

An Archaeological Approach to Territoriality and Boundary Defense among Northern California Hunter-Gatherers

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An Archaeological Approach to Territoriality and Boundary Defense among Northern California Hunter-Gatherers

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Territoriality has long been examined from a geographic and economic standpoint. A brief overview of some of the theoretical and methodological approaches used in the analysis of hunter-gatherer territoriality is presented here. Ecological and organizational models are commonly employed in hunter-gatherer territory research, but often little is said about how territoriality affected interaction within and between territorial boundaries. The models discussed in this paper provide a theoretical base for studies of hunter-gatherer territoriality and boundary defense, and these models should be made explicit when studying hunter-gatherer prehistory.

In California archaeology, how territories and territoriality influenced prehistoric interaction and exchange between groups must be discussed. If territories played a part in the spatial and cultural organization of prehistoric peoples, then territoriality must have affected the ways in which people communicated and interacted within and across these boundaries. We should not assume that the archaeological record is territorially neutral. As a result, we need to incorporate hypotheses involving territorial behaviors into our research questions. For example, in regions where lithic materials were produced, exchanged, and consumed within the territories of spatially and culturally separate societies, the territorial behaviors are visible in the archaeological and ethnographic data. Ongoing research with the Glass Mountain Archaeological Project in northeastern California supports the utility of an approach that takes prehistoric territorial behavior into consideration.

Archaeological and ethnographic research offer clues to ways in which territoriality operated in the past. In particular, obsidian, with its chemically traceable composition and widespread availability throughout much of California, can be extremely useful for investigating these issues. Of utmost importance in this research is an awareness that territoriality is not just a geographic construct, but also a cognitive and social construct. We cannot maintain a territorially neutral view of the past, for to do so neglects the complexity of interactions in prehistoric societies. Instead, it is necessary to incorporate hypotheses involving territorial behaviors into archaeological research questions.

INTRODUCTION

Questions about how territoriality affected human interactions in the past are rarely made explicit in the archaeological research undertaken in California today. As part of a renewed interest in regional syntheses, largely resulting from extensive Cultural Resource Management projects, spatial territories are often assumed to exist when constructing prehistoric culture areas and subsistence rounds. However, the interactions across and within territory boundaries are rarely explored. Territory is a term used here to indicate the geographic or social confines that a human group controls or uses more or less exclusively, and territoriality is used to mean the behaviors utilized to defend or delineate a territory.

In California archaeology, how territories and territoriality influenced prehistoric interaction and exchange between groups must be discussed. If we assume that territories played a part in the spatial and cultural organization of prehistoric peoples, then territoriality must have affected the ways in which people communicated and interacted within and across these boundaries. We should not assume that the archaeological record is territorially neutral. Hypotheses regarding territories and territorial behavior should be an integral part of our research questions.

In regions where lithic materials were produced, exchanged, and consumed, territories and territorial behaviors are often visible in the archaeological and ethnographic data. Ongoing research with the Glass Mountain Archaeological Project in northeastern California demonstrates the usefulness of a territorially explicit approach to prehistoric behavior.

BACKGROUND

Hunter-gatherer territoriality in the anthropological literature is defined in two distinct, yet interrelated ways. It is a social relationship, defined as “the attempt by an individual or group to affect, influence, or control people, phenomena, and relationships, by delimiting and asserting control over a geographic area” [SACK 1986: 19]. And it is an economic relationship, defined as a “cognitive and behaviorally flexible system which aims at optimizing the individual’s and hence often also a group’s access to temporarily or permanently localized resources, which satisfy either basic and universal or culture-specific needs and wants, or both, while simultaneously minimizing the probability of conflicts over them” [CASIMIR 1992: 20].

These are not mutually exclusive definitions of territoriality. As a social relationship, territoriality provides the infrastructure that may ensure access to localized resources. Territoriality is a cognitive construct that serves as a way to distinguish “us” and “them” [DYSON-HUDSON and SMITH 1978: 21-41]. In this way, territoriality defines a group and dictates who is entitled to the rights and privileges associated with group membership. The inverse of this statement is also true: territoriality defines who may be considered a foreigner, imposing restrictions on those who fall within this category.

There are three main components of territoriality. First, territoriality includes geographical or social boundaries. These boundaries may be flexible and changing [TILLEY 1994: 54], but some form of boundary is present in all types of territoriality [SACK 1986: 21]. Second, territoriality must contain a form of communication. In order to distinguish boundaries, groups

or individuals must have a means of communication, either through signs, signals, gestures, or language. Third, territoriality incorporates a means of boundary defense. Sack states that this includes "enforcing control over access to the area and to things within it, or to things outside of it by restraining those within" [SACK 1986: 22]. Boundaries may be maintained through non-aggressive cultural means, or through aggressive techniques such as defensive posturing, warfare, or the threat of spiritual harm [ANDREWS 1994: 82-83; CASHDAN 1983: 49; WILLIAMS 1982: 147].

Territoriality is a spatial concept and a cognitive construct, and distinguishes those within the group from those on the outside. Ethnographic and archaeological data indicate the presence of territoriality among hunter-gatherers of the present and the past, though much of this research has focussed on territoriality as an optimal strategy for resource procurement. Archaeology must look beyond spatial organization and subsistence optimization, and consider how territoriality affected interactions across boundaries.

THEORETICAL APPROACHES

Ecological Models

Some of the earliest theoretical approaches to territoriality dealt with animal ecology, and focused on group spacing and resource use [CARPENTER and MACMILLAN 1976; PETERSON 1975: 55]. Ecologists who were interested in these topics examined ways in which territoriality provides the holder with a reproductive advantage. Their research demonstrated that while territoriality provides increased access to and availability of resources by eliminating competition, it also requires additional energy expenditures for boundary maintenance and defense [CASHDAN 1983: 48].

Ecological models of human territoriality offer one approach to the study of hunter-gatherer territoriality and boundary defense. Traditionally, ecological theories of human territoriality were loosely based on subsistence models of the New Archaeology. Most importantly, Binford's [1982] forager/collector model and the ethnographic documentation of seasonal rounds in the subsistence practices of the Nunamiut Eskimo suggested that hunter-gatherers lived and gathered resources from within a cognitively defined area, or territory. However, the presence of a defined area of exploitation does not necessarily indicate the existence of territorial behaviors.

