

# *The "Iron Dog" in Northern Alaska*

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Many technological items of western origin have been accepted by the Eskimos of northern Alaska during the past 120 years. Some introduced items, the rifle for example, have had wide ranging effects on Eskimo culture; others, such as the pop-top beer can, have caused little change. The recent introduction of the snowmobile, a tracked vehicle capable of fast and efficient operation across snow, has caused profound changes in contemporary Eskimo culture in northern Alaska. This phenomenon, of course, is not confined to Alaska but has been noted in other Arctic areas.<sup>1</sup> However, data concerning the changes attributable to the rapid acceptance of the snowmobile are rare, particularly in Alaska. This paper deals with the introduction of the snowmobile to Noatak Village, northern Alaska, and includes both a description of the consequent effects on Noatak Eskimo culture and my predictions of changes still to come.

## BACKGROUND

The Eskimo village of Noatak is located on the west bank of the Noatak River approximately fifty airline miles north of Kotzebue in northern Alaska.<sup>2</sup> The present concentration of the Noatak Eskimos at this particular location is a result of historical forces. Aboriginally, two different groups of Eskimos inhabited the Noatak region: the Naupaktomiut and the Noatagmiut. The Naupaktomiut, or people of the spruce, inhabited the forest-covered flats along the lower 120 miles of the Noatak. Their winter villages of two or more houses were hidden along side channels of the river in close proximity to good fishing locations. The Noatagmiut, or people of the Noatak, inhabited villages in the

treeless upper Noatak valley, the valleys of its main tributaries and on the shores of headwater lakes.

Ethnographic reconstructions of Naupaktomiut and Noatagmiut cultures indicate that the two groups did not differ greatly. According to my informants there were slight variations in terms of language, house type, distribution and subsistence pattern. I am not prepared to discuss dialect differences. Table 1 illustrates

TABLE 1  
DIFFERENCES BETWEEN THE NOATAK RIVER GROUPS

	<i>Naupaktomiut</i>	<i>Noatagmiut</i>
Distribution:		
Winter	Forested lower Noatak River	Treeless tributary streams and lakes of middle and upper Noatak River
Spring	Coast between Cape Krusenstern and Kivalina	Spring camps along middle and upper Noatak River
Summer	Sheshalik spit, across from Kotzebue	Sheshalik spit, across from Kotzebue
Fall	Hunting camps north of middle Noatak River	Ascending river to winter quarters
Shelter Type:		
Winter	<i>Ebrulik</i> : rectangular spruce frame, sod covering, square or rectangular skylight	<i>Kolovik</i> : dome-shaped willow frame, sod covering, round or oval skylight
Summer	<i>Kalovik</i> : dome-shaped tent of caribou hides	Pyramidal tents of caribou hides
Subsistence:		
Fish	Ca. 53 per cent	Ca. 12 per cent
Meat	Ca. 45.5 per cent	Ca. 87 per cent
Vegetal	Ca. 1.5 per cent	Ca. 1 per cent

the other differences between the two aboriginal groups. It should be stressed that there was great similarity in other aspects of Naupaktomiut and Noatagmiut culture and that a Naupaktomiut individual or family sometimes participated in the Noatagmiut seasonal round and vice versa.

The aboriginal culture of the Noatak Eskimos began to change after A.D. 1850 in response to increasing white contact. During the years between 1850 and 1908 the Noatak Eskimos traded with, worked for and were exploited by whalers, traders, trappers and various exploration parties. Depopulation because of disease, changes in co-operative hunting patterns because of the use of the rifle, starvation because of the decline of the caribou and loss of aboriginal beliefs and values inimical to Christianity were all part of the changes that took place during this early contact period.

In 1908 the California Yearly Meeting Friends Church started a federally supported mission school at the present site of Noatak Village. The desire of the Noatak peoples for Christianity and schooling coupled with the virtual collapse of their traditional culture drew them to the site and resulted in the founding of Noatak Village. The Naupaktomiut came first because the mission school was located in the centre of their traditional territory; by 1910 almost all the Noatagmiut also had settled in the village.

