Tethered Nomadism and Water Territoriality: An Hypothesis

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Study of archaeological sites in the northern part of the State of Coahuila, Mexico, has produced evidence of a marked and long persistent selectivity in the choice of places for settlement. Many locations which at first appeared identical with those that were utilized had either been left completely unoccupied or had experienced an occupation sufficient to leave only the barest traces of the passing of man. This eclectic pattern of settlement calls for explanation and has led to the posing of a double question: what forces were efficient in this selectivity and what were the criteria for selection? A third and more theoretically complex problem involves the relationships between settlement pattern and other cultural, social, and natural aspects of this particular eco-system.

When it is realized that some of the sites were inhabited in the neighborhood of ten thousand years ago and that descendant culture in similar and even identical sites were in existence at the arrival of the Spaniards, these questions take on a broad significance. Their resolution could provide respectable time-depth for generalizations on cultural change and conservatism and upon the broad subject of cultural ecology, specifically upon the relationships between a stringent environment and such cultural spheres as social structure, political organization, demography, and possibly even cultural values.

With these questions and these potentials in mind, the present study was undertaken. It should be emphasized that the work has been a laboratory exercise, without recourse to checking in the field. The results are therefore to be considered tentative and in the nature of working hypotheses. It is my opinion that field testing, archaeological, ethnographical, social anthropological, and geographical would surely provide validation or refutation of some, or possibly all, of the ideas to be expressed here. The data are there for the collecting. It remains to be seen whether or not the inferences and derivative hypotheses appear to be worth this testing. They are presented now mainly for the purpose of exploring this latter issue.

Caves and rock shelters, which constitute the major prehistoric occupation sites in northern Coahuila, occur in great abundance throughout the region in both limestone and igneous formations. Those which were used for human habitation are found close to the mouths of canyons, at or near their juncture with the alluvial fans and the open pediment slopes, a geographic sub-region locally called the "monte". Another type of occupation occurred beneath the cliffs where canyons debouch upon the monte. Also at the mouths of canyons are found bedrock mortars, singly or in series, often in great numbers, and some times quite unassociated with sheltered habitation sites. Finally, in canyons which cut completely through or between mountain masses and which thus form links between two extensions of monte, favored sites throughout the entire canyon were utilized, not merely those at the mouths.

It seems justifiable to infer from these data that it was the monte which was the critical factor in the selection of continually, if not continuously, occupied sites. But what exactly was it about the monte that was so important to the aboriginal people? It could not have been shelter: there is no natural shelter on the monte. It could not have been water because, except in an inconsequentially few localities, there is no water on the monte. Factors of covert culture, such as religious beliefs or cultural values, may have been of influence, but in the present state of our knowledge, inferences as to such possibilities, however acceptable on *a priori* grounds, cannot be given empirical support. However, empirical support can be given to the inference that it was the presence of food stuff, particularly vegetal foods, that made the monte such a strong determinant in the ancient settlement pattern.

From the archaeological evidence, it is clear that the aboriginal people of northern Coahuila depended for their subsistence largely, or at least heavily, upon wild vegetal foods. Of these, the many desert succulents, agave, yucca, sotol, prickly pear, and the leguminous trees and shrubs such as mesquite, huizache, and huizachillo, provided the major part. It is characteristic of these plants that they ripen at different times of the year and that different stands of the same species tend to vary in their season of maturation. This circumstance put a premium on mobility but provided a relatively continuous food supply to those who could move about to follow the sequential harvests. Another factor which encouraged, even demanded, mobility was that many of these plants, especially the succulents, provide very little food-value per unit of consumption and thus require large harvests and bulk consumption. As a general rule, these plants grow in the largest and most efficiently harvested stands only on the monte. In the canyon systems and on the higher elevations of the mountain masses, they appear in smaller stands, often with long reaches of rough and barren terrain between, with the result that collecting there is much more tedious and much less productive. The net cultural result of all these natural features must have been to force the people into a highly mobile, nomadic way of life largely upon the monte and largely shunning the depths of the canyons and the higher elevations of the mountains. Their movements were

oriented principally parallel to, and along the flanks of, the mountains, and only rarely transversely into or through them.

On the other hand, the people could not shun the mountains and canyons entirely, because it was there, and only there, that dependable supplies of water could be found. Today in northern Coahuila, running water is virtually nonexistent, and this condition has obviously been true throughout the span of man's occupation of the region. Springs are scarce, often ephemeral, and confined to the mountains and canyons. In the past, catchment basins in the form of natural potholes scoured in the bedrock of canyon floors, presently called "tinajas" in the local idiom, undoubtedly provided the principle source of natural water throughout the region.

From these data, there develops a picture of the aboriginal people roaming the monte in search of large quantities of crude vegetal food, while at the same time having to remain within traveling distance of the watered mountains. Both the archaeological record and the ethnohistorical sources make it plain that aboriginally there was no device for the storage or transportation of water in any quantity larger than that which could be held in a folded prickly pear pad. Therefore the wanderings of the people in search of food were limited by the duration of small amounts of portable water, by their capacity for thrist, by chance finds of remnant rainwater upon the monte, or by combinations of these factors. This need to effect a compromise between two complementary domains of nature, the food-giving monte and the water-giving mountains, amply explains the consistent use of sites at the mouths of canyons: the place where mountain and monte meet.