Site catchment analysis, as presented by Vita-Finzi and Higgs [HIGGS and VITA-FINZI 1972; JARMAN *et al.* 1972; VITA-FINZI and HIGGS 1970], is yet another way of looking at subsistence practices and territory from an ecological perspective. They argue that mobile and sedentary peoples exploit resources from within a spatially defined site catchment area, or economic territory. The catchment area is determined by distance: a radius of two hours' walk for hunter-gatherers, and one hour's walk for agricultural peoples [JARMAN *et al.* 1972: 63]. Thus, taking into account differences in terrain and accessibility, a spatial territory, or zone of economic exploitation, is constructed based on walking time and distance from a centrally located village or home base. In site catchment analysis, the resource availability and economic productivity of this territory is calculated to answer questions about changes in economy, subsistence, and

population. Site catchment analysis has strongly influenced studies of territoriality, optimal foraging, and subsistence, for its calculations of potential exploitation zones and traveling distances for both mobile and sedentary peoples.

Optimal foraging theory has also had an influence on theories of territoriality. Optimal foraging theory, in its strictest sense, suggests that humans will exploit resources that provide the maximum amount of energy for the minimum amount of effort [BETTINGER 1987]. Territoriality from this perspective requires a balance between the costs and benefits of territorial behaviors, including the energy expenditure of territorial defense and the guaranteed access to resources within defined territorial boundaries. The investigation of territoriality in archaeology today is both an expansion and modification of these earlier ideas.

Obviously, one of the principal factors in an ecological approach to human territoriality is the role of resource availability. There appears to be an inverse relationship between territory size and resource density, however resource predictability is also a factor. As predictability and density increase, there is a subsequent increase in territoriality [DYSON-HUDSON and SMITH 1978: 21-41, SHACKLEY 1990: 55]. This relationship is apparent in Figure 6.1. Predictability

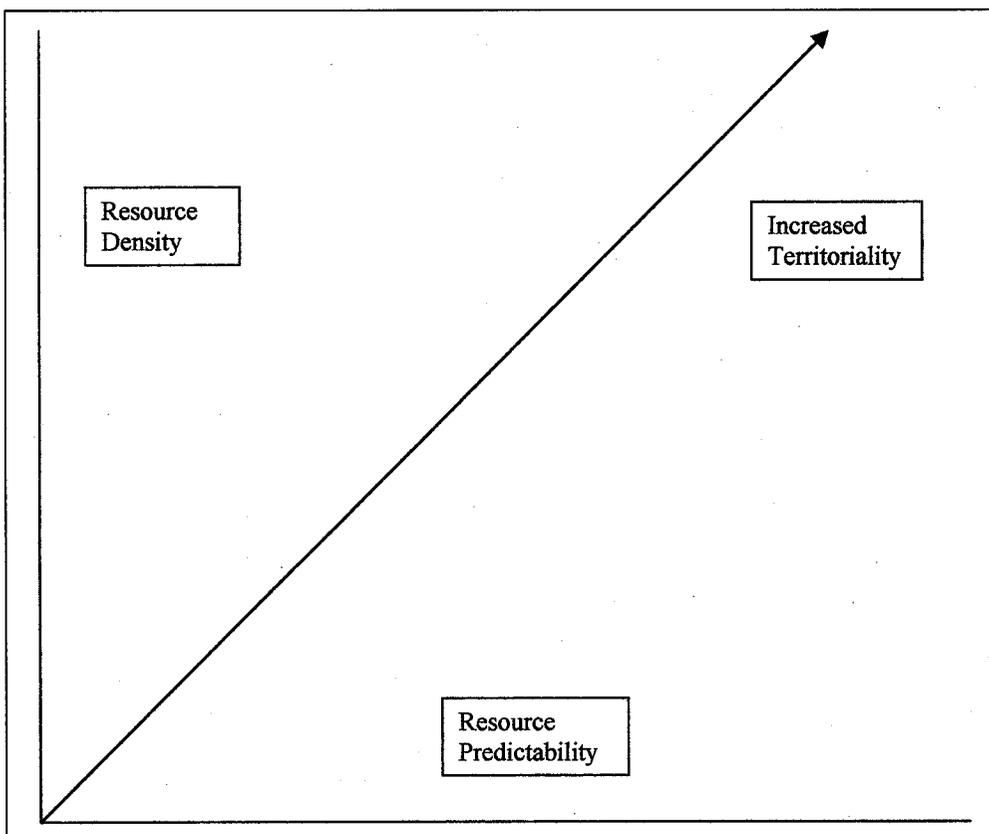


Figure 6.1 Resource availability and territoriality [DYSON-HUDSON and SMITH 1978; SHACKLEY 1990: 55].

refers to “the confidence that can be placed in predictions of the abundance of resources at some time or times in the future” [CASHDAN 1983: 48]. If food or other resources exhibit predictable availability, it may be economically worthwhile to defend that patch of resources. Resource density is also a necessary requirement for territoriality, and by extension population resource ratios must show high resource availability for the population size [ROSENBERG 1998: 655]. Large territories may be difficult to defend, and the costs of boundary defense, even if active warfare is not a factor, may be prohibitive when resources are sparsely scattered within the territory [SHACKLEY 1990: 52].

Ecological theories suggest that there is a minimum threshold of predictability and density of resources required for boundary defense to be economically feasible, as suggested by optimal foraging theory. However, this minimum threshold may be considerably lower in humans than in animals. Humans, as creative, intelligent beings, devise lower-cost methods of boundary defense, which may allow for territoriality in regions exhibiting sparse and unpredictable resources and consequently larger territories.

Organizational Models

Organizational models comprise a second theoretical approach to the study of hunter-gatherer territoriality and boundary defense. There are two types of organizational models, which address ways in which human groups maintain their territorial boundaries and exclude outsiders. These are perimeter defense and social boundary defense [CASHDAN 1983: 49; CASIMIR 1992: 10-11; SHACKLEY 1990: 51-52]. These models are not mutually exclusive, and both forms of defense may have been used by hunter-gatherers in the past.

