

An Ethnoarchaeological Model for the Identification of Prehistoric Tepee Remains in the Boreal Forest

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ABSTRACT. The deliberate observation of contemporary northern hunters is one way of enhancing the interpretation of the archaeological record in the western Canadian Subarctic. This paper is based on six months of archaeological ethnography at a residential hunting camp in the mid-Mackenzie Valley, Northwest Territories, Canada, followed by archaeological excavations at the same camp of Dene hunters. The conceptual framework of this research is ethnoarchaeology, which encompasses the theoretical and methodological aspects of a comparing ethnographic and archaeological data.

A model for identifying tepee remains in the absence of surficial architectural remains is presented, based on the excavation of a currently occupied tepee at the hunting camp. This model consists of a number of attributes, ranging from a central hearth to subterranean storage facilities. The probability that tepee architecture is present increases with every attribute that can be documented archaeologically. The presence or absence of architectural remains is essential in the identification of site function, and site function is the key to reconstructing the regional settlement pattern in pre-ethnographic times.

There is a certain urgency in integrating first-hand accounts of northern hunters with the archaeological record, as opportunities to do so continue to dwindle with the passage of time and the ever-increasing pace of culture change in the western Canadian Subarctic.

Key words: ethnoarchaeology, archaeology, ethnography, archaeological methodology, Northern Athapaskan, Dene, Mackenzie Valley, Subarctic

RÉSUMÉ. L'observation délibérée des chasseurs actuels du Grand Nord est une des façons d'améliorer l'interprétation des données archéologiques dans la zone subarctique occidentale du Canada. Cet article s'appuie sur une étude d'ethnographie archéologique menée sur une durée de six mois, à un camp permanent de chasseurs Déné, au milieu de la vallée du Mackenzie, dans les Territoires du Nord-Ouest du Canada, suivie de fouilles archéologiques sur ce même site. Le cadre conceptuel de cette recherche est l'ethnoarchéologie, qui englobe les aspects théoriques et méthodologiques de la comparaison de données ethnographiques et archéologiques.

On présente un modèle pour l'identification de vestiges de wigwams en l'absence de restes d'architecture à la surface, en se fondant sur les fouilles d'un wigwam actuellement habité au camp de chasse. Ce modèle comprend un certain nombre d'attributs, qui vont d'un foyer central à des installations d'entreposage souterraines. La probabilité de la présence de l'architecture du wigwam augmente avec chaque attribut qui peut être documenté sur le plan archéologique. La présence ou l'absence de vestiges d'architecture est essentielle pour l'identification de la fonction du site, et cette dernière est la clé permettant de reconstruire le schéma de peuplement régional à l'époque pré-ethnographique.

On devrait sans trop tarder, intégrer les récits directs des chasseurs du Grand Nord aux données archéologiques, vu que les occasions de le faire deviennent de plus en plus rares avec le temps et l'accélération des changements dans la culture des régions occidentales du Canada subarctique.

Mots clés: ethnoarchéologie, archéologie, ethnographie, méthodologie archéologique, Athapaskan septentrional, Déné, vallée du Mackenzie, subarctique

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INTRODUCTION

It is fair to say that subarctic archaeology in Canada's western Northwest Territories is not held in high esteem. It might even be said that subarctic archaeology resembles a kind of servitude, in that it is dirty, difficult and, for the most part, devoid of awe. In addition to the obvious inconveniences of isolated locales, dense bush and biting insects, the vast majority of sites are astonishingly meagre in contents, with the exception of lithic debitage, or "dirty bits of rocks," as a prominent Africanist described one subarctic lithic assemblage.

This paucity of material remains is attributed to acidic soils and the perishable nature of skin, bone and wood, in combination with the materially unencumbered cultures of mobile hunters. The Dene valued simple ways of doing things; snares and deadfalls are classic examples (Clark, 1982; Ives, 1985:315).² As a result of poor preservation, these devices normally leave no traces in the archaeological record. In addition, most subarctic sites occur in places where deposition occurs at a trifling rate, if at all, which in turn is further complicated by disruptive post-depositional processes, such

as natural fires, which make dating an often impossible task (Ives, 1985:314-315). It is difficult to think of any other place in the world that imposes more constraints on the preservation and understanding of the archaeological record than does the western Canadian Subarctic. Although these factors account for the barrenness of the material record, they do nothing to enhance our ability to recognize, and ultimately assign meaning, to those sparse archaeological remains that endure. Doing this requires a consideration of methodology.

Enhancing the interpretive potential of the archaeological record has always been of concern to most subarctic researchers, and published ethnographies and ethnohistorical accounts have been used extensively for this purpose. The use of ethnographic analogies has caused less anxiety among northern workers than it has elsewhere in the world, mainly because the environment has remained in its largely pristine state since Paleo-Indian times (8000-6000 B.C.) up to the late 20th century (Clark, 1981:129).

On the basis of analogy, site surveys and minimal excavation in the Mackenzie Basin, coupled with even more modest publication of results, Dene prehistory in the western Northwest Territories is currently viewed as an aggregation

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²The languages spoken by the Indians of the western Canadian Subarctic belong to a language family known as Athapaskan. Those who speak the various dialects of the Athapaskan language are called Athapaskan or Dene (den áy). Dene is an Athapaskan word meaning "man" or "person." The Athapaskans of the N.W.T. have recently indicated a preference for the use of Dene, and this term is used throughout this paper.

of very temporary camps occupied by social units of hunters whose numbers and composition remain largely undefined (Helm, 1981; Maxwell, 1980). This impression has emerged in large part from sites that yield hearths, lithic debitage and few, if any, other signs of human endeavour, as well as from the odd stone tool found deep in the forest in association with little or nothing save some ash or faunal bone fragments. Donald Clark's (1986:11) recent list of the prehistoric site types that he encountered in the Great Bear Lake region is illustrative, as it includes isolated fire-cracked rocks, solitary flakes or implements, dispersed scatters of flakes and large cobbles that appear to be purposefully placed.

This impression of spartan mobility owes much to the ethnographic record, which chronicles the adaptive necessity of a fluid and flexible social organization to cope with the often scarce and dispersed food resources of the Subarctic. As a result, subarctic archaeologists have assumed an incessant, almost compulsive, mobility on the part of the prehistoric inhabitants, a mobility so pronounced that its effect upon the landscape is thought to be largely imperceptible. Dene ethnologists have certainly identified the importance of group dispersion, especially in the winter, but they also write of groups coalescing for hunting and fishing (Helm, 1981). Even group dispersion in aboriginal times is believed to have involved small groups of several nuclear families each or single family units. Recognition of this annual variation in group size appears to be mostly ignored in the subarctic archaeological literature, however.