The course of acculturation from 1910 to 1965 was steady and accumulative. *Ebruliks* gave way to one room, log cabins and, by 1965, some multiple room, frame and plywood houses. Skin covered *umaypaks* (large boats) propelled by oar and sail were replaced by wooden river boats and outboard motors. A co-operative native store flourished, the Bureau of Indian Affairs built a modern school and the National Guard built an armory. The villagers were slowly drawn into a partial wage economy through trapping, summer employment in construction work and salmon canneries and other agencies.

Some of the most dramatic changes in Noatak Eskimo life revolved around the subsistence quest. Caribou remained scarce until the 1920s; salmon were thus the primary subsistence source during the early years of the village. In 1909 reindeer were

introduced to the Noatak area by the U. S. government in an attempt to replace caribou. Reindeer herding was an activity of some importance until the 1940s. However, the caribou returned after 1920 and soon became economically important again. The necessity for long winter hunting trips to secure caribou required large dog teams. A new, light sled type became common and dog teaming became a far more important part of Noatak Eskimo culture than aboriginally. Moose became common in the Noatak River valley after 1960 and offered a subsidiary subsistence source.

By the mid-1960s Noatak was a typical Alaskan Eskimo bush village with about 250 inhabitants. Though the pattern of Noatak's subsistence economy fluctuated somewhat from year to year and family to family, the standard seasonal round can be summarized as follows:

### *Summer*

Most Noatak families moved to Sheshalik, a sand spit extending into Hotheam Inlet near the mouth of the Noatak River, by boat soon after breakup in late May or early June. They spent the early summer there hunting beluga, ugruk and smaller seals. Fishing with nets, for whitefish and trout, was an important secondary subsistence activity. In late June and early July many of the men left for Kotzebue, Fairbanks or southern Alaska to work for wages. The women and children were left behind either at Sheshalik, where they netted salmon and picked berries, or at Kotzebue, where food was procured from relatives or purchased.

### *Autumn*

In late August and early September the families staying at the coast returned to Noatak Village to join the few families who summered there. The primary fall subsistence activity was seining for salmon and other fish. The fall fishery was exceedingly important because supplies of dried and frozen salmon for dog food were necessary for successful winter caribou hunting. Some caribou hunting with boats along the middle Noatak River was also undertaken during the fall months, as was collecting of berries and tubers.

*Winter*

Caribou is the primary and preferred source of meat for the Noatak Eskimos. During the early 1960s long trips with sleds pulled by eight to fourteen dogs were necessary to secure sufficient caribou meat for human consumption. Sometimes caribou wintered in the vicinity of the village; if so, hunting trips would take only two to five days. However, often longer trips, of up to fourteen days, were necessary to locate the caribou, kill and butcher them, feed and rest the dogs and bring quantities of meat back to the village.

Subsidiary subsistence activities in the winter months centred around fishing through the ice. This activity was mainly confined to women who walked out from the village each day to good fishing locations. Additionally, Noatak men sometimes travelled west to the coast during the late winter months to hunt seals along open leads in the ice. Men not engaged in hunting big game animals or collecting firewood might go fishing or hunt rabbits and ptarmigan. The killing of moose was incidental to the foregoing activities. Trapping of fur animals, an activity of considerable import in earlier years involving long sled trips, was not really economically significant during the early 1960s.

*Spring*

The approach of breakup brought many migrating waterfowl to the Noatak area. Spring is a relatively lean period in terms of human subsistence possibilities; hence, ducks and geese were taken in defiance of Federal game regulations. Soon the villagers began to move to the coast again.