Perimeter defense entails marking the perimeter of the territory boundary and controlling access. It occurs in areas of relatively dense and predictable resources [CASIMIR 1992: 11]. “Foragers of this group ‘look’ territorial... boundaries are advertised and marked, social units correspond to territory units, and there is usually little movement of individuals across territory boundaries” [CASHDAN 1983: 49]. In this model, territories are relatively small and boundaries actively defended. However, communication and aggressive threats may limit the instances in which conflict actually occurs, and non-aggressive means may serve to effectively maintain geographic boundaries [WILMSEN 1973: 5]. Monitoring territory perimeters may be the most costly aspect of boundary defense in this type of territoriality.

Social boundary defense entails defending the boundaries of the social group rather than the perimeter of the territory itself. “If resources are unpredictable and scarce, foragers control access with more or less delayed reciprocal altruism, not to the territorial space itself, but to the social group having rights to this territory” [CASIMIR 1992: 12]. In this model, groups maintain geographic boundaries by concocting elaborate greeting and trespass rules for outsiders who wish to enter a given territory, though territories are often large and difficult to defend. Instead, groups rely on communication, kin and trading networks, and reciprocal behavior to maintain territorial order. Societies that depend on social boundary defense may grant outsiders permission to use local resources, but expect to receive the same type of leniency in the future when they trespass on another’s property [CASHDAN 1983: 49-50]. Shackley argues that “honesty in these relationships may be maintained simply by economy. The holders of the

territory often have the most updated information on the various resources, and visitors can save energy simply by asking the 'owners' during the greeting ceremonies" [SHACKLEY 1990: 58].

Finally, the degree to which potential trespassers will cooperate with the cultural constructs of social boundary defense techniques may depend on a number of issues. First, interlopers must consider the possible value of information regarding unpredictable resources, which may be obtained during social greetings. Second, they must contend with the probability and consequences of detection if they are discovered trespassing without permission. Third, uninvited guests forgo potential exchange and social relationships that are an additional benefit of contact [KELLY 1995: 194]. It appears that there are distinct advantages in seeking permission to trespass, rather than venturing into a territory unannounced [CASHDAN 1983: 51]. It is thus better to "play along" with territorial constructs than to attempt to circumvent physical or social defense mechanisms.

Organizational models of territoriality and boundary defense address issues of territory maintenance. Perimeter defense and social boundary defense exist on a continuum of action, with outright hostility on one extreme and permissiveness in the context of social etiquette on the other. Additionally, these two models are not necessarily mutually exclusive (see Figure 6.2), for hunter-gatherer societies may employ each technique based on changing situations of resource availability and social context [CASIMIR 1992: 16].

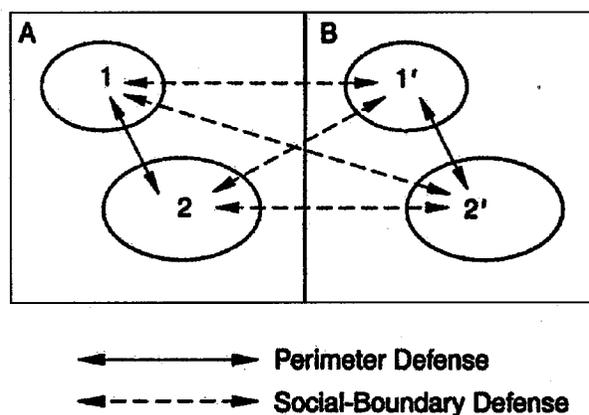


Figure 6.2 Perimeter defense and social boundary defense [from KELLY 1995: 201].

Territoriality and Subsistence and Social Organization

A third theoretical approach to the study of territoriality deals not with the construction or maintenance of the territory itself, but with the effects of territoriality on subsistence and social organization. Specifically, territoriality and population pressure have been used as a causal factor in the emergence of sedentism. Rosenberg states that "sedentism is a process of territorial compression that operates in contexts where the costs of territorial defense outweigh those of intensified exploitation" [ROSENBERG 1998: 653]. When hunter-gatherer mobility requires that

groups move to another area, other groups may displace them, and take over their temporarily abandoned territory. Rosenberg argues that the need for territorial defense rises with increasing population pressure until it reaches a level in which it is of greater advantage to remain in one area, exploiting what resources are available there, rather than to move elsewhere and expend time and energy defending a larger territory [ROSENBERG 1998]. In this model, territoriality, specifically the increased costs of boundary defense in situations of competition for resources, results in a greater degree of sedentism among hunter-gatherers. Rosenberg proposes that groups will choose to defend smaller territories and exploit secondary resources rather than maintain larger and less cost-effective territories and a mobile lifeway [ROSENBERG 1998].

The three approaches discussed above outline basic tenets of some of the issues addressed in studies of hunter-gatherer territoriality. Additional research on territoriality, which has focussed on modern pastoralists and industrial societies [see MIRGA 1992; RAO 1992; SACK 1986: 92-127; TAYLOR 1988] is beyond the scope of the present paper. However, we can further examine hunter-gatherer territoriality by discussing the methodological approaches used by anthropologists and archaeologists.

Ethnography and Archaeology

Ethnographers have documented territoriality among modern and historic hunter-gatherers, thus providing insights into the techniques used to maintain and defend territorial boundaries [ANDREWS 1994: 65-93; PETERSON 1975: 53-68; WILLIAMS 1982: 131-153]. Such studies have contributed to models of perimeter defense and social boundary defense as discussed above. Two studies will be elaborated here - first, of Australian Aborigines and second, of the Akulmiut in western Alaska.

The Yolngu inhabit the northeastern portion of Arnhem Land in Australia. They are traditionally a hunting and gathering group, and even in modern times they have relied heavily on wild food resources despite their transition to permanent settlements in the early 1970's [WILLIAMS 1982: 133]. The Yolngu maintain territories based on kin ties and clan membership. Boundaries are marked by natural features including elevation changes, landforms such as hills or cliffs, streams or drainages, and vegetation or soil changes. Territories to the Yolngu do not necessarily exist for the sake of excluding outsiders, but instead they "use boundaries to express varying categories of rights, both of users and owners. To request permission to enter, camp on, or use the resources of a particular area is to acknowledge the right of the owners to accede or deny permission" [WILLIAMS 1982: 148]. However, permission is almost always granted. In this instance, territories do fulfill an economic function in that by restricting access, even nominally, owners are capable of protecting resources within their boundaries. Despite this, territories also fulfill a social function by creating and maintaining ties between neighboring groups through contact, and by suggesting an "us" and "them" relationship between kin groups and clans. Additionally, the social boundary defense utilized by the Yolngu serves to reinforce and create power relationships across territory boundaries [WILLIAMS 1982: 131-150].