But in order to be a resource in any realistic sense of the word, the water had to be dependable, that is to say, it had to be available at any and all times when the people had need of it. This, of course, depended in the first place upon natural conditions. But it also depended upon cultural conditions. Societies, even those as elementary as postulated for prehistoric Coahuila, cannot survive on the basis of perpetual, violent competition for vital resources, especially water. In some way the people had to know, when they arrived thirsty and depleted at a certain watering place, that they could find water and, even more importantly, make free use of it without having to fight or otherwise reassert proprietorship over it. There had to be some form of social control, not force, which assured recognition of ownership, or at least of the right of preemptive use of the water. Thus we can envisage a normadism demanded by the natural characteristics of terrain and food supply yet tied, like a picketed horse, to the locus (or loci) of socially recognized and socially sanctioned water rights. I have called this condition "tethered nomadism."

Even today in Coahuila, this preemptive right to water is acknowledged. I can remember several instances in which permission to refill storage tanks or to water stock was granted only very reluctantly and on a one-time basis. It was explained to me that the painfully finite water supply had to be preserved for the people living around it, since there was no prospect of replenishment for

many months, perhaps years. If the existing supply were to be exhausted, the people would have to leave, and there was no place for them to go because all other adequate supplies of water in the region were already preempted by other communities. Thus even today, the people and their activities remain tethered to water, whether it is natural or whether it comes from artificial empoundment, windmills, or other aspects of modern technology.

The territory over which any group could wander in search of food and return to the locus of its preempted source of water must have been rather well defined, either formally by social sanction or informally, even unconsciously, by practical considerations and natural pre-conditions. As I have argued in another publication (Taylor and Rul, 1961), I doubt that food supply imposed any significant limitations because, for people accustomed to desert food, the desert provides an amples supply, even an abundance, for those willing and able to roam. From the evidence already adduced that many habitable shelter-sites were unoccupied, it is clear that shelter was not a limiting factor either. The most acceptable hypothesis is, therefore, that the boundaries of each group's nomadism were determined by water, specifically the distance the group could safely travel from dependable water. This was a territoriality defined by the efficient distance of round-trip foot travel along radii extending in all directions from a point or points of socially preempted water. I have called this condition "water territoriality".

It should be pointed out in passing that there is nothing in the nature of the facts that would suggest mutual exclusiveness in regard to the territories thus defined. It is perfectly possible that territories based on different and even quite distant loci of water might have overlapped and that several distinct bands of people might have utilized certain gathering and hunting lands in common, while maintaining an exclusiveness of water supply.

Assuming that the above inferences have been reasonably drawn, let us look at some of the implications which tethered nomadism and water territoriality have for other aspects of the culture and eco-system of aboriginal Coahuila. In the first place, I believe that these concepts help to explain the archaeological evidence for a remarkable cultural conservatism which existed over the entire region for a period in excess of ten thousand years. While the people were collecting upon the monte, they would have been intensly occupied in making the most of their time away from water. They would have had little or no time for strictly social activities, even in those instances when several groups were in contact. It is difficult to imagine visiting, social dancing, games, or other purely pastime persuits under such conditions. Thus, cultural interchange would have been at a minimum, when it occurred at all. Even less inter-group exchange would have occurred back at the watering places. With water hospitality at a minimum (as it exists even today in Coahuila), any inter-group visiting at water sources would have been too intermittent and of too short duration to effect more than minimal cultural diffusion. In addition, unlike the situation in the Great Basin and other such marginal areas, there was ap-

parently no marked seasonality in the food resources of Coahuila, times when foods were totally out of season. Thus it seems improbable that there existed the custom of slack-season gatherings, such as were characteristic of life in the Great Basin and at which cultural interchange could occur with ease and intensity. Finally, influences from outside the immediate area would have been negligible because the preemption of water would have made it difficult, if not completely impossible, for foreigners to remain in the area long enough to effect any appreciable cultural impact.

A second implication is that the size and composition of the aboriginal social groups would have been strongly affected by the conditions of tethered nomadism. In the first place, the size of any group could not have been large, because the bodies of potable water were too small and finite and replenished at too infrequent intervals to support large groups of people and because it is highly improbable that any one group could have had rights to more than a minimal number of water sources. In the second place, one must presume that the need for constant movement, the scarcity of water and its very stinted, intermittent, and infrequent consumption, and the high bulk/low foodvalue of the major foodstuffs were not conducive to the physical welfare of either the very young or the very old. In support of this inference, preliminary evidence from our meager human skeletal materials indicates that infant death was accorded little attention suggesting that it was of common occurence. There are also indications that a very small percentage of the people reached old age or even advanced maturity. Although the data are not presently at hand, it would be interesting to know the relative mortality of males and females; it would be my prediction that female mortality would exceed normal expectation, because of the demands upon them, specifically the nurturing of the young under such ecological conditions.