## THE INTRODUCTION OF THE SNOWMOBILE TO NOATAK VILLAGE

The town of Kotzebue is the main distribution centre of northwest Alaska and the snowmobile was in use there several years prior to its introduction into Noatak. The snowmobile became popular in Canada and the United States during the late 1950s as a winter recreational vehicle. The first snowmobiles were intended primarily to function as weekend leisure toys, but it soon became apparent they could fill a working role in the life

of arctic peoples, albeit with some problems because of the relatively light construction of early models. The first snowmobile apparently came into Kotzebue in the spring of 1960. This machine was a demonstration model which was sold to a white resident. A local store took on a dealership, selling three snowmobiles in the fall of 1960 and five during the winter of 1961-62. A period of economic prosperity, partially attributable to the establishment of a commercial salmon fishery, began after 1962. During the winter of 1968-69 there were seven snowmobile dealerships in Kotzebue. The total number of machines sold during this year to both whites and Eskimos is unknown but probably exceeded thirty.

Men living in Noatak Village did not begin to use the snowmobile until the winter of 1965-66. Economic considerations and a certain conservative attitude, expressed as "let's wait and see if they work," were the primary reasons for this lag. During the winter of 1964-65, while I was in the village, a white man came through on a snowmobile, but few Noatak men seemed interested. They complained that snowmobiles cost too much, scared the caribou and, besides, dogs never ran out of gas!

In February 1966 an acculturated Noatak Eskimo who had a considerable familiarity with machinery purchased a snowmobile. Shortly after this another Noatak man who had purchased a snowmobile during the fall of 1965 while residing in Kotzebue returned to Noatak Village. These were the only two snowmobiles in Noatak during the winter of 1965-66.

The success of the two hunters who first bought snowmobiles, combined with the ready acceptance Noatak Eskimos have for machinery, once its usefulness has been demonstrated, led to the acquisition of eight more snowmobiles during 1966-67. Nine additional machines were purchased by the villagers during the winter of 1967-68, the last period for which I have records.

#### CONSEQUENCES OF THE INTRODUCTION OF THE SNOWMOBILE

By the spring of 1968, just over two years after the introduction of the snowmobile, there were nineteen in Noatak Village. The number will undoubtedly increase as more men turn from

hunting by dog team to use of the snowmobile. In the minds of the villagers, the many advantages of the snowmobile far outweigh the initial cost and subsequent upkeep. It is also likely that there will be a market in used snowmobiles. At least three used machines already have been sold in the village.

The integration of the snowmobile and its attendant technology into Noatak Eskimo culture will have wide-ranging, interrelated consequences. A number of changes have already taken place; others are still in process.

### *Economic Consequences*

The changeover to snowmobile use will serve to tie the Noatak villagers even more closely to a wage economy. The least expensive snowmobile available in Kotzebue (where Noatakers purchase their machines) sells for approximately \$795, the most popular models for approximately \$1095. Though the Noatak villagers are accustomed to purchasing outboard motors, rifles and other hard goods that require a substantial cash outlay, snowmobiles represent a considerable portion of the average individual's yearly income. Statistics are not available for the period 1966-68, but in 1960 the average net income for thirty-nine Noatak wage earners was \$1,195.<sup>3</sup> There is little reason to believe the average net income in 1966-68 was very much higher. Because snowmobiles are so expensive, they are often purchased by one individual and then used by his relatives as well. Also, most snowmobiles are purchased in the fall, after the men return from summer wage work.

Maintenance costs are high. Most Noatak men are, by necessity, capable of making simple mechanical repairs. One man, the first to purchase a snowmobile, often is called upon when more complicated breakdowns occur. However, parts are expensive and the quality of home repair work is obviously not up to professional standards. These factors, combined with the exceedingly hard use to which the machines are subjected, result in a relatively short snowmobile life span.

Gasoline is also expensive, though snowmobiles apparently are capable of relatively good mileage per gallon. Gasoline at Noatak costs \$1 a gallon or more. One measure of the sudden

popularity of snowmobiles in northwest Alaska is that almost every bush village ran out of gasoline during the winter of 1967-68.