The territory of the Akulmiut of western Alaska was maintained and defended differently than that of the Yolngu. The Akulmiut are a hunting and gathering Alaskan Eskimo group inhabiting the tundra between the Yukon and Kuskokwim Rivers. Their subsistence rounds are

characterized by aggregation in large settlements in the winter, and dispersal to seasonal camps in the summer. These practices continued through to the 1980's, when ethnographic research was conducted, despite the increased permanence of local villages [ANDREWS 1994: 65-73]. Territorial boundaries correspond to geographic features, which are given significant names to communicate their role as boundary markers and, in some cases, to serve as a reminder of a battle between the Akulmiut and non-Akulmiut trespassers. Territories for the Akulmiut serve to define areas of exclusive resource use, and protect dense and predictable resources such as seasonal fish runs and waterfowl. Boundary defense occurs through outright warfare and aggressive posturing, although they also utilize other mechanisms such as "ceremonies, naming conventions, kinship, and place names to communicate and delineate a unique area and its resources" [ANDREWS 1994: 92]. Additionally, Akulmiut advertise their identity through easily recognizable clothing and kayak designs. Ceremonies also serve as a means to create and reinforce Akulmiut community, and further emphasize the difference between members and non-members of the society. Therefore, through a combination of perimeter defense and social boundary defense techniques, the Akulmiut maintain and protect territorial boundaries. Costs of defending the territory are offset by advantages obtained through exclusive use of the territory and its resources. Andrews states that "even with dispersed or mobile resources, predictability and abundance of critical food resources secure these hunting-gathering people with a nearly guaranteed food supply, contributing to a territorial system of land and resource use" [ANDREWS 1994: 93].

As the two examples cited above illustrate, ethnographic studies have revealed territoriality and boundary defense practices in modern hunter-gatherer societies. Both perimeter defense and social boundary defense can be seen in practice within a single society. It is now possible to project this research into the past and look at the archaeological record for evidence of prehistoric hunter-gatherer territoriality. Two examples are summarized here; the first traces the role of petroglyphs in marking territorial boundaries [BOUCHET-BERT 1999: 27-46], and the second shows how the sourcing of materials can reveal cultural and territorial boundaries in Northeastern California [LUHNOW 1997].

Bouchet-Bert reanalyzed archaeological data from a large petroglyph site in the Great Plains to determine its potential role as a boundary marker for the ancestors of the modern Blackfoot Nation. The site is located within ethnographically recorded Blackfoot territory, and the petroglyphs are situated in a highly visible manner. The petroglyphs are realistic representations of warriors displaying military paraphernalia such as bows, arrows, and shields [BOUCHET-BERT 1999: 43]. Previous interpretations of this site had suggested a spiritual meaning for the petroglyphs or concluded that they were depictions of hunting or battle prowess [BOUCHET-BERT 1999: 28]. However, Bouchet-Bert maintains that this site marks a territory boundary, and the depictions serve to intimidate the enemy and discourage trespass [BOUCHET-BERT 1999: 43]. His conclusions are based on ethnographic data, site location, and the subject matter of the petroglyphs. In this situation, the petroglyphs are a form of aggressive posturing and a threat to possible interlopers, and document boundary defense in prehistoric times.

Prehistoric territoriality has also been investigated by using obsidian source data to detect a prehistoric territory boundary in Northeastern California. This research is an excellent example of how territorial information can be obtained by synthesizing Cultural Resources Management

data. Luhnnow used X-ray fluorescence analysis of obsidian to track sources and dispersal, and was then able to delineate a boundary between the Gumatwas and Kokiwas bands of the Modoc Nation [LUHNOW 1997]. At the time of contact the Modoc occupied the far northern portion of California and their territory included southern Oregon. The ethnographically recorded Gumatwas territory included the area around Tule Lake and the Medicine Lake Highlands. This entire area contains a number of high-quality obsidian sources. The territory of the Kokiwas was located near Clear Lake and Blue Mountain, which contained another tool quality obsidian source. Luhnnow calculated the percentages of Blue Mountain and Medicine Lake Highlands obsidian sources in the archaeological assemblages of sites located near the ethnographically recorded boundary between the two bands. She found that there was a significant difference in the assemblage composition on either side of the boundary line. The Kokiwas Modoc were using Blue Mountain obsidian for most, and in some instances all, of their stone tool requirements. The Gumatwas Modoc utilized Medicine Lake sources, including Glass Mountain, Grasshopper Flat, Lost Iron Wells, Cougar Butte, and East Medicine Lake sources [LUHNOW 1997: 158-175]. Luhnnow concluded that despite the Modoc's traditionally mobile hunting and gathering lifeway, they respected territorial boundaries and primarily exploited resources within their own territory.

It is interesting to note that the boundary Luhnnow investigated is between two small bands within the Modoc Nation rather than between vastly different cultural groups. Kin affiliations and cultural ties certainly crossed this territorial boundary, yet the Gumatwas and Kokiwas Modoc were still largely respecting a defined spatial boundary between the two [LUHNOW 1997]. In this study and in similar research conducted in California addressing the distribution of chemically traceable artifacts [BETTINGER 1982: 103-127; HUGHES and BETTINGER 1984; LYNEIS 1984], archaeological assemblages can be used to infer territories as they existed prehistorically.

Archaeological research is also just beginning to address the role of the cultural frontier in interaction and exchange between different cultural groups [LIGHTFOOT and MARTINEZ 1995], and the ways in which territories form [ZEDEÑO 1997]. These new foci may help us understand the ways in which bounded, territorial societies first created boundaries, and then interacted and exchanged goods, information, and people across them.