In contrast, any practical experience with contemporary subarctic hunters quickly dispels the assumption that they move continually. Rather, they range far and near for varying lengths of time from a residential base camp. Continually moving camp, irrespective of whether the actual transport is done by women and children, comprises a male hunter's flexibility to respond to opportunity and to plan future activities. In fact, it has been observed that it is the hunters with the most secure base that are the most mobile (Binford, 1983:204). They can afford, materially and psychologically, to range more widely and freely.

If the ethnographic literature, the ethnohistory and contemporary observations of hunters do not support the notion of perpetual mobility, why is it that the archaeological perspective fails to reflect the variability in the size and distribution of Dene groups on the landscape? An obvious reason is the one discussed earlier — the differential preservation of the subarctic archaeological record. To this can be added the annual destruction of archaeological sites along subarctic river systems as a result of flooding and ice-rafting (Cinq-Mars, 1974). These natural processes are also responsible for the incomplete reflection of Dene prehistory encountered in the ground.

An additional obstacle to increased understanding might very well be the archaeologist's inferred sense of the past. The reasoning underlying this can be summarized as follows. The presence of stone tools or debitage, in association with ash, charcoal and/or fire-cracked rocks, is interpreted to represent a "camp" of some sort, where unknown numbers of hunters and their families carried out various activities. This explanation of these ephemeral remains is then used to verify or support the premise that gave rise to the interpretation of the archaeological data in the first place — that highly mobile, dispersed, prehistoric Dene left only fleeting glimpses

of their journey through time, largely in the form of non-diagnostic lithics. This is the so-called accommodative argument (Binford, 1981:81-83, 181). This inferred sense of the past, although ethnographically satisfying in very broad terms, may be imposing limits on our understanding of the past.

An alternative to prejudging the past is the development of methods for distinguishing those attributes of the archaeological record that elucidate the organizational properties of the culture under study. Ethnography has confirmed seasonal nucleation and dispersal in historic times, but what remains problematical is the identification of sites characteristic of larger and smaller groups of people in the prehistoric record. Larger groups are expected to require more raw materials and food and to create more refuse than smaller groups (Ives, 1985:316). In addition, larger groups would use more space and occupy more dwellings. Larger sites also reflect the existence of sufficient food supplies to support large aggregations of people temporarily.

There is also informant testimony from Dene hunters (Hanks, pers. comm. 1986) that indicates that men sleep out in the open when unaccompanied by women and children. In other words, the presence of dwellings means the presence of women and children, yet dwellings, women and children are largely invisible in the current interpretation of the prehistoric settlement pattern. It follows from this that the residential site or base camp was the means of accommodating social groupings other than male hunting parties, and hence was a key component of Mackenzie Basin prehistory. The presence of dwellings is a distinguishing feature of base camps of longer duration, as compared to more ephemeral special-purpose sites. Using ethnographic and ethnohistoric estimates of numbers of persons occupying them, dwellings are potentially important indicators of the relative size of residential populations.

Reconstructing Dene prehistory is dependent upon a fuller understanding of these factors. How did these peoples organize themselves on the landscape? To what extent did they gather in residential camps throughout the year and range out from there to hunt and fish? The atomistic collection of people on the run is certainly part of the story, but undoubtedly not the whole story. Ethnography indicates both seasonal nucleation and dispersion, and archaeologists need not uncritically accept either one or the other, any more than accept an inferred sense of the past without an inferential methodology (Binford, 1983:231-232).

Living archaeology, also called actualistic studies by Binford (1981:21-30), is a methodological approach that enhances our ability to understand more fully what we find in the ground, and hence assign meaning to it. The archaeological record in the boreal forest may, in fact, hold more clues to its formation than we currently perceive.

The logic of the actualistic study can be summarized as follows (Binford, 1981:26-30). If we can isolate causal relationships between things, then we have a strong justification for the inference of the cause from the observed effects. Demonstrating this relationship requires a contemporary setting, since there must be no ambiguity regarding the identity of the agent that produced the pattern or traces. In Binford's words (1981:26-27):

given such control in the contemporary world, and given that one is successful in recognizing and describing diagnostic

criteria between cause and effect, animal and footprint, then when one encounters the diagnostic footprint in the future the inference of the prior presence of the indicated animal may be considered an inference of high probability.

This reasoning is grounded in the fact that we must make uniformitarian assumptions if we are to understand the past.

The remainder of this paper is an attempt to apply an actualistic methodology to the recognition of subarctic tepes in the absence of aboveground architectural remains. Recognizing such remains is necessary to the understanding of site size and duration. The variability inherent in these two properties has been neglected or treated superficially in the reconstruction of Dene prehistory. This work builds on the earlier archaeological research of Don Clark (1982) and Jim Wright (1972, 1976).

THE ETHNOGRAPHIC CONTEXT

The archaeological work discussed in this paper is a continuation of a previously published archaeological eth-

nography (Janes, 1983) carried out at a hunting base camp about 150 km south of the Arctic Circle in Canada's western Northwest Territories (Fig. 1). The focus of study is a group of Slavey Dene who call themselves the Willow Lakers (K'lot'ine). Their name is taken from a lake situated north-northeast of Fort Norman, N.W.T., in the mid-Mackenzie River Valley, where they hunt, fish and trap (Fig. 2). The community at Willow Lake is a cluster of separate households situated on a spit of land, mostly surrounded by the Loche River and Willow Lake (Fig. 3). It is linked to Fort Norman by both water and overland trail, where the Willow Lakers also have houses. The Willow Lake settlement is best described as a residential base camp. Hunters range out from this location in search of meat and furs, returning after absences of one to several days (Fig. 4).

