at this time, the harvest period would be an optimal time for raiding. On the other hand, stored crops would be available at other times during the year and need to be defended if internecine warfare was a characteristic of the regional population.

According to Coupland (1980) it should be possible to discern different types of warfare based on the types of defensive systems found in the archaeological record. Field defensive systems could be indicative of outside raiders, while defense of stored crops and an absence of field defenses could indicate internecine competition. The costs involved in refuging would indicate an even higher level of stress within the society. Close examination of refuges should indicate whether or not stored crops were particularly defended. If stored crops were not particularly defended within refuges, the economic basis of internecine warfare

assumed in this discussion was probably not present. Coupland's brief survey (1980) of Southwestern literature indicates a strong emphasis on defense during some periods of time. His survey of Cedar Mesa defensive sites, which will be reviewed in more detail in a succeeding chapter, indicates the protection of late Puebloan storage granaries. If these findings hold up for this volume's much more detailed inspection, we would expect for some periods, at least, habitation sites would not be located adjacent to arable land and instead would be found in defendable locations. Sites occupied during these periods would also be expected to show a consideration for defense of stored crops.

The other defensible resource, domestic water, might be combined with the above or be in a separate residual category. If it is a separate category, one could expect sites that did not show defense of stored foods, but are located adjacent to good springs.

<Conclusions>

While we expect the overwhelming determinant of settlement patterns to be the location of arable lands, there are also other possible factors. Within agriculture, there are a number of dimensions, depending on farming technique and climatic regime. Residuals would be inspected to discover other resources, whether wild foods, animals or lithic sources were correlated with site types. Particularly during the terminal Pueblo occupation there are a number of approaches

that could help to unravel the nature of conflict, if that was indeed a determining factor of settlement patterning.