There is another side to the coin. The expense of operating snowmobiles is somewhat offset by their great efficiency when used in caribou hunting. With the snowmobile, men who previously had to purchase meat can now hunt. Men with full-time employment do most of their hunting on weekends. Those who can afford to operate snowmobiles with money earned during the summer months have more leisure time and will take whatever full-time jobs become available in Noatak or Kotzebue. Thus there is a widening economic gap between those who continue to use dog teams and those who have turned to snowmobiles.

### *Technological Consequences*

The acquisition of snowmobiles also requires an understanding of a new technology on the part of the Noatak people. The first problem is the choice of make and model of snowmobile an individual wishes to purchase. Nine makes and thirty models are available from Kotzebue or through mail order firms. Such a wide range of choices apparently was not available to the Noatak Eskimos when outboard motors arrived in northwest Alaska, some twenty-five years ago. Even now, outboard motors, no matter what the make, are called Evinrudes because that was the only brand available for a number of years. Snowmobiles, however, are called by the brand name of the manufacturer, not by any particular generic name.

The Noatak Eskimos have purchased snowmobiles built by six different manufacturers. The distribution is as follows:

<i>Brand</i>	<i>Number</i>
A	7
B	5
C	4
D	1
E	1
F	1



The purchase of Brands D-F seems to have been in the nature of an experiment. Brands A and B are made by the manufacturers of the two most popular outboard motors sold in northwest Alaska. I have no specific information on models, though the Noatak Eskimos have tended toward purchasing those that are less expensive.

Snowmobiles are still relatively new, hence there is considerable comparison between brands and models and much discussion about the attributes of given brands. For example, the 1968 models of Brand A featured a new reverse gear which frequently malfunctioned with hard usage. Though the manufacturer upheld the guarantee and replaced broken transmissions, some machines sat idle for a considerable period. It is doubtful whether Brand A will be as popular during coming winters.

Use of the snowmobile will require changes in the attendant paraphernalia used on winter journeys. The Noatak Eskimos tow sleds behind their snowmobiles when hunting or travelling long distances. These sleds were, at least until 1967-68, all old sleds previously used with dogs. However, some Kotzebue hunters have developed special low, wide sleds for snowmobile use. The new sleds carry more, are simpler to make, and track better behind the machine. Noatak hunters undoubtedly will build or buy similar sleds.

Only steel sled shoeing is used on the runners of sleds towed behind snowmobiles. Steel shoeing was used on dog sleds during moderate weather; during extremely cold weather hardwood strips were bolted over the steel shoeing in order to decrease friction across the cold, dry snow. Snowmobiles have enough power to overcome the increased friction caused by cold conditions.

Other changes have occurred in the gear used for winter travel. Special equipment is carried for snowmobile maintenance and repair. It is not necessary to carry a large amount of food and camping gear because snowmobile trips usually take only a day or two. Changes in the way gear is carried and how the sled is loaded and balanced probably also have occurred.

### *Decreasing Use of Dogs*

The most dramatic change attributable to the introduction of the snowmobile is the decrease in the use of dogs for traction.

Though difficult to measure in absolute terms with the now available data, the changeover to snowmobiles has resulted in a considerable decline in the Noatak dog population. According to Williamson there were approximately 500 adult (old enough to require solid food) dogs in Noatak Village during the winter of 1960-61.<sup>4</sup> In February, 1968, a rabies inoculation program in Noatak resulted in the inoculation of 259 dogs, representing the total over-three-months population. (The corresponding figures in Pt. Hope are 340<sup>5</sup> and 262). The 1960-61 and 1968 totals are computed on a roughly comparable basis and thus indicate the decreasing importance of dogs in Noatak Eskimo culture.

During the winter of 1967-68 at least forty-five men engaged in hunting. For some men, this involved only occasional hunting for rabbits and moose in the immediate vicinity of the village, but other men undertook long trips in search of caribou. Of the forty-five men, eighteen used snowmobiles, eighteen used dog teams exclusively and nine men hunted on foot only.