Seven families constitute the core group of Willow Lakers, although the annual cycle of each family varies considerably in terms of scheduling and duration. Flexibility and mobility are characteristic, with no family necessarily spending the same amount of time each year at Willow Lake. There is also

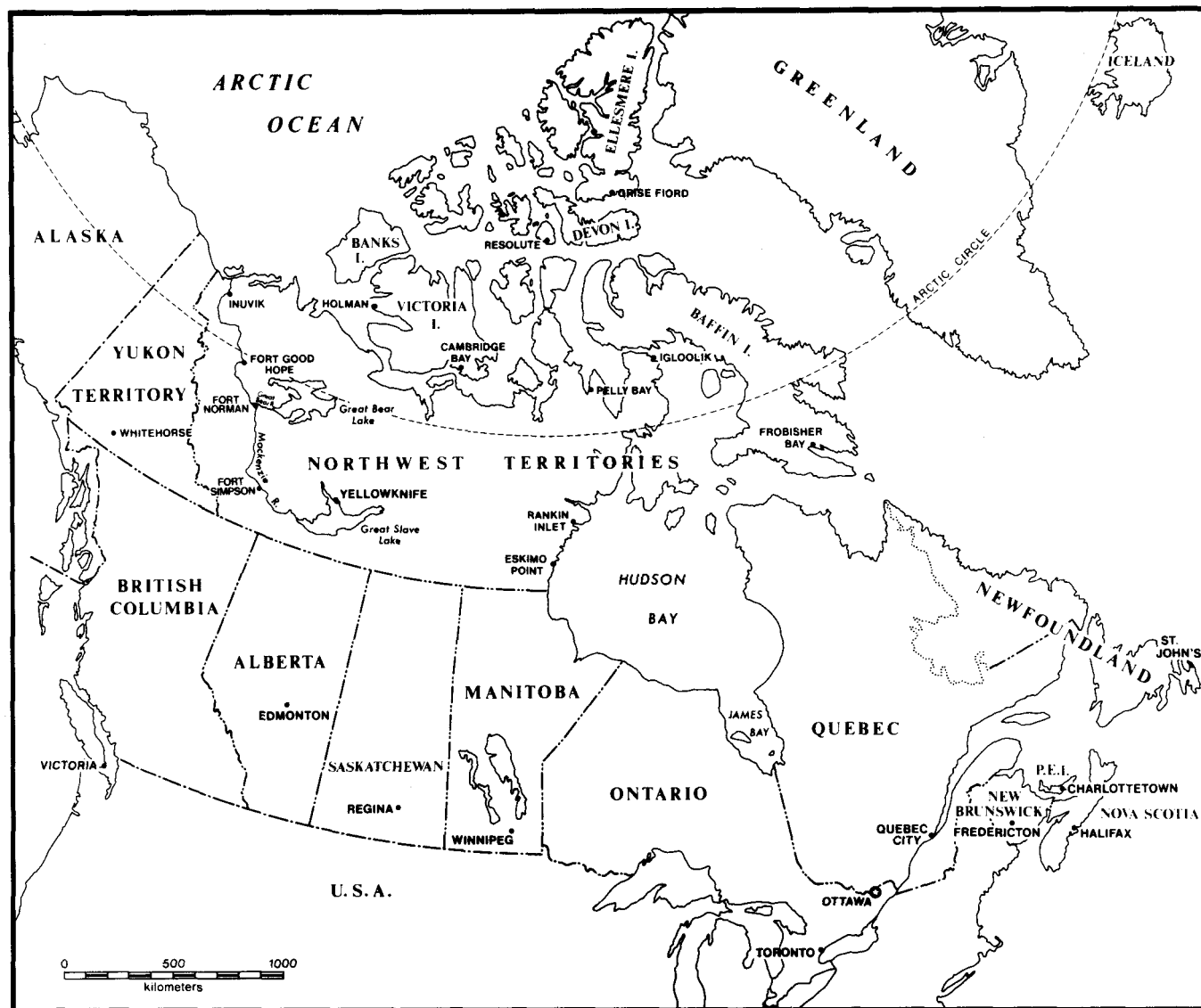


FIG. 1. Map of Canada, showing the Mackenzie River Basin in the western Northwest Territories. (From Janes, 1983. Reproduced with permission.)

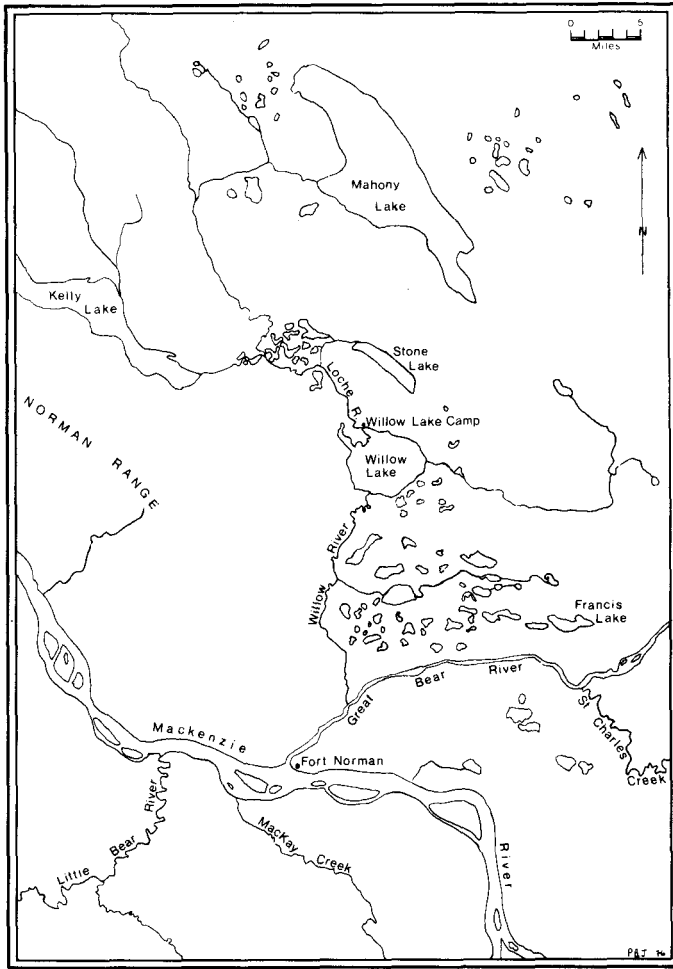


FIG. 2. Map of the Willow Lake drainage area, showing Fort Norman and the Willow Lake residential camp. (From Janes, 1983. Reproduced with permission.)

a constant round of Dene visitors throughout the year, who come to hunt and fish on a temporary basis.

The Willow Lake Dene are not directly comparable to their hunting and gathering forefathers, and as yet there is no unbroken historic link between their contemporary way of life and the prehistoric record of the area. It is assumed to exist, however, and archaeological data are currently being sought to confirm this. Nonetheless, the Willow Lakers engage in activities that can be considered transitional, if not traditional, within the context of the 20th century. Many of these activities, such as hunting, meat processing, hide preparation, shelter construction and gathering, appear to have been only superficially altered since Euro-Canadian contact. However, the Willow Lakers make extensive use of such things as high-power rifles, snowmobiles, outboard motors and nylon gill nets, integrating them with an indigenous material culture that includes snowshoes, moccasins and a well-developed wood technology.

