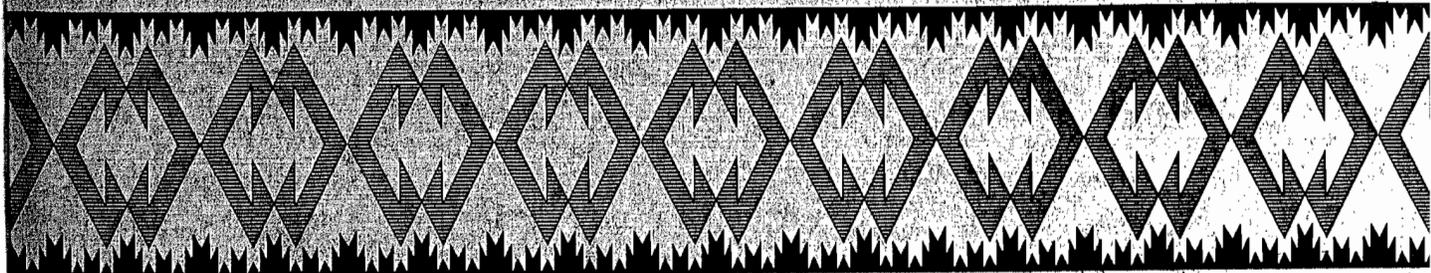


**MOBILITY AND SEDENTISM:
THE NAVAJO
OF
BLACK MESA, ARIZONA**

Belinda Blomberg



**SOUTHERN ILLINOIS UNIVERSITY at CARBONDALE
CENTER FOR ARCHAEOLOGICAL INVESTIGATIONS**

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knowledge of the present. Both the recent past and the distant past are equally important for archaeological study. Regardless of whether archaeologists are concerned with prehistoric or historic material remains, the behaviors which created these remains often transcend time-space systematics.

Ethnoarchaeology differs from historic archaeology in that it bonds together ethnographic observations of living societies and the materials studied by archaeologists. R. A. Gould, a major figure in ethnoarchaeology, believes that ethnoarchaeology does not study things so much as it looks at processes of behavior that will explain material remains in their ultimate discard context (1974:24). Ethnoarchaeology offers new methodological and theoretical means by which to study problems in historic and prehistoric archaeology.

Archaeologists have been long interested in problems concerning prehistoric herding economies. Studies by ethnoarchaeologists of historic pastoralists are relatively few. However, several archaeological studies of Navajo pastoralism have been attempted (James and Lindsay 1973; Elyea et al. 1979; McKeown 1980; Sessions and Williams 1979).

Many ethnoarchaeologists are finding that groups available for study no longer have pristine, traditional cultures. They must decide whether to study the archaeology of contemporary societies before, during, or after they have become enculturated by Western civilization.

Black Mesa Navajo culture has been greatly changed by Anglo-American influence. One aspect of this change is the Black Mesa Navajos' transition from a pastoral economy with high spatial mobility to increased sedentism with low or no spatial mobility.

Navajo Settlement Patterns

Literature about the Navajo has provided temporal information on mobility strategy change over time. Ethnohistorical data have been recorded since the late nineteenth century through the present. Subsequent debates on whether the Navajo are nomadic, seminomadic or semi-sedentary have ensued (Hoover 1931; Hill 1938; Jett 1978). Accounts of different mobility strategies for the Navajo must be considered in terms of the type of physical environment of the area being examined, the degree of dependence upon pastoralism, and the time period during which data were recorded.

Since the data collected for this study are from historic Navajo sites on northeastern Black Mesa, I am interested in the time period from 1868 to the mid-1950s. The date 1868 marks the incarceration of Navajos at Bosque Redondo (Fort Sumner); virtually no information is available on the occupation of Black Mesa before this time.

Russell (1980) in a preliminary compilation of an oral history and ethnohistory of northeastern Black Mesa, has documented settlement pattern change using Navajo literature and informant data. Data on

early seasonal movements in relation to Black Mesa can be found in the autobiographies of three Navajo men: Son of Old Man Hat, Old Mexican, and Frank Mitchell (Dyk 1938; Dyk 1947; Dyk and Dyk 1980; Frisbie and McAllester 1978). Russell found that in three of these autobiographies, Black Mesa was used only for winter habitation. Summer habitation was located off Black Mesa in the late 1800s and early 1900s.