The pattern of dogs being replaced by machines is not consistent. Five Noatak men immediately gave away or sold their dogs after purchasing a snowmobile. Eleven men retained their dogs, though few bothered to keep the dogs in good condition or to replace those that could no longer work.<sup>6</sup> The men who disposed of their dogs completely fall into two classes. Some are middle-aged or older and thus incapable of either hunting efficiently with a dog team or of securing food for a large number of dogs. However, they can hunt effectively with a snowmobile. The others are relatively acculturated and thus quite mobile; they find it difficult to maintain dog teams as they move to Kotzebue and other villages frequently in search of wage work.

The men who kept their dogs did so for a number of reasons. Some were unsure of the effectiveness of snowmobiles and reserved the dogs for emergencies. Often such forethought is rewarded and the men return, at least temporarily, to dog teaming when the snowmobiles malfunction. When dog teams are not being used for hunting, children drive to the river for ice or women take the team to good fishing locations near the village. Some men distributed their dogs to relatives who could not afford

a snowmobile with the understanding that the original owner could still use the dogs if it proved necessary. The postmaster, who hunts on weekends with his snowmobile, loaned his dogs to two young men who lived in his house; they hunted for his family as well as for themselves. In almost all cases where a man retained rights to a dog team, the total number of dogs in the team declined and the physical condition of the individual dogs was not up to pre-snowmobile standards.

Changes will continue in the Noatak Eskimo practice of using dogs for traction. More Noatak men will purchase snowmobiles and gradually forsake their dog teams. One Noatak man, recognizing the pattern of exchanging dog teams for snowmobiles, believes that only a few men will keep dog teams and then only for the annual Christmas dog races. However, snowmobile races, now popular at Kotzebue, may replace even this function of dog teams.

Simply in terms of economics, it will be difficult for Noatak families to maintain both snowmobiles and dog teams. During the period of transition some families probably will continue to utilize both. Snowmobiles will be used by the men for hunting and by the entire family for long distance travel. Dog teams will be used by younger men who cannot afford snowmobiles, for hunting, gathering wood and getting ice. Finally, and in dramatic opposition to traditional Eskimo practice, women may become the primary dog handlers. Fishing through the ice is a favourite winter activity for Noatak women and already some are utilizing otherwise idle dog teams to move back and forth between the fishing grounds and the village.

### *Changes in Subsistence Patterns*

Another result of the diminished importance of dogs in Noatak Eskimo culture will be a substantial change in the subsistence pattern of the villagers. Prior to the introduction of the snowmobile the Noatak villagers spent a considerable amount of time and energy each fall in securing large supplies of salmon, trout and whitefish. During the fall of 1960, for example, the villagers netted about 75,000 dog salmon and 35,000 pounds of trout and whitefish.<sup>7</sup> The trout and whitefish were mostly for

human consumption but the salmon, processed by splitting and drying or by freezing, were intended almost exclusively for dog food. The light, dried salmon served as trail rations for working dogs while dogs in the village were fed frozen fish. The importance of securing dog food is that for the Noatak Eskimos, as with all inland Eskimo peoples, caribou is the preferred human food. The success or failure of the winter caribou hunt, upon which rested the economic well-being of the villagers, hinged on a successful fall fishery to secure adequate winter dog food.

Assuming the continued decline of the dog population, it will become less and less necessary for the villagers to lay up large supplies of salmon. To date, only a few indications of this trend are apparent. The Noatak native store purchased dried salmon for resale in Kotzebue during the winter of 1967-68. In previous years each family used all the dried salmon its members could catch and prepare. Also, a number of families that had once made an effort to dry large amounts of salmon no longer did so. The total salmon catch for the village was smaller than in previous years, though data for quantitative comparisons are not available.

The villagers will continue to net salmon for their own use and for sale but not in the quantities previously taken. Additionally, some families may remain at jobs in Kotzebue or elsewhere later in the fall because it is no longer necessary to return to the village to secure dog food.