THE ARCHAEOLOGY

Archaeological colleagues are often surprised to learn that tepees are still in use among the Dene in the late 20th century. Tepees remain an important part of the domestic architecture

at Willow Lake and were a major subject of study in 1975. Activities carried out in the tepees include relaxing, cooking, eating, tool repair and manufacture, sewing, meat and fish processing, hide and fur processing, communal feasts and occasionally sleeping.

The author, accompanied by two other archaeologists and a Willow Lake family, returned to the residential camp in 1984 to examine the archaeological remains of this observed behaviour. An intensive excavation of the tepee belonging to household 3, known to have been occupied discontinuously for 35 years, was undertaken to determine if activity areas were discernible (Fig. 3). Ethnographic observations in 1974 and 1975 indicated that tepees are best thought of as generalized activity centres, where a number of activities are carried on individually or simultaneously, none of which has any strict spatial definition. In the course of evaluating this proposition, we obtained an intimate glimpse of a tepee as a habitation site and were able to identify a number of distinctive features in the ground. These features are discussed below, with the assumption that they are potentially useful in detecting the presence of tepees in the archaeological record, in the absence of recognizable architectural remains.

Surface Characteristics

Surface indications, apart from the spruce pole framework and associated tepee furniture, include a central hearth and the floor itself (Fig. 5). The floor consisted of a mat of dead spruce needles and dead spruce boughs devoid of needles, along with a mixture of wild grass and fireweed. The latter had appeared since the last occupation of the tepee during the previous spring. In addition, spruce cones, spruce bark and fish scales were found scattered throughout the surface layer.

The ancient Dene practice of flooring dwellings with spruce boughs, which is still in use, has doubtful value in delimiting dwellings in the archaeological record. Spruce needles are acidic and they release their acidity as they decompose. Hypothetically, this would result in an area with low pH values, corresponding roughly to the location of previous spruce bough mats. The practice of continually replacing old floors with fresh boughs, which are soft, springy and fragrant, enhances the potential utility of this technique.

Unfortunately, the pH value of subarctic soils is sufficiently low that changes caused by the concentration of spruce boughs in a tepee may be impossible to detect (Ives and Beaudoin, pers. comm. 1987). In addition, pH can fluctuate markedly through a season, even at a single spot. Finally, natural processes can mimic the tepee situation, as when a growing conifer lays down a circular pattern of needles, twigs and cones.

Hearth Remains

Hearths are among the few recognizable features of a Dene archaeological site. The difficulty is determining whether the hearth was used within a dwelling. In 1984, the hearth was located in the centre of the tepee and was marked by a haphazard clustering of rocks. Contrary to expectations, none of the tepee hearths at the residential camp is bounded by a circular configuration of rocks. Such an arrangement impedes the multi-purpose use of the hearth.

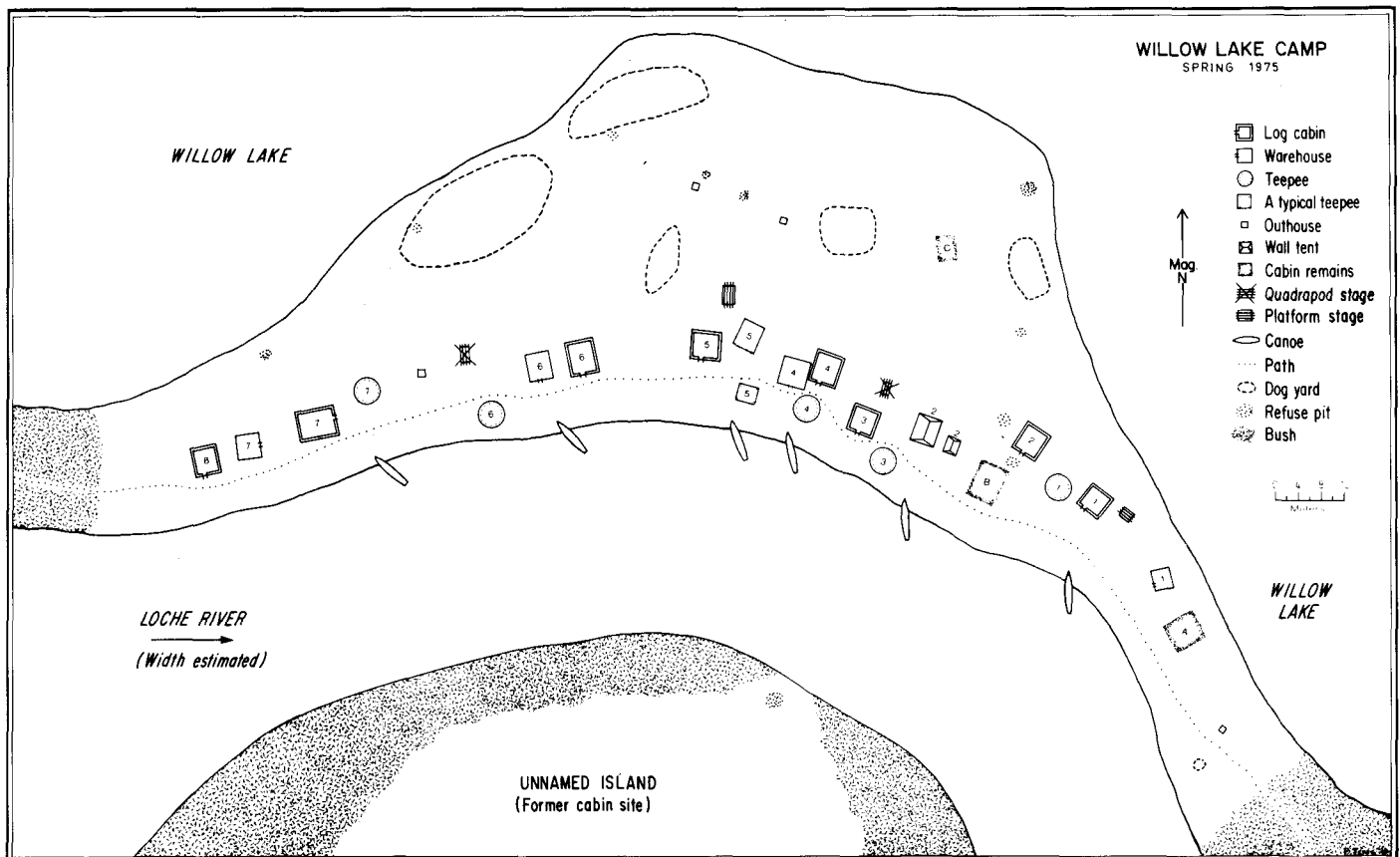


FIG. 3. Plan of the Willow Lake residential camp as it appeared in the spring of 1975. (From Janes, 1983. Reproduced with permission.)