Two different settlement patterns are discerned by the narrators of these autobiographies. The first settlement pattern was common if a camp planted agricultural fields. A camp is composed of individuals in one or more households (Russell 1980:9). If a camp was involved in agriculture, they returned to relatively set winter and summer areas to procure resources (Russell 1980:95). This transhumant pattern of moving herds to and from Black Mesa for different seasons of the year was characterized by camps returning to relatively set winter ranges and summer agricultural areas. If a camp did not plant agricultural fields and concentrated totally on pastoral activities, they did not return to traditional use-areas, but moved the herds to areas where optimal forage was available.

Frank Mitchell characterized the late 1800s settlement pattern:

The people moved around most of the time, herding their sheep from place to place. The people traveled mostly on horseback; when we moved with the sheep, we used horses to carry our belongings. The main reason for moving around like that was to look for new grazing ground and water for the sheep and horses. We never stayed at one place very long; we would spend a few days here and then move on to some other location (Frisbie and McAllester 1978:29-31).

Informants interviewed by Russell estimate that seasonal movements off Black Mesa in search of grazing areas had ceased by the 1920s (Russell 1980:98). Grazing areas are divisions of land under the 'control' of a family or families. These areas may have been used traditionally to graze herds and became recognized as 'property' soon after seasonal movements off the Mesa stopped.

Grazing areas are the land areas on which a family or a group of families claims the exclusive right to (1) graze their livestock on, (2) plant and grow their agricultural crops on, and (3) construct and live in 'permanent' habitation structures on (Russell 1980:7).

Settlement patterns exhibit extreme variation after the 1920s. However, a general trend towards the occupation of permanent habitation sites becomes evident. Permanent habitation sites are located within a grazing area, and livestock are grazed in areas around permanent habitation sites. Often temporary sheep camps or isolated corrals are built to herd livestock farther away from the permanent habitation site, on less-used portions of the grazing area. The trend towards increasing sedentary settlement is characteristic of the time period after the United States government initiated the stock reduction program of 1934. Informants living on Black Mesa remember the larger herd sizes, for sheep and goats were common prior to stock reduction (Russell 1980:43).

Anglo-American acculturation may account in part for the Black Mesa Navajo having adopted a more sedentary settlement pattern. However, this inquiry will not be directed towards understanding the external causes of sedentary behavior. This research is designed to examine ways that the process of sedentism might be manifested in a pastoral system of production, when some part of the group's livelihood is gained from the care of herds or flocks of domestic animals.

If a social unit possesses a dynamic adaptive system, the possibility of subsistence and/or settlement change over time or space always exists. To state that a system is adapting implies a rational determination of change and pressures are created to execute the change (Plog 1974:48). Plog acknowledges that although change may be due to conscious decisions, it is more likely that systemic change is a product of both the accidental and purposeful behavior of individuals within the system (1974:48).

The Process of Sedentism

The topic of sedentism is often discussed in ethnographic and archaeological literature with a specific emphasis on the transition from a hunting and gathering to agricultural mode of subsistence (Binford 1968, Cohen 1977, Harris 1978). Hunting and gathering is often equated with nomadic spatial movement and temporary settlements, while agricultural production is associated with very low mobility and permanence of residence.

Binford suggests that under conditions of increased sedentism one expects population growth because of the reduction of risks associated with mobility. Emigration is expected to coincide with population growth. This emigration would maintain optimal group sizes and densities on the landscape.

His hypothesis is that cultivation initially occurred in post-Pleistocene times in an area between adjacent environmental zones containing plant forms amenable to manipulation. Two sociocultural units with differing degrees of sedentism existed within this area, or 'zone of tension'. When emigrant colonies from the more sedentary group disrupted the equilibrium of the less sedentary group, selective pressures favored the development of more effective means of food production (e.g. agriculture) for both groups within the zone of tension (Binford 1968:251). There also were increasing pressures against immigration if no more effective means of food production were developed.

David Harris expanded and abstracted Binford's model by assuming that human populations normally do not outgrow their resources. However, populations do change their economic strategies. Economic strategies can change because of changes in the environment. Different economic strategies require that groups make different movements (as summarized in Cohen 1977:11).