Use of the snowmobile will also increase the availability of caribou, if the herd population remains at its present level. The speed and range of the machine allows a hunter to cover more territory more effectively in his search for caribou.

### *Changes in Hunting Techniques*

Changes in the techniques of hunting caribou because of snowmobile use are already apparent. In the past, the common practice was for a number of hunters, ranging from two to eight or more, to travel by dog team to locations where caribou were reported. The teams would be left in a sheltered spot some distance downwind from the caribou while the hunters carefully

approached on foot. If the caribou were not frightened and the hunters' aim accurate, a large number would be taken. Then some hunters would make camp while others skinned and dressed the animals. Often the hunters would camp nearby the kill for several days, hunting more animals from the camp, continuing to butcher the dead caribou and, after running out of salmon, feeding the dogs the less desirable portions of caribou flesh. The kills were evenly divided among the members of a hunting party. If more animals were killed than could be transported back to the village, the extra caribou were cached for later retrieval. A hunting trip of this type lasted from five days to two weeks or more.

Hunting is greatly simplified with the snowmobile. Usually two or more hunters on separate snowmobiles travel together to provide transportation in the event of a mechanical breakdown. The hunters travel across the countryside in search of caribou. If a herd has been noted in a particular valley or river drainage the hunters will travel there at high speed and then slow down to hunt. When caribou are seen the hunters accelerate and begin chasing the animals. They follow the frightened caribou until the latter run downhill into a creek bottom and start up the other side. Then the hunters stop, leave their machines, and begin to fire at the winded caribou struggling uphill. Usually the Noatak men try to kill about six animals, a full snowmobile sled load. The caribou are butchered, loaded and the hunters return to the village. Because snowmobiles are fast and efficient, few if any 1967-68 hunting trips lasted more than two days.

It is not yet known what effects this type of hunting will have on the north Alaskan caribou herd. Some of my informants said that when snowmobiles were first used the caribou were not bothered by the noise; now they are frightened so easily that a high-flying airplane will scatter them. Older men with experience in hunting caribou claim that the animals are becoming extremely skittish and hard to hunt.

The total number of caribou taken each year by the Noatak Eskimos will probably increase though not as dramatically as one might expect. In the past dogs were fed some caribou meat during hunting trips; this meat may now be reserved for human consumption. Also, the Noatak Eskimos do not often kill more

animals than they can use. However, an increase in the yearly caribou kill should occur across all of northern Alaska. At the moment, there is some concern that the north Alaskan caribou population is too high, so the short-run effects of snowmobile hunting may be beneficial.

The same is not true of the results of hunting grizzly bear, mountain sheep, and wolf by snowmobile. Individuals of these species are easy prey for snowmobile hunters, particularly in the spring. Stringent hunting regulations will have to be enforced to prevent such hunting from becoming detrimental.

If the Noatak villagers continue to hunt caribou by snowmobile, the salmon of the Noatak River and the moose population of that drainage should benefit. It will not be necessary to net as many salmon in the fall. Moose have recently invaded the Noatak drainage and have served as a subsidiary subsistence source for the Eskimos when caribou are scarce. If snowmobile hunting provides sufficient caribou, the Noatak villagers will no longer hunt moose, for the meat of the latter is not particularly desired.

The new hunting pattern of the Noatak Eskimos necessitates a different approach to both the land and the caribou. Stalking caribou on foot requires a much greater knowledge of the behaviour of that animal than does chasing caribou with a machine. In the words of an older Noatak hunter, "The young men aren't really learning to hunt when they use snowmobiles."

Driving a snowmobile involves knowing the terrain intimately but not in the same way a man driving a dog team must. Dog teams travel relatively slowly and require firm snow or ice to move efficiently. Snowmobiles require good footing but they travel at a much greater speed and can handle more variable terrain than dog teams. A snowmobile driver selects his route of travel on the basis of different factors than does a dog team driver.