GLASS MOUNTAIN ARCHAEOLOGICAL PROJECT

The Glass Mountain Archaeological Project forms the basis of my dissertation research. This research is ongoing, and the current data and conclusions are only preliminary. In this research, my interest in territoriality is explicitly incorporated into the research questions and project design. One of the goals of the Glass Mountain Archaeological Project is to investigate how territories and territorial boundaries may have affected the procurement and exchange of obsidian bifaces, and how this information can be used to identify the prehistoric knappers who worked at Glass Mountain.

Glass Mountain is located in Siskiyou County, California, within a volcanic formation known as the Medicine Lake Highland. The place was a primary source for tool-quality obsidian, which was used prehistorically for the manufacture of ceremonial bifaces and projectile points. These were traded to the California coast and are found archaeologically in

ceremonial and burial contexts [HUGHES 1978]. The obsidian flow is only approximately 900 years old [USGS 2000]. Although it is a relatively common source for large obsidian bifaces, X-ray fluorescence data indicate that Glass Mountain obsidian is rare in utilitarian contexts. It makes up approximately 5% of the obsidian found archaeologically from temporally relevant sites in the area around the source [BUSBY *et al.* 1990; DELACORTE *et al.* 1995; MIKKELSEN and BRYSON 1997; MORATTO 1995]. Glass Mountain obsidian appears to be used prehistorically for large biface production, and little else.

Ethnographic and archaeological investigations at Glass Mountain offer initial data with which to formulate questions involving territoriality in prehistory. Obsidian bifaces are recorded ethnographically as important regalia displayed during the White Deerskin Dance among the Yurok, Hupa, Tolowa, and Karok. Additionally, bifaces were used by the Shasta, Chimariko, Wiyot, and Wintu, outside the context of the White Deerskin Dance [KRDEBER 1925, 1957]. Prehistorically and during early historic times, extensive trade networks served to link the obsidian sources of northeastern California to coastal peoples.

Both ethnographic documentation and obsidian sourcing data indicate that Glass Mountain was a major source for black obsidian used to manufacture the bifaces discussed here [HUGHES 1978, 1982; DAVIS 1961: 15; GOLDSCHMIDT and DRIVER 1940: 120]. However, there is some discrepancy in the ethnographic literature as to who actually manufactured the bifaces. Davis [1961: 15] attributes obsidian exchange to the Shasta and Achumawi. Voegelin suggests that bifaces were manufactured by interior tribes, in this case the Eastern Shasta and the Karok, and traded to the west [HUGHES 1978:54]. Goldschmidt and Driver state that “no Hupa remembers seeing any other Hupa make these flints [bifaces], though some have seen a Karok man make them” [GOLDSCHMIDT and DRIVER 1940:120]. Finally, Kroeber (see Figure 6.3) places Glass Mountain within the ethnographic territory of the Modoc [1925]. To summarize much of the ethnographic literature however, the Karok are the most frequently cited as the producers of the large obsidian bifaces from Glass Mountain [GOLDSCHMIDT and DRIVER 1940; HUGHES 1978].

In light of the existing ethnographic and archaeological data, several potential hypotheses must be assessed:

1. Did the Karok procure the obsidian to make bifaces and manufacture them at the quarry? And if so, did the territorial behaviors of the Modoc restrict access to this raw material source?
2. Alternatively, did the Modoc grant the Karok permission to procure and manufacture bifaces of Glass Mountain obsidian?
3. Did the Karok procure obsidian at Glass Mountain, but manufacture bifaces within their own territory?
4. Or, did the Modoc manufacture bifaces and trade them to the Karok, who in turn traded them to coastal Nations?

Ethnographic data offer potentially the strongest support for the first hypothesis. Hupa informants claim to have witnessed Karok flintknappers making bifaces [GOLDSCHMIDT and DRIVER 1940: 120], though there are discrepancies with this record. Applying theoretical models