A 'strategy' is defined as the combination of two or more acts carried out by an individual or group that result in the acquisition of

CHAPTER V

SUMMARY AND CONCLUSIONS

The basic goal of this research paper was to isolate material correlates of increasing sedentism. On a large scale, the Black Mesa Navajos' transition to a more sedentary subsistence-settlement system was viewed as a behavioral response to social and physical environmental change. I attempted to devise a model based on ecological concepts. The premise was that human mobility will vary in conjunction with the distribution of resources on the landscape. The two mobility strategies that were discussed considered human and animal responses to the different spatial and temporal distribution of resources. The hypotheses and test implications formulated were specific statements generated from the premise that residential mobility is dependent upon the strategy devised to procure resources. A specific change in strategy, where mobility is decreased, ultimately increases residential stability. Different levels of residential mobility result in archaeological sites of different form and content.

The Navajo residing on Black Mesa have traditionally been mobile people, highly dependent on pastoralism for subsistence and cash income. The hypotheses tested postulate that sedentism is initiated by the transition from a nomadic pastoral mobility strategy to a tethered pastoral mobility strategy. This transition is, in turn, related to a change in subsistence strategy. The choice of subsistence strategy is dependent upon resource availability. Finally, the transition from pastoral nomadism to tethered pastoralism may occur if optimal grazing and water resources can no longer be consistently predicted or utilized. A nomadic pastoral mobility strategy would ideally be practiced by groups with high residential mobility who do not maintain grazing area boundaries nor share essential resources. Navajos practicing a nomadic pastoral mobility strategy guide themselves and their livestock to more palatable or preferred resources. A tethered pastoral mobility strategy was characterized by low residential mobility; such groups would locate a central residence near at least one critical resource, such as water. Because Navajos return to this central place, the area within which they may graze their livestock is restricted. Overgrazing of the land occurs if the patches of pasture are fed upon continuously and are not allowed to recover. If the Navajo are restricted to a circumscribed area, preferred grasses become insufficiently available and sheep must graze on mixed pastures of grass and brush or stored fodder.

One indicator of overgrazing on the landscape is the deterioration of pure grass stands to mixed grass stands. The loss of palatable types is called 'selective destruction' (Landgraf 1924:54). Selective destruction could not be easily avoided if groups practiced a tethered pastoral mobility strategy. In the Black Mesa area, shrubs and young conifers replace pure grass stands. This succession increases the amount of land space needed to support the same number of ruminants.

Landgraf (1954) suggests an ideal situation for Ramah area land-use which could apply to Black Mesa land-use as well. He feels that

large-scale collective and rotated grazing over extensive blocks of range enables the vegetation to replace itself so that forage remains relatively stable and erosion is halted. He suggests that cattle and horses be allowed to graze freely in large fenced areas, while the more gregarious sheep and goats be herded over wide and rotated ranges in order to keep intensive grazing from injuring the vegetation in any one district. Essentially, Landgraf is suggesting a return to a pastoral nomadic mobility strategy.

A tethered pastoral mobility strategy occurring in combination with increasing population would be destructive to the environment. Population increases limit resource availability and create overlapping and bounded use of resource patches. Pastoralism will not continue to be chosen as a dominant subsistence strategy under conditions of environmental degradation.

This statement is not intended as a judgement of the superiority of one mobility strategy over another. In fact, the nomadic and tethered mobility strategies can be viewed as diametric, ideal-types. The Black Mesa Navajo have changed their mobility and residence patterns over time, and this research has indicated that these changes have been highly variable. The nomadic and tethered mobility strategies were only intended to model the process of sedentism. For the Black Mesa Navajo, these strategies do not describe a situation of reality. The creation of two abstract, opposing mobility strategies provided a foundation from which material correlates of sedentary versus mobile settlement patterns could be derived.

The results of hypothesis testing indicate that site formation processes change with different patterns of residential mobility. The variables that proved particularly sensitive to increasing sedentism over time were numbers of animal enclosures, storage, refuse, and auxiliary features, and the distance between hogans and ashpiles. These test results suggest that as the Navajo of northern Black Mesa became less mobile, they increased investments in certain intrasite facilities.