Snowmobiles also inspire confidence in young men that often is not commensurate with their knowledge of travel conditions. Travelling in the dark is possible whereas night-time travel was almost never undertaken with dog teams. Few accidents have happened to Noatak men, but the potential is greater than in dog team days.

### *Social Consequences*

The acquisition of snowmobiles will increase the social interaction between Noatak and other North Alaskan villages. Travel time from Noatak to Kotzebue is around four to five hours with a snowmobile; with a dog team the same trip often took two days. One Noatak man travelled, on separate trips, to Ambler, on the Kobuk River, and Kivalina, on the coast west of Noatak, during the winter of 1967-68; he would not have made either trip with a dog team. The California Yearly Meeting Friends Church holds a religious gathering each winter at one of the villages in the Noatak area. The recent meeting at Selawik, on the river of the same name, was attended by Eskimos driving forty-six snowmobiles and only a few dog teams. Three snowmobiles and no dog teams went from Noatak. In many cases, wives and children accompanied Noatak men on these long trips. This trend will continue and will undoubtedly affect marriage patterns, residence patterns, the spread of communicable diseases and other aspects of Noatak Eskimo life.

The growing importance of snowmobiles may also cause changes in the prestige structure of Noatak Village. Prior to 1965, a man's "worth" in the eyes of his fellow villagers depended upon his ability to maintain and utilize a dog team. The skills necessary to operate a snowmobile are not exactly the same skills associated with dog teams, hence some Noatak men who previously were relatively unsuccessful in prestige terms may rise in local esteem.

### CONCLUSIONS

The snowmobile is the single most important item of western technology introduced into the culture of the Noatak Eskimos. Only the rifle may have caused as many changes in Eskimo culture, but the rifle was introduced as part of a more inclusive technological complex and its overall effects cannot be easily assessed.

The end results of the replacement of dog teams by snowmobiles are not yet apparent, though some observed and hypothesized changes have been noted here. The effects of the snowmobile are not confined to Noatak, Alaska. These changes, and others not recognized here, are taking place across the Old and

New World Arctic. It has been pointed out that the ultimate acceptance of the snowmobile will vary from area to area according to the usefulness of the new technology within local environmental and cultural contexts.<sup>8</sup> However, the net effect of the snowmobile almost everywhere will be the further acculturation of indigenous populations.

The nature and pace of this acculturation are difficult to predict, even in terms of the limited area of Northern Alaska. The snowmobile differs from many items of western technology introduced to the North Alaskan Eskimos in that the snowmobile has become not only part of an old pattern, that of subsistence hunting, but also serves as an impetus toward a more western way of life. For the foreseeable future, the economy of the North Alaskan Eskimos will continue to be a combination of subsistence hunting, seasonal wage work and monetary compensation from various government agencies. Only a favourable resolution of the land claims problem might alter the picture. The acquisition of the snowmobile is causing substantial shifts in some aspects of this economy by making caribou (and perhaps sea mammal) hunting more efficient and allowing, as well as requiring, more effort to be expended on wage work; but it seems doubtful that a correspondingly substantial change in the overall economy will result.

The most important effect of the snowmobile may be in the relation of the North Alaskan Eskimos to the outside world, the western superstructure which orders the world within which the Eskimos must operate. Increased social interaction becomes a factor in cultural change by making functional innovations highly visible and thus reinforcing individual and group aspirations concerning that innovation. The snowmobile will allow considerably more contact between the Eskimo villages in northern Alaska than occurred in the past and the contact will be through the more acculturated individuals who have embraced the new technology. The opportunity to exchange new ideas and aspirations will correspondingly increase.