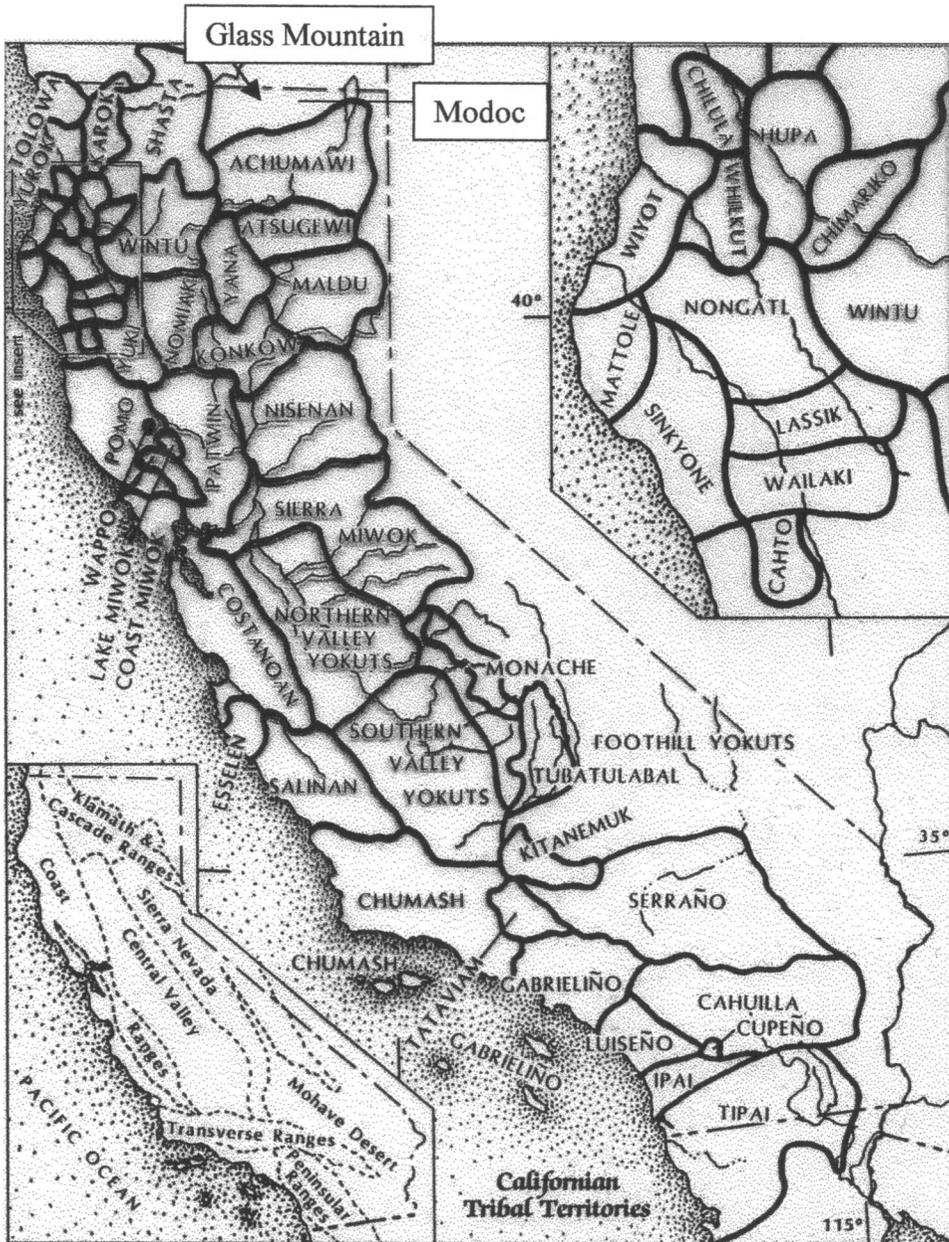


Figure 6.3 California Territories [after KROEBER 1925].

of perimeter and social boundary defense addresses both the first and second working hypotheses. If the Modoc actively employed perimeter defense strategies, the Karok may have surreptitiously procured obsidian from Glass Mountain. Northeastern California was a relatively sparsely populated region in prehistory, and the Karok may have entered Modoc territory undetected. However, this scenario seems unlikely. The Modoc maintained a reputation for aggressiveness and hostility towards neighbors, according to the ethnographic record. In fact, they were known to raid neighbors for slaves during the early historic period [MURRAY 1959]. If perimeter defense was practiced, interlopers contended with the probability and consequences of detection if they were discovered trespassing without permission [KELLY 1995: 194], and it may have been easier and safer to merely request permission to enter.

In the second hypothesis, social boundary defense may have been employed. Karok flintknappers may have retained special permission to trespass in order to procure and manufacture large bifaces in Modoc territory. If social boundary defense was practiced in addition to or instead of active perimeter defense, the Karok may have used the Glass Mountain obsidian source with Modoc knowledge and permission. In this scenario, Modoc control of Glass Mountain and the social boundaries of the Modoc Nation remained intact. There is scant evidence to support or falsify this hypothesis, except for the ethnographic accounts of Modoc interactions as cited above. However, in a parallel example, Luhnnow's [1997] research (see above) indicates that individual bands of the Modoc retained almost exclusive use of obsidian sources within their territories. Presumably, restrictions on obsidian procurement by outsiders such as the Karok would have been even more extreme.

To address the third hypothesis, we must seek archaeological evidence of biface production in Karok territory. So far, archaeological evidence to support biface manufacture in Karok territory has not been found. Glass Mountain obsidian appears to be extremely rare in debitage assemblages west of Glass Mountain. Instead of Glass Mountain obsidian, most of the obsidian found archaeologically is made up of Grasshopper Flat/Lost Iron Wells sources, which are located only a few miles from Glass Mountain [BAKER *et al.* 1990; BEVILL and NILSSON 1996]. Although the lack of evidence does not necessarily falsify this hypothesis, an alternative explanation can be offered to explain obsidian procurement at Glass Mountain.

The final hypothesis suggests that instead of Karok obsidian procurement and biface manufacture, the Modoc may have been knapping bifaces within their own territory, and then trading them to the Shasta or directly to the Karok, who then exchanged the bifaces with coastal peoples like the Yurok or Hupa. Archaeological evidence offers strong support for this hypothesis.

During the 2000 field season, in excess of 200 surface units in 12 individual sites were examined for biface thinning flakes, core reduction flakes, and unidentifiable flake fragments or shatter. Biface thinning flakes were defined based on strict adherence to the following characteristics: lipped and faceted platforms, multiple and directional dorsal flake scars, and a diffuse bulb of percussion. General core reduction flakes were defined by an absence of biface thinning flake characteristics, yet with a visible striking platform present. Unidentifiable flake fragments included distal flake fragments, flakes with crushed, missing or otherwise obscured platforms, or non-directional shatter containing few flake characteristics. In these three categories, biface thinning flakes formed approximately 11% of the total analyzed assemblage,

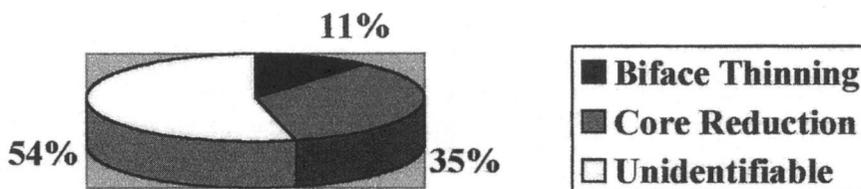


Figure 6.4 Debitage assemblage for Glass Mountain surface units.

core reduction flakes made up 35%, and unidentifiable flake fragments or shatter comprised the remaining 54% (see Figure 6.4). If anything, biface thinning flakes are underrepresented in these percentages due to the strict definition of biface thinning flake employed during analysis. Many flakes, which appeared to be biface thinning flakes but contained crushed or missing platforms, were categorized as unidentifiable fragments.

The archaeological evidence suggests that the knappers spent a considerable length of time at the quarry, and reveals that they did not feel threatened in Modoc territory. Additionally, bifaces of this type are found, though rarely, at other sites within the ethnographically recorded territorial boundaries of the Modoc [SAMPSON 1985]. Finally, Luhnnow's research [1997] indicates that individual bands of the Modoc retained almost exclusive use of obsidian sources within their territories, and it is possible to presume that restrictions on obsidian procurement by outsiders such as the Karok were even more extreme.