Many external factors initiated increasing sedentism among the Navajo. The purpose of this study was not to investigate the 'why' and 'when' aspect of the Black Mesa Navajo's change to a more sedentary subsistence-settlement pattern. Instead, concern was given to the material cultural patterning observable on historic Black Mesa Navajo sites.

However, the nature of the Black Mesa Navajo material culture change is better understood when viewed in a cultural-historical perspective. The results of the one-way analysis of variance tests presented in Chapter IV suggest that gradual changes in site content and spatial organization occurred from 1925 to 1940. The following section will address this time period in regards to changing mobility strategies on Black Mesa. I shall consider how the fluctuations in human and livestock populations may have initiated a more sedentary settlement pattern among the Navajo.

Several linked events contributed to the decline of pastoralism and pastoral mobility among the Black Mesa Navajo. First, transhumant

patterns of movement were not common after the late nineteenth and early twentieth centuries. Around the turn of the century, Navajo families spent the winter on Black Mesa and moved during the summer to lower elevations off the mesa (Jett 1978; Russell 1980). The transhumant movement was almost nonexistent during the period from 1910 to 1940 (Russell 1980:34). Russell notes that certain informants living on the Eastern Lease Area of Black Mesa remember that movements were discontinued by the 1920s (1980:98). The seasonal round was discontinued because other Navajos would not let Eastern Lease Navajos travel through their land. In some cases, they could not reach their summer grazing areas (1980:98). An increase in population and corresponding reduction of grazing areas produced a formal recognition of grazing area boundaries on many areas of the reservation during the 1920s (Sessions and Williams 1980:209; Ward et al. 1977:34).

A strategy resembling the tethered pastoral mobility strategy might have been gradually accepted during the 1920s as grazing area boundaries became recognized. This strategy might have been preferable to a nomadic strategy, requiring pastoralists to ignore boundaries or territorial distinctions in order to cover large areas or to move the residence over long distances. The Kirghiz study (Shahrani 1979), presented in Chapter II, also demonstrated that mobility strategies change when pastures increase in value, and summer and winter pastures become continuous rather than widely separated. This pattern seems to emerge for the Black Mesa Navajo.

However, many of the external factors affecting pastoralism on other parts of the reservation did not immediately affect pastoralism on Black Mesa because it is relatively remote (Downs 1964:19; Russell 1980:5). The 1940 division date is significant because it marks the time when subsistence strategy changed among the Navajo of Black Mesa.

The stock reduction program came to Black Mesa late, in the period from 1938 to 1940, after the people had experienced nearly a decade of rumors from other parts of the reservation and had been affected by the depression for nearly ten years (Downs 1964:19).

Downs (1964) makes a pertinent assessment of the effects of stock reduction on the Black Mesa Navajo economy. He claims that the appearance of the stock reduction program at the end of the depression created the first opportunity in nearly a decade for these Navajos to obtain cash. The opportunity to obtain cash may have acted as a stimulus to reduce livestock herds to sizes no longer adequate to provide both food and extra income. This crumbling livestock subsistence base forced Black Mesa Navajos to seek out other sources of income: "Since 1940 the people of Black Mesa can best be described as engaged in attempting to recoup lost livestock income and at the same time in seeking alternatives and supplements to livestock income" (1964:21). A trend towards the decreasing importance of livestock in the Navajo economy after 1940 is evident in the literature. Kluckhohn and Leighton comment that for the reservation as a whole approximately 58% of the total income in 1940 was derived from agriculture and livestock, while by 1958 only 9.9% of the total income was attributable to those sources (1974:56).

A negative correlation appears to exist between the deterioration of grazing land and the decline of income obtained from livestock. In the early 1940s, 20% of the reservation would support one sheep on less than 16 acres, while in 1958 only 5% would support one sheep on the same amount of acreage. Recent studies of Black Mesa vegetation find that all vegetation located on the lease areas is overgrazed, especially those areas surrounding the residential base (Espey, Huston and Associates, Inc. 1980:106).