Figure 6 shows the excavated hearth in profile. It consists of bands of ash and charcoal, alternating with bands of burned clay. The latter could be the result of building a platform for the hearth, a practice observed by Hanks and Pokotylo (1987). The depth of the hearth averages about 12 cm, which is surprisingly shallow when one considers the lengthy occupation of this dwelling. This is quite likely explained by the practice of regularly removing ashes from the teepee hearths, a practice observed in 1975 (Janes, 1983:20).

Of particular interest was the amount of refuse found in the upper level of ash and the underlying band of burned clay, which included both artifacts and calcined faunal bone. This refuse we encountered in 1984 must be that which accumulated since the last hearth clean-up and illustrates both the discrepancy between real and ideal behaviour, as well as the impossibility of observing everything in the field. Observations in 1975 (Janes, 1983:30) indicated that on only one occasion was refuse burned in a teepee hearth. This was further reinforced by an informant who observed that throwing animal bones in the fire attracts lightning. Yet, the hearth excavated in 1984 yielded an abundance of small rabbit and duck bone, as well as various objects, the largest number of which were iron nails. Among their manifold uses, nails are used by Dene trappers to stretch and dry animal skins, most notably beaver.

This hearth was obviously being used for refuse, contrary to the earlier ethnographic observations and the cultural

admonishments not to do so. A partial explanation of this inconsistency lies in the *selective* use of teepee hearths for refuse disposal, as small items easily consumed by a relatively small fire were the most abundant. Recognizing that this particular hearth was used to tidy up living and working spaces, the contents of such hearths may be expected to represent the wider range of activities that take place within teepees. This is in contrast to hearths that have no direct associations with household activities, such as those used in hide processing. Because of hearth cleaning, however, the archaeologist must recognize that the observable refuse may only pertain to the later use of the dwelling, not its occupation through time.

The Living Floor

The circular living floor was found to be both concave and hard packed throughout the stratigraphic sequence. The earthen floor sloped gently upward, from a low point surrounding the central hearth to the perimeter of the structure. This reflects the concentration of human activity around the hearth, which creates a depression in relation to the perimeter of the teepee. The perimeter was used primarily for storage (Janes, 1983:60-65).

Whether or not the concavity of a teepee living floor could be detected in the archaeological record is problematical and, undoubtedly depends upon the duration and intensity of



FIG. 4. The Willow Lake residential camp in 1975, looking eastward.



FIG. 5. The teepee prior to excavation in 1984.

occupation, although Wright (1972:10-16) noted a depressed floor within a prehistoric dwelling on the barren grounds. Mason (1946:20) writes in reference to the Slavey Dene that the skin covering was packed and carried, but that the lodge poles were left standing for the next user. This practice could enhance the archaeological visibility of teepee remains.

Hard-packed strata may also have multiple causes, including strictly pedological ones. In addition, a common feature of the dog yards at the residential camp is the tightly compacted ground surrounding each chaining stake, closely resembling hard-packed floors (Janes, 1983:63). These pseudo-living floors are created by the endless pacing of the dogs while they are chained. As urine and feces are everywhere in these confined areas, various chemical analyses may allow the archaeologist to differentiate these features from true living floors.

Ostensibly Complex Stratigraphy

The stratigraphy inside the teepee was sufficiently complex to elude interpretation until the excavation was finished. The teepee was excavated in four quadrants by cultural layers (Fig. 7). From the beginning, each quadrant appeared to exhibit strata in different sequences. There were patches of decaying vegetation and wood throughout, as well as numerous lenses of ash, spruce needles and hard-packed clay, all of which obscured the stratigraphic succession from quadrant to quadrant. Until we had gained a broader view of the living floor through time, the appearance of each lens was treated as if it represented a distinct occupational episode. Further excavation revealed that these were not discrete cultural strata, but instead were isolated phenomena of limited extent. It is not difficult to interpret these features. Pockets of spruce needles are attributable to former bough floors, while decaying wood could represent anything from tools to firewood. A large quantity of ash found throughout the southwestern quadrant of the teepee was more difficult to decipher.

This ash, mixed with burned earth, calcined faunal bone and artifacts, might have migrated southward from the central hearth, although the quantity of ash suggests that its accumulation in this portion of the structure was more than chance. Our Dene crew member, Joe Bernard, observed that "ashes, mud or anything" are sometimes used to smooth out teepee floors. This is relevant here, as the centre portion of the southwestern quadrant is underlain by a massive rodent disturbance. Assuming that this could create slumping of the



FIG. 6. The teepee hearth in profile, depicting the bands of ash and burned earth.

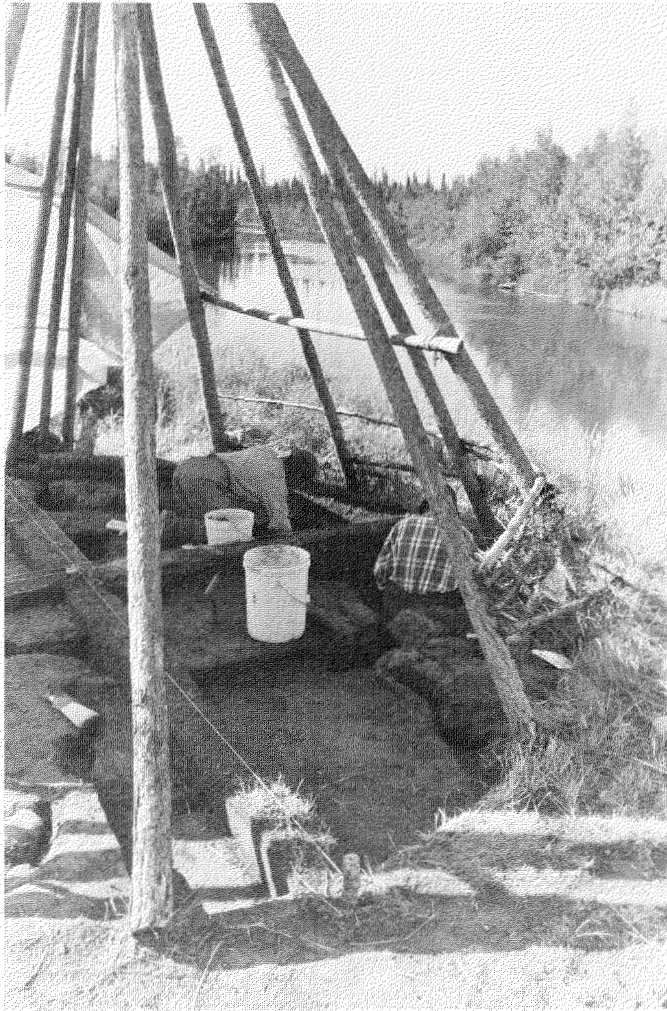


FIG. 7. Excavation of the tepee by quadrants. The balks were later removed.