The suggestion that the Modoc, and not the Karok, manufactured obsidian bifaces at Glass Mountain is contrary to the ethnographic reports. Due to the Modoc's reputation for hostility and aggression, the Karok would have been reluctant to spend extended periods of time at Glass Mountain. Instead, we would expect the Karok to reduce obsidian nodules to manageable-size preforms and take them away to be completed elsewhere. This behavior is not apparent at Glass Mountain. Instead, bifaces were knapped to the final stages of manufacture at the quarry. Over 230 large bifaces and biface fragments were observed during surface reconnaissance, and biface thinning flakes make up a relatively large percentage of the obsidian debitage found at the quarry.

The evidence presented here strongly favors the fourth working hypothesis: that Modoc flintknappers manufactured bifaces at Glass Mountain. I maintain that the Karok were not making bifaces as suggested ethnographically, but were only the final middlemen in a long, down the line exchange system that served to transport Glass Mountain bifaces from Modoc producers, across territorial boundaries, to Coastal Nation consumers. The ethnographic reference to Karok biface production may merely be an artifact of early 20th Century fieldwork practices, including interviews with coastal nation Elders.

By considering prehistoric territories and territorial behaviors explicitly, archaeological research is capable of addressing a wider range of questions. The Glass Mountain Archaeological Project offers just one example of the utility of such an approach in formulating alternative hypotheses about prehistoric peoples.

CONCLUSION

Archaeological and ethnographic research offer clues about ways in which territoriality operated in the past, and obsidian, with its chemically traceable composition and prehistoric availability throughout much of California, offers a unique medium through which to investigate these issues. Of utmost importance in this research is the awareness and explicitness of prehistoric territoriality. If we, as archaeologists, take territories and territoriality not as just geographical constructs, but also as a cognitive and social construct, we may gain new insights into prehistory. If territories played a part in the spatial and cultural organization of prehistoric peoples, then we must assume that territoriality affected the ways in which people communicated and interacted across these boundaries. We cannot assume that the archaeological record is territorially neutral. Incorporating hypotheses involving territorial behaviors into our research questions will significantly broaden our perspectives.

This paper has provided a brief overview of some of the theoretical and methodological approaches used in the analysis of hunter-gatherer territoriality, and argues for a territorially explicit approach to hunter-gatherer archaeology. Ecological and organizational models are commonly employed in hunter-gatherer territory research, but usually little is said about how territoriality affected interaction within and between territorial boundaries. The models discussed in this paper provide a theoretical base for studies of hunter-gatherer territoriality and boundary defense, and these models should be made explicit when studying hunter-gatherer prehistory. We cannot maintain a territorially neutral view of the past, given the archaeological evidence for territorial behaviors in prehistoric societies.

Future research in conjunction with the Glass Mountain Archaeological Project will hopefully provide additional information regarding the role of territoriality in the obsidian exchange networks of northern California. The study of territoriality and boundary defense combines cognitive, social, cultural, and economic aspects of hunter-gatherer behavior, helping archaeologists and anthropologists achieve a more holistic view of the functioning of hunter-gatherer societies in the past and present.

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BIBLIOGRAPHY

ANDREWS, Elizabeth F.

- 1994 Territoriality and land use among the Akulmiut of Western Alaska. In E. S. Burch, Jr. and L. J. Ellanna (eds.), *Key Issues in Hunter-Gatherer Research*. New York: Berg. pp. 65-93.

BAKER, Suzanne, Hugh G. WAGNER, and Dwight SIMONS

- 1990 Archaeological Excavations at CA-Sha-479 and CA-Sha-195, Whiskeytown Unit, Whiskeytown-Shasta-Trinity National Recreation Area, Shasta County, California. Report prepared by Archaeological/Historical Consultants for the National Park Service, Western Regional Office, San Francisco, California.

BETTINGER, Robert L.

- 1982 Aboriginal exchange and territoriality in Owens Valley, California. In Jonathon E. Ericson and Timothy K. Earle (eds.), *Contexts for Prehistoric Exchange*, New York: Academic Press. pp. 103-127.
- 1987 Archaeological approaches to hunter-gatherers. *Annual Review of Anthropology* 16: 121-142.

BEVILL, Russell and Elena NILSSON

- 1996 Archaeological Investigations at CA-Sha-559, Whiskeytown-Shasta-Trinity National Recreation Area, Shasta County, California. Report prepared by Mountain Anthropological Research and Dames and Moore.

BINFORD, Lewis R.

- 1982 The archaeology of place. *Journal of Anthropological Archaeology* 1: 5-31.

BOUCHET-BERT, Luc

- 1999 From spiritual and biographic to boundary marking deterrent art: a reinterpretation of writing-on-stone. *Plains Anthropologist* 44(167): 27-46.

BUSBY, Colin I., James C. BARD, Raymond J. DEZZANI, Karen M. NISSEN, John M. FINDLAY, Robert M. HARMON, and Michael R. FONG

- 1990 OTH-B Cultural Resource Program Site Testing: Modoc National Forest. Basin Research Associates. Prepared for U. S. Forest Service, Alturas, California. On file at Modoc National Forest.

CARPENTER, F. L. and R. E. MACMILLAN

- 1976 Threshold model of feeding territoriality and test with a Hawaiian honeycreeper. *Science* 194: 639-642.

CASHDAN, Elizabeth

- 1983 Territoriality among human foragers: ecological models and an application to four Bushman groups. *Current Anthropology* 24(1): 47-66.

CASIMIR, Michael J.

- 1992 The dimensions of territoriality: an introduction. In M. J. Casimir and A. Rao (eds.), *Mobility and Territoriality*. New York: Berg. pp. 1-26.

DAVIS, James T.

- 1961 Trade routes and economic exchange among the Indians of California. *University of California Archaeological Survey Reports No. 54*, Berkeley: California.

DELACORTE, Michael G., Ronald L. RENO, Thomas D. BURKE, Stephen D. MIKESELL,
and Kelly MCGUIRE

- 1995 Report on Archaeological Test Investigations at 209 sites Along the Proposed Tuscarora Pipeline, from Malin, Oregon to Tracy, Nevada. Far Western Anthropological Research Group, Inc. Prepared for Tuscarora Gas Transmission Company, Reno. On file at Modoc National Forest.