A dramatic change occurred in the Navajo economy as the range became overgrazed and stock reduction was enforced. This trend does not seem to have reversed itself. It is probable that if mobility strategies have changed, this change has been reinforced by the decline in the economic viability of pastoralism. One conclusion to be made from the test results is that formation processes of Black Mesa Navajo sites undoubtedly began changing when mobility was restricted to sanctioned grazing areas. As these areas became overgrazed and mandatory reductions in livestock were imposed, a pastoral subsistence base was no longer possible.

The deemphasis on livestock as a primary source of income made the tethered pastoral mobility strategy more feasible and attractive to the Navajo. The tethered strategy allowed some family members to continue livestock raising, while other members sought wagework to supplement income obtained from pastoralism. Bailey (1980) comments that the extended family allowed for great care of livestock because responsibility for the animals rested with all the family members. After the 1940s, the daily herding duties were taken over by children and older individuals unable to obtain wage income. A daily return to the residential base is more likely when these age groups become responsible for the herds.

Sessions and Williams (1980) have seen this division of labor on southwest Gallegos Mesa. They comment that the young and the very old care for livestock, while the wage earning group is employed at least on a seasonal basis (1980:208). Russell (1979) notes this division of labor at Navajo agricultural field camps.

In this sense, the mobility strategy has become tethered because of the need for a true central location, or base of operation from which task groups might radiate and return to, in order to pool income or resources. The inability to depend on livestock as a primary source of income has forced the Navajo to settle down, protect family land holdings and share a small, group income, even if such income must be obtained from nontraditional sources. A distinction should be made between the sociocultural importance of livestock to the Navajo, and the amount of income which is derived from this subsistence source.

Today animal husbandry is still important to the families in the Eastern Lease Area. A great deal of labor is still involved with the care of domestic animals. Income from other sources, such as wage labor is channeled into the maintenance and expansion of herds, particularly cattle. The percentage of income from domestic animals, however, has declined substantially over the last forty years. While this is the case, animal husbandry activities still rank as

the most important single subsistence activity in the eyes of the Navajo residents (Russell 1980:53-54).

I would suggest, for the Black Mesa Navajo, that the fragmentation of the subsistence economy initiated a trend towards decreasing residential mobility. The transition from the pastoral nomadic strategy probably began slowly, in the late 1920s, when grazing area rights were becoming firmly established. The decline of the United States economy from the 1920s to the early 1930s also depressed the Navajo economy. The stock reduction program did not affect the relatively remote Black Mesa region until 1938 to 1940. Therefore, a very turbulent and difficult 20-year period (1920-1940) occurred for Navajo families traditionally dependent on pastoralism for subsistence. The diversification of the subsistence base to include wagework after 1940, as Downs suggests, may have brought upon the significant changes observable in the archaeological record, as well.

Often, change in settlement patterns is not observable in an archaeological context until that change becomes widely accepted. Russell found that mobility patterns changed after 1920 on Black Mesa. The majority of archaeological variables examined in this study began to change between 1925 and 1940. I would argue that residential mobility was decreasing during this time period. It is possible that after 1940, two permanent camps (one winter and one summer residence) per family were common. Since the 1950s, Black Mesa Navajos have become increasingly sedentary. Many families may have only one permanent habitation site, which is occupied during the entire annual cycle.

Comparative Arguments

In the past five years, a number of archaeologists have developed models concerned with Navajo environmental adaptations. Many of these studies (Reher 1977; Sessions 1979; and Elyea et al. 1979) are directed toward gaining a better understanding of Navajo uses of marginal environments. Winter (1980) notes that these researchers discuss the influence of certain aspects of the Anglo-American economy on the process of adaptation, such as the entry of trading posts, stock reduction, and wage labor. However, the factors of population growth, overgrazing and environmental deterioration are greatly emphasized in their models. In general, this is the argumentative character of this research paper, as well. The Navajo are viewed as functioning independently of Anglo-American culture, even though they have been influenced by it.

In contrast to such an approach, ethnographers and ethnohistorians of the Navajo propose that external political factors are as important as environmental factors and that both are interrelated (York 1976; Lamphere 1976, 1979; Kelley 1977). Many feel that the Navajo have a highly dependent and subordinate relationship with Anglo-American society. In fact, the Navajo tribe is incorporated and controlled as an internal colony of the United States, although it remains politically marginal (Lamphere 1976).