floor, fill would be required. Another consideration is the location of this tepee, which sits on the edge of a relatively steep river bank. There is a retaining log along the perimeter of the tepee at the top of the bank, presumably to prevent the floor from eroding down the steep bank. The floor seems to have been built up in this area, another explanation for the ash fill.

Lithic materials underlay the main cultural component, in both disturbed and undisturbed contexts. Two stone scrapers, or *chi-thos*, were found within the tepee in association with strands of nylon rope in a rodent tunnel (Fig. 8). Flakes of ignimbrite, or welded tuff, were also found in a dark, greasy band at the base of the main cultural component, overlying a stratum of sterile clay. Despite the tendency to rejoice in the pay-off of the direct historical approach, there are several factors that must be considered in any attempt to interpret these lithic remains.

To begin with, the stone tools were found within a rodent tunnel, thus having no cultural stratigraphic context. The flakes, on the other hand, may have been associated with a buried hearth, the origin of which is not clear at this time. This hearth was located in the northeast quadrant of the tepee, along its perimeter, and obviously had nothing to do with the recent occupation of the tepee, since people do not

build fires along the perimeters of tepees. One can only conclude that this hearth exemplifies the differential, horizontal distribution and disturbance of refuse throughout a community through time, or the process of "smearing and blending" first described in the literature by Ascher (1968:50). It is likely that this hearth relates to a completely different occupation of the same piece of ground, which is entirely plausible when one considers the intensity of reoccupation at this residential camp.

The third variable in the interpretation of the lithic remains is the temporal duration of stone tool use in the western Subarctic, which extends beyond that of most areas in North America. Stone tools do not imply any appreciable antiquity in the Mackenzie Basin, where their use persisted well into the 20th century (A.M. Clark, 1974).

In retrospect, these stratigraphic complexities might very well lack meaning for the prehistorian. The ash, the clay lenses and the stratigraphic incongruities, etc., are characteristics of a complex dwelling history that can be viewed simply as a surface level, a main cultural component and a sterile clay substrate. In a camp marked by intensive occupation through time, one must question the feasibility of striving for too much precision on too small a time scale. Archaeologically, all these features within the dwelling would undoubtedly be attributed to the same phase or occupation, which may or may not be realistic, depending upon the degree of precision one is seeking. Irrespective of these chronological considerations, the disorderly combination of ash lenses, spruce needle concentrations, organic debris, etc., in the ground should alert the archaeologist to the likelihood of recurring domestic activities within a once-confined space.

Rodent Disturbance

The extent of subterranean disturbance within the tepee caused by fossorial insectivores and rodents was nothing short of remarkable. There was very little of the floor area that had not been affected by the burrowing of mice, voles or shrews. The surveyor's tape in Figure 8 marks many of the displaced artifacts found in the network of tunnels and chambers throughout the cultural level and below.

Tepees are evidently ideal homes for these creatures. Domestic refuse, most notably the by-products of meat, fish

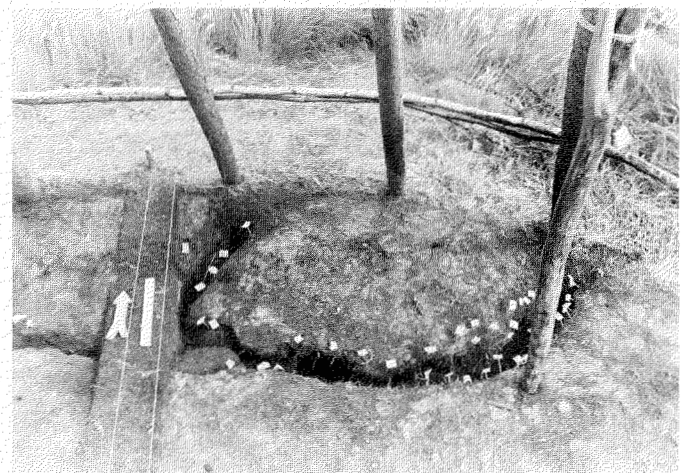


FIG. 8. Evidence of rodent disturbance in the floor of the tepee. The tags of surveyor's tape represent disturbed artifacts found in the rodent tunnel.

and hide processing, attract various insects whose larvae can be seen at the base of spruce bough floors in occupied tepees at the residential camp. Larvae, along with seeds and meat scraps, constitute most of the food for mice, voles and shrews. The thick bough floors obscure the activities of these animals, while the non-rigid exterior covering of the tepee affords them nearly limitless access. A similar degree of burrowing was also noted in another tepee at the camp, which was test excavated during the 1984 season for comparative purposes.

Despite the tendency to treat this form of disturbance as novel, negligible or undefinable, there is a growing body of literature that documents the impact of rodent disturbance on archaeological deposits (Bocek, 1986). While the detailed implications of such disturbances have yet to be worked out in the boreal forest, it appears that the presence of rodent and insectivore disturbance in an archaeological context can reflect human occupation indirectly. There are also implications for the inhabitants of dwellings, as mentioned earlier in the discussion of stratigraphy. The filling-in of tunnels, dens and storage chambers is assumed to have been required to keep the tepee habitable.

Tepee Furniture

Although the poles supporting the tepee cover rest on the surface of the ground, activities occur within the dwelling that leave subterranean evidence in the form of remnant poles, or post molds, depending upon the degree of preservation. Inserted in the sterile clay near the northern perimeter of the tepee were the remains of one sapling in an upright position. Corroborated by informant testimony, these saplings are used as supporting devices for hide fleshing and dehairing. These supports are rounded on one end to avoid damage to the hide, which is draped over it for scraping. The other end is sharpened and pushed into the ground. These supporting devices are often removed from the ground when not in use, and the basal portion encountered in 1984 could have been broken off during removal.