DYSON-HUDSON, Rada and Eric Alden SMITH

- 1978 Human territoriality: an ecological reassessment. *American Anthropologist* 80: 21-41.

GOLDSCHMIDT, Walter R. and Harold E. DRIVER

- 1940 The Hupa white deerskin dance. *University of California Publications in American Archaeology and Ethnology* 35:103-142.

HIGGS, E. S. and C. VITA-FINZI

- 1972 Prehistoric economies: a territorial approach. In E. S. Higgs (ed.), *Papers in Economic Prehistory*. Cambridge: Cambridge University Press. pp. 27-36.

HUGHES, Richard E.

- 1978 Aspects of prehistoric Wiyot exchange and social ranking. *Journal of California Anthropology* 5(1): 53-66.
- 1982 Age and exploitation of obsidian from the Medicine Lake Highland, California. *Journal of Archaeological Science* 9:173-185.

HUGHES, Richard E. and Robert L. BETTINGER

- 1984 Obsidian and prehistoric sociocultural systems in California. In S. P. De Atley and F. J. Findlow (eds.), *Exploring the Limits: Frontiers and Boundaries in Prehistory*. BAR International Series 223, Oxford. pp. 153-172.

JARMAN, M. R., C. VITA-FINZI, and E. S. HIGGS

- 1972 Site catchment analysis in archaeology. In P. J. Ucko, G. W. Dimbleday, and R. Tringham (eds.), *Settlement Patterns and Urbanization*, Research Seminar in Archaeology and Related Subjects. England: Gerald Duckworth and Co. pp. 61-66.

KELLY, Robert L.

- 1995 *The Foraging Spectrum*. Washington D.C.: Smithsonian Institution Press.

KRDEBER, A. L.

- 1925 *Handbook of the Indians of California, Volume 1*. Bureau of American Ethnology, Bulletin 78.
- 1957 The world renewal cult of Northwest California. In R. F. Heizer and M. A. Whipple (eds.), *The California Indians*. Berkeley: University of California Press. pp. 404-411.

LIGHTFOOT, Kent G. and Antoinette MARTINEZ

- 1995 Frontiers and boundaries in archaeological perspective. *Annual Review of Anthropology* 24: 471-492.

LUHNOW, Glenda G.

- 1997 An examination of the ethnographic boundary shared by Gumbatwas and Kokiwas Modoc tribelets, Northeastern California. Unpublished M. A. Thesis, Sonoma State University.

LYNEIS, Margaret

- 1984 The Western Anasazi frontier: cultural processes along a prehistoric boundary. In S. P. De Atley and F. J. Findlow (eds.), *Exploring the Limits: Frontiers and Boundaries in Prehistory*.

BAR International Series 223, Oxford. pp. 81-92.

MIKKELSEN, Patricia J. and Robert U. BRYSON

- 1997 Culture Change along the Eastern Sierra Nevada/Cascade Front, Volume II: Modoc Uplands. Far Western Anthropological Research Group, Inc., Archaeological Research Services, Inc., and JRP Associates, Inc. Report prepared for Tuscarora Gas Transmission Company. On file at Modoc National Forest.

MIRGA, Andrzej

- 1992 Roma territorial behavior and state policy: the case of the socialist countries of East Europe. In M. J. Casimir and A. Rao (eds.), *Mobility and Territoriality*. New York: Berg. pp. 259-278.

MORATTO, M. J.

- 1995 Archaeological Investigations PGT-PG&E Pipeline Expansion Project: Idaho, Washington, Oregon, and California. Volume IV: Synthesis of Findings. Prepared by INFOTEC Research, Inc., and Far Western Anthropological Research Group, Inc. Prepared for Pacific Gas Transmission Company. On file at Modoc National Forest.

MURRAY, Keith A.

- 1959 *The Modocs and Their War*. Norman: University of Oklahoma Press.

PETERSON, Nicolas

- 1975 Hunter-gatherer territoriality: the perspective from Australia. *American Anthropologist* 77(1): 53-68.

RAO, Aparna

- 1992 The constraints of nature or of culture? Pastoral resources and territorial behavior in the Western Himalayas. In M. J. Casimir and A. Rao (eds.), *Mobility and Territoriality*. New York: Berg. pp. 91-134.

ROSENBERG, Michael

- 1998 Cheating at musical chairs: territoriality and sedentism in an evolutionary context. *Current Anthropology* 39(5): 653-681.

SACK, Robert David

- 1986 *Human Territoriality*. Cambridge: Cambridge University Press.

SAMPSON, C. Garth

- 1985 *Nightfire Island: Later Holocene Lakemarsh Adaptation on the Western Edge of the Great Basin*. University of Oregon Anthropological Papers, vol. 33.

SHACKLEY, M. Steven

- 1990 Early hunter-gatherer procurement ranges in the Southwest: evidence from obsidian geochemistry and lithic technology. Unpublished Ph. D. Dissertation, Arizona State University.

TAYLOR, Ralph B.

- 1988 *Human Territorial Functioning*. Cambridge: Cambridge University Press.

TILLEY, Christopher

- 1994 *A Phenomenology of Landscape*. Oxford: Berg

U. S. GEOLOGICAL SURVEY

- 2000 *Description: Medicine Lake Shield Volcano, Medicine Lake Caldera*. <http://vulcan.wr.usgs.gov/Volcanoes/MedicineLake/description_medlake.html>

VITA-FINZI, C. and E. S. HIGGS

- 1970 Prehistoric economy in the Mount Carmel area of Palestine: site catchment analysis. *Proceedings of the Prehistoric Society* 36: 1-37.

WILLIAMS, Nancy M.

- 1982 A boundary is to cross: observations on Yolngu boundaries and permission. In N. M. Williams and E. S. Hunn (eds.), *Resource Managers: North American and Australian Hunter-Gatherers*. AAAS Selected Symposium 67. Boulder: Westview Press. pp. 131-153.

WILMSEN, Edwin N.

- 1973 Interaction, spacing behavior, and the organization of hunting bands. *Journal of Anthropological Research* 29(1): 1-31.

ZEDEÑO, Maria Nieves

- 1997 Landscapes, land use, and the history of territory formation: an example from the Puebloan Southwest. *Journal of Archaeological Method and Theory* 4(1): 67-103.