We thus emerge with a picture of small bands of people consisting of more males and less females than expectable and having comparatively few individuals in the sub-adolescent and aged categories. They live largely in the open and occupy only a selected few sheltered sites that are conveniently located with respect to water and a collecting area on the monte. The bands are isolated and markedly conservative, having few culturally productive contacts with other groups, particularly with those form outside the immediate area. They exist by exploiting rather large tracts of land, but their nomadism is limited by the restrictions of a socially sanctioned preemption of small, finite, and often scattered supplies of water.

Finally and in conclusion, I believe that it is of particular significance that the pattern of life in present-day Coahuila is, to all intents and purposes, identical with that of the prehistoric past. There are differences to be sure, but these are merely modifications of basic and long-persistent characteristics, made through a hesitant and rather meager application of modern technology. The rural, rustic, "native" population (in contradistinction to the more sophisticated, more urbanized, more highly Europeanized people) still lives largely by abstrac-

tive and exploitive activities, in other words, by gathering. Many of the people are engaged in trapping animals for pelts, and the killing of wild animals for food is still a major resource. Guayule is collected for rubber, candelilla for wax, yucca and lechuguilla for fiber, sotol and maguey for destilling alcohol, bat guano for fertilizer. Most of these substances are processed by modern technology, but the basic approach as far as the local population is concerned is akin, if not identical, to that of the aboriginal gatherer. Even the mines and large cattle ranches, owned by persons with more typically modern orientation, are esentially exploitive and abtractive, not productive. It is true that, as a whole, the economic goals have been changed, in particular from those of Neolithic and pre-Neolithic self-sufficiency to those of a modern, money economy. But the basic orientation and specially the more fundamental methods by which the goals are achieved have remained the same.

On the other hand, food production is definitely an innovation and has replaced gathering as the major element in the subsistence economy. But here again the fundamental bases and orientations are virtually the same and are influenced, even controlled, by the same factors that affected the aboriginal economy. In the first place, the amount of cash-crop production is insignificant and is almost entirely locally consumed. The cash-crop production can, therefore, be viewed as a type of division of labor within the local, self-sufficient economy, rather than an example of true cash-crop economy. In the second place, agriculture of any sort can be practiced only in favored places where arable land is available and where modern techniques can provide sufficient quantities of water. But it is significant that land which is arable by any but the most modern techniques lies on the monte and is arable because it receives water developed and conserved from sources which are the same as those utilized by the aborigines. Actually, then, there has been no departure from the basic controls which operated in prehistoric times. Water has remained the one crucial and determining factor, and with few exceptions the water is the same as that which supplied prehistoric man.

Today, modern settlements are still more commonly located at the mouths of canyons or are clustered around the bases of the mountain masses where water can be developed or is naturally present in relative abundance. Often the people are found occupying caves and shelters where, inside, ancient pictographs attest the former presences of ancient man or where, outside, there are to be found quantities of prehistoric chipped stone artifacts. In other places, modern houses are built on ancient middens or against the very cliffs which sheltered an aboriginal campsite.

Today, the people have a strong ethno-centric and loco-centric bias. They know their own mountain and its surrounding monte, but they are surprisingly ignorant, even fearful, of other mountains and other people. They use their local resources but are hesitant to travel distances to avail themselves of the resources of other localities. This pronounced territoriality seems to be centered

on a sourcse of water as much as it is upon strictly social factors. It may be taken as a modern reflection of aboriginal conditions.

In closing, I wish to mention a point which I deem to be of the utmost significance. The culture of northern Coahuila, in any of its various modern aspects, cannot be considered the end-point of the aboriginal cultural continuum. It is most important to recognize that a well-defined break occurred between aboriginal cultural-history and the present-day cultural complex. The aboriginal population was wiped out, both physically and culturally, certainly by the beginning of the nineteenth century and probably before the middle of the eighteenth. Northern Coahuila was repopulated from the south and southeast by Spaniards and indians having non-local cultural backgrounds. How, then, are we to account for the remarkable similaritics in the two historically disparate eco-systems? May we assume that the stringency of the environment has been such that only one eco-system, once started and once consolidated, could compete and survive? In this instance, how much should we attribute to environmental determinants and how much should we attribute to Goldenweiser's concept of the limitation of possibilities? How are we to view the situation with respect to Leslie White's ideas concerning energy and evolution? There certainly has been a vastly increased amount of energy available: then why not the evolution? Comparing the cultural orientations of the ancient and modern peoples of Coahuila, what can be said of the influence of habitat upon human value systems: are the apparent similarities coindicental, are they due to environmental determinism, or is there a *tertium quid* as yet unrecognized?

I have asked what I believe to be several rather pertinent and significant questions. I am confident that the answers lie in Coahuila. The data are there. The work toward their elucidation is yet to be done.