On the periphery of the central hearth, two more pole fragments were found in the sterile clay substratum (Fig. 9). Their proximity to the hearth suggests that they are the remains of cooking sticks, a Dene cooking technique used both within tepees and while travelling in the bush. Green sticks or poles, usually of willow, are sharpened on both ends.

One end is shoved into the ground near the fire, and meat or fish is impaled on the other end. This is a simple, expedient method of food preparation, requiring no pots, pans or grills.

Remnants of these poles alone, however, are not sufficient to signal the presence of a dwelling, as cooking sticks can be used in any situation where food is prepared over a fire. Hide fleshing, on the other hand, is a residential camp activity. The most useful distinctions between the fleshing upright and the cooking stick appear to be their relative proximity to the hearth and their size. Hide fleshing, for obvious reasons, is not performed immediately adjacent to the fire, while the fleshing uprights are considerably larger in diameter than the cooking sticks.

Storage Pit

A subterranean storage pit was unearthed in the southeast quadrant of the tepee, which was initially thought to be more rodent disturbance (Fig. 10). Subsequent excavation revealed a pit that was lined at the bottom with a thin layer of sphagnum moss and covered with sheets from a cardboard box. Overlying the cardboard was a thick bed of sphagnum moss that was both green and fresh looking, and which may very well have lined the sides of the pit while it was in use.



FIG. 10. Profile of the excavated storage pit within the tepee.

This pit was cut through the cultural component, well into the sterile clay. Its contents, in addition to the moss and cardboard, included spruce needles, roots, clay lenses and rotting vegetation. There were some artifacts among the spruce needles, possibly a result of filling the pit with old floor sweepings. Two middle-aged Dene who observed the excavation agreed that the pit was used to keep fish and meat cool. One of them indicated that this pit must have been used a while ago, "as it was so far underground" (Janes's field notes, 1984:70).

While this type of interior storage pit was not observed during the ethnographic work in 1974 and 1975, they have not gone undetected in the archaeological record. Bryan Gordon provides an instructive comparison from his work at the early-18th-century Kutchin Dene site of Whirl Lake in the lower Mackenzie Valley (Gordon, 1974). Although the underground fish caches he describes were located outside of the house pit, his reconstruction suggests that fish were



FIG. 9. Remains of two cooking sticks uncovered near the tepee's central hearth.

chilled on the permafrost level, covered with an insulating shallow layer of earth and bark and stored for later retrieval.

Activity Areas and the Zone of Debris

Ethnographic observations of this tepee in 1974 and 1975 revealed a variable door location, a constant hearth location and considerable fluidity in the use of space (Janes, 1983:61). In late May, for example, household goods were clustered along the northwest perimeter of the tepee, while in early June they were concentrated along the southern edge. By mid-June, the household goods were located along the west and north edges of the tepee. In fact, the only constant was the location of the refuse tub. Otherwise, fish, beaver tails, muskrat carcasses, duck parts, skin stretchers, stretcher spacers, butchering boards, and so forth, could be found at different locations throughout the tepee through time, in no apparent pattern.

A pattern was perceived in the use of the northern half of the tepee in 1975 for food preparation and hide and fur processing. This was short lived, as later field observations indicated that skinning, butchering, plucking and fleshing also occurred southwest, southeast and south of the hearth. What is important to note is that different activities were carried out in the same space within the tepee. The members of this household prepared food and processed furs for trade in the same area within this tepee. Furthermore, the locations of any of these activities were not rigidly defined within the structure, but varied.

Ethnographic information from the early 20th century (Mason, 1946:20) indicates certain conventions in the distribution of sleeping places within Dene tepees. To the two sides, in respective order from the door, are the resident women, the resident men and the resident boys. Opposite the door, in the place of honour, sleep the visiting men. How these conventions relate to the conduct of other activities within the tepee is not clear. Interpretation is further complicated by contradictory observations that document the absence of definite doors or the presence of multiple doors in Dene tepees (Janes, 1983:60-70; Mason, 1946:20).

Archaeological excavation of the same tepee in 1984 revealed a distribution of artifacts that does not allow the identification of discrete activity areas within the dwelling. Altogether 258 objects were removed from the main cultural component, not including five very small clusters of resharpening detritus or such things as fish scales, wood chips, duck feathers and artifacts displaced by rodent activity. Numerous activities are represented directly or indirectly by the artifacts found, including tool repair, meat and fish processing, sewing, cooking, eating, hide and fur processing and relaxing. These archaeological remains are nearly a complete reflection of the actual activities observed in the dwelling in 1975 (Janes, 1983:60).

There is a notable uniformity in the types of objects found throughout the tepee. Fire-cracked rocks, nails, cartridges (spent and live) and fish, bird and animal bone were found in every quadrant, while lead shot and beads were found in three of them. Nails were ubiquitous and, together with the generalized distribution of bone, mirror the flexible use of this dwelling first observed in 1975. Fur processing, as evidenced by the nails, as well as food consumption, occurred together or separately, and at varying locations, throughout the tepee.

Hide working and cooking are more visible archaeologically, as discussed earlier. Hide working is identifiable on the basis of surface and subsurface pole remains in the northwest, northeast and southwest quadrants of the tepee, while cooking is indicated by the presence of small-diameter pole fragments from cooking sticks near the central hearth. These remains also correspond to ethnographically observed behaviour.

It is not possible, however, to identify discrete clusters of artifact types, which would support the presence of monofunctional activity areas within this tepee. Even though hide working can be spatially pinpointed, it occurred within the context of numerous other activities, as did cooking. The archaeology supports the ethnographic proposition that Dene dwellings, and the space surrounding them, be viewed as generalized activity centres, embracing a variety of human activities and events that are not spatially distinguishable (Janes, 1983:70). In short, different tasks are performed at different times and at different places within the same area.

The archaeological corollary of this ethnographic proposition is the concept of a zone of debris, rather than an aggregation of separate activity areas (Binford, 1978; Stevenson, 1985; O'Connell, 1987). In the case of this tepee, the zone of debris radiates outward from a central hearth and has a roughly circular pattern. It contains both usable and unusable objects that were discarded, lost or set aside at their location of use. Willow Lake men and women preserve or curate their tools and equipment (Janes, 1983:91, 99-101). Even though some organic debris, such as bone from food consumption, has accumulated within the dwelling, refuse is purposefully disposed of outside of dwellings at this residential base camp (Janes, 1983:29-34). Although common sense indicates that the zone of debris would be more dense within the confines of the tepee, subarctic archaeologists actually know little or nothing about the nature and disposition of materials in and between dwellings. There could be less of a demarcation between the inside and outside of tepees than is assumed here.