In addition to promoting Eskimo to Eskimo interchange the use of the snowmobile will thrust the North Alaskan Eskimos more firmly into the western lifeway. Despite its adaptation to



local environmental conditions and hunting patterns, the snowmobile is not Eskimo in origin. Though local modifications in both meaning and use are taking place, the purchase of a snowmobile, its operation and maintenance all require involvement with a mechanized non-native technology. Beyond this, ownership of a snowmobile draws individual Eskimos into closer contact with western ideals and realities. Wage labour of a relatively permanent nature is possible, if not necessary, with the use of a snowmobile for subsistence hunting. In this respect the introduction of the snowmobile is merely accelerating a trend already apparent in Northern Alaska. Of course the availability of jobs must keep pace with the desire of the Eskimos to engage in wage labour.

Finally, it should be noted that the introduction of the snowmobile offers anthropologists an opportunity to study the change caused by a single technological advance. The availability of adequate base studies in many areas of the Arctic provide the means with which to measure the nature and extent of changes attributable to the snowmobile. Also, there is no really thorough study of dog traction technology in Northern Alaska.<sup>9</sup> Even now it may be too late.<sup>10</sup> At the very least, the response to a new technology by North Alaskan Eskimos during the past few years demonstrates the rapidity and pervasiveness of such change in an accepting, adaptable culture.

### Notes

1. P.J. Pelto, "Snowmobiles: Technological Change in the Arctic," Unpublished ms; P.J. Pelto, Martti Linkolas and Pekka Sammallahti. "The Snowmobile Revolution in Lapland," Unpublished ms.
2. The sources summarized here include; D.C. Foote, *A Human Geographical Study in Northwest Alaska*, with contributions by H.A. Williamson (Cambridge, Mass.: U.S. Atomic Energy Commission, 1961); H.A. Williamson, "The Founding and Early Years of Noatak Village; Noatak, 1960-61," in *A Human Geographical Study*. In addition, I spent four summers and one winter (1964-65) engaged in archaeological and ethnological fieldwork in the Noatak River Region. This work was supported by the Arctic Institute of North America through a contract with the Office of Naval Research, the Department of Anthropology of Yale University and the Explorers Club. In-the-field support was provided by the Arctic Research Laboratory, Barrow, Alaska. More recent research, including gathering of information on snowmobile use, was supported by the National Science Foundation. I wish to thank Chester Burns, Herbert Onalik, Jr. and Mary Arnold, all of Noatak, and Rex and Lyle Bowen of Kotzebue for their help.

3. Williamson, "Noatak Village," p. 91.

4. *Ibid.*, p. 93.

5. Foote, *Northwest Alaska*, p. 73.

6. Here and elsewhere in this paper it will be noted that my figures are not always consistent. For example, there were 19 snowmobiles in Noatak during 1967-68 but I have mentioned only how 16 men have disposed of their dogs. Of the remaining three snowmobiles, one was owned by a man who owned two and is considered above, one belongs to the school janitor who did not hunt previously and one was purchased on trial and returned after it broke down. Other discrepancies can be similarly explained.

7. Williamson, "Noatak Village," pp. 92-93.

8. Pelto, "Snowmobiles."

9. Cf. Richard K. Nelson, *Hunters of the Northern Ice* (Chicago: University of Chicago Press, 1969), p. 265.

10. A brief resurvey of Noatak Village in the Summer of 1970 while engaged in archaeological excavations under the auspices of the National Science Foundation revealed that the trends postulated above are continuing at an even greater rate than anticipated. During the winter of 1969-70 there were 36 families in Noatak Village utilizing 48 snowmobiles of more than a dozen makes and models. Ten of these were purchased second-hand. A mens' organization, called the Ski-Daddler Club (after a snow-mobile model), was organized to help defray the costs of searching for Noatak men whose snowmobiles broke down away from the village; money is secured by weekly Bingo nights. Of the 36 families only 20 still retained dogs and some families had only 1 or 2. Six families used dogs to haul wood and water or to go fishing. Only one Noatak man used dogs for hunting during the winter of 1969-70 and he purchased a snowmobile in the spring of 1970. Hence the study of dog traction mentioned in the closing paragraph of this paper must now be an ethnographic reconstruction.