Even if discrete activity areas existed in the past, they are virtually impossible to recognize in the archaeological record of this tepee because of certain site formation processes, most notably smearing and blending (Ascher, 1968). This haphazard disturbance and distribution of material remains has many causes, one of the more important being the intensity of occupation within a confined space. In 1975, for example, two households were sharing the tepee, making a total of 13 inhabitants. This means very heavy foot traffic. In addition, the earthen floor (used on occasion without spruce boughs) is a natural trap for all manner of debris. A third factor is the seasonal abandonment of tepees at the residential camp. Tepee coverings are often removed in whole or in part at these times, exposing the living floors to the vagaries of snow, wind, rain and forest scavengers. The result is a truly complex palimpsest of successive occupations that resists both horizontal control and stratigraphic precision.

Information on artifact provenances was collected in 1984, allowing the investigation of artifact density across the tepee floor, as well as of the distribution of artifacts by size, both horizontally and vertically. When these analyses are completed, it is hoped that the results will provide insight into site structure and spatial patterning that will be of value for cross-cultural comparisons.

Recent work (Hull, 1987) at a tepee ring site in the Northern Plains provides some interesting observations for comparative purposes. On the basis of a microdebitage analysis of soil samples taken within the tepee rings, Hull concludes that small pieces of debitage in archaeological deposits can reflect patterns of use and disposal different from those of larger fragments. This in turn can allow the identification of site formation processes (Hull, 1987:782). Because ethnographic information in disposal habits specific to Plains Indians was not available, however, it will be necessary to evaluate the appropriateness of the expectations of space use that Hull employed in the analysis.

CONCLUSIONS

It is not possible to interpret the 35-year occupation of this dwelling on the basis of the ethnographic "moment" recorded in 1974-75. Nonetheless, certain diagnostic attributes of the dwelling are relevant to Dene archaeology, as these attributes constitute the tangible impression of tepee architecture. Although the archaeological recognition of this pattern in the future must occur without direct knowledge of the behaviour that created it, the pattern itself is based on behaviour observed in a contemporary setting. In summary, these diagnostic attributes of tepee architecture include a central hearth, a hard-packed, sloped floor, ostensibly complex stratigraphy, rodent disturbance, sub-surface tepee furniture, subterranean storage facilities and a circular zone of debris. The roughly circular configuration of stones on the surface of the ground, used to hold down tepee coverings, must also be considered as an additional attribute. Although this pattern was not observed in 1984 at Willow Lake, Clark (1982) and Hanks (pers. comm. 1986) have noted it elsewhere in the Mackenzie Basin.

There are undoubtedly other attributes, as inter-household variability in dwelling use is characteristic of the Willow Lake residential camp (Janes, 1983:60-68). This patterning of attributes, based as it is on the examination of one dwelling, can only be tested through additional excavation in controlled settings. Clearly, the probability that tepee architecture is present increases with every attribute that can be documented.

FUTURE RESEARCH

The short-term, single-occupation site (Deal, 1985:283) appears to be the cornerstone of Dene culture history. Northern archaeologists would benefit from reconsidering this and asking whether they are observing the remains of residential base camps or those of special-purpose sites (Fig. 11), as site function is the key to determining the nature of the regional settlement system in pre-ethnographic times.

Refining the current cultural-historical model through the identification of site types can proceed without additional fieldwork, at least initially. Data from a sample of excavated sites in the Mackenzie Basin can be examined to determine the morphology, associations and distribution of recorded features, along with the form and placement of artifacts, refuse and activity areas. Although the available data are admittedly sparse, their potential for revealing site function on even a gross level should be assessed. Future ethnoarchaeological field research must also address the areas outside of known dwellings, if we are to improve our ability to infer



FIG. 11. Dene crew member Joe Bernard and his family at Willow Lake in 1984.

the presence or absence of architecture from archaeology alone.

Although the ethnoarchaeological model presented here has been concerned with tepees, it has been suggested that the Dogrib, Slavey and Chipewyan Dene may have borrowed this dwelling type from the Cree within relatively recent times. This question remains unresolved. The Slavey Dene apparently did not use the tepee in summer, but instead used semicircular open shelters made by bending and tying willows and then covering them with moose hides (VanStone, 1974:35).

As the general form, structure and use of this shelter type and other conical dwellings are similar or identical to that of a tepee, it is plausible that the model proposed here for identifying subsurface remains is still relevant. Its application to other Dene dwellings, such as the Slavey winter house made of logs, is undoubtedly less appropriate.

In closing, a homologous relationship between the past and present need not be assumed in order to accept the potential efficacy of this ethnoarchaeological model. Nor should it be assumed that the patterns and activities observed today are necessarily equivalent to those of the past. This is offered as a reassurance to those who view ethnoarchaeology as the uncritical extension of contemporary explanations into the prehistoric past.

What the contemporary setting does offer is a firmer empirical basis for making inferences. It can provide a series of clues to assist in identifying and recognizing what is found in the ground, in the absence of observable behaviour. Faced with the task of archaeological reconstruction and a dearth of material remains, subarctic archaeologists have an opportunity to link the activities of contemporary northern hunters with the consequences of those activities that may be apparent in material things. By enhancing our understanding of the form and arrangement of material remains in a contemporary setting, we are more capable of reading the archaeological record. Information of this kind is accumulating in the

Mackenzie Basin (Clark, 1982; Hanks and Winter, 1983; Janes, 1983) and will eventually allow a comparative analysis of the ethnoarchaeological methodology in a regional context.

Recognizing the ever-increasing pace of culture change in the western Subarctic of Canada, there is a certain urgency in undertaking actualistic studies now. It is surprising that more work of this kind has not been done in the Canadian North, considering that two of the world's great hunting cultures, the Dene and the Inuit, are still engaged in subsistence hunting.

Data collected by ethnographers is often not useful to the archaeologist, and the nature of the archaeological database precludes simple correlation with models derived from ethnographic observations alone. The ethnoarchaeological information recorded during the late 20th century will be irreplaceable, as the world's last exotic cultures are rapidly being lost to what has been called the "homogenization of world culture" (Johnson, 1987:30). Opportunities for integrating a first-hand account of hunters and gatherers with the archaeological record continue to dwindle with the passage of time.

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