THE ALASKA NORTH SLOPE INUPIAT AND
RESOURCE DEVELOPMENT: WHY THE APPARENT SUCCESS?

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The apparently positive experience of the Alaska's North Slope Inupiat Eskimo with the massive Prudhoe Bay and Kuparuk oil field developments stands out among the generally grim experiences of indigenous peoples. The North Slope experience would thus seem to offer an excellent comparative case. Before embarking on such a comparison, however, I first revisit the question of whether the North Slope story has indeed been as positive as generally portrayed (Morehouse and Leask 1980; Knapp and Nebeský 1983; McBeath 1981; Worl 1981, 1978; Kruse 1984, 1982; Kruse et al 1983, 1982, 1980; Alaska Consultants 1984). In the decade since the first studies were made, do the Inupiat still constitute a majority of the region's population? Are they continuing their subsistence lifestyle? Have Inupiat residents experienced a real improvement in education, income, and housing? Have they experienced higher levels of social disruption? These are some of the questions it seems appropriate to ask before attempting to account for a successful experience with mining activity.

To the extent that the positive image of the North Slope experience holds up, we can turn to the factors which appear to shape the relationship between resource development and indigenous people. O'Faircheallaigh's article provides a useful point of departure. The primary objective of the comparison is to take a small step towards the construction of a general conceptual framework.


Changes in Population

In 1970, the year after the discovery of the Prudhoe Bay oil field, an area of 228,800 square kilometers constituting the North Slope was home to 2,796 Inupiat and 376 non-Inupiat living in six villages (see Figure 1). Decennial census takers enumerated only 212 persons at the oil field enclave locations of Deadhorse and Prudhoe Bay. The Inupiat constituted 88 percent of the non-enclave population.

Ten years later the Inupiat population had increased by 15 percent while the non-Native, non-enclave population more than doubled (see Figure 2). During the same period, the enclave

![Figure 1. The North Slope Borough](image)
population expanded to some 3,000 persons present at any one time (and almost double that figure counting all the individuals spending at least half their time on the North Slope). By 1980, then, the Inupiat majority had slipped to 77 percent of the village population and 45 percent of the population present on a given day on the North Slope.

By 1990, eleven years after the initiation of oil production, the Inupiat North Slope population stood at 4,336 -- 34 percent higher than a decade earlier. Meanwhile the non-Native village population continued to expand, but at a slower rate than between 1970 and 1980 (55 versus 159 percent). The enclave population increased by some 2,000 persons to a total of 5,000, thus outnumbering the Inupiat population. The Inupiat share of the village population dropped only slightly from 77 to 74 percent and the Inupiat share of the region population fell from 45 percent to 40 percent.

Subsistence Harvests

Data tracking changes in subsistence harvests on the North Slope between 1970 and 1990 exists only for bowhead whales. Bowhead harvests constitute some 40 percent of the total edible pounds harvested by Barrow and Wainwright hunters (SRBA, 1990; 1989). It is also a key subsistence resource for the residents of Point Hope, Kaktovik, and Nuiqsut. All major Inupiat subsistence resources are migratory. Year-to-year variations in migration patterns, weather and ice conditions, and in population size are the norm rather than the exception. As a result, harvests of a given resource vary widely. Figure 3 displays large annual differences in the number of bowhead landed between 1970 and 1977, the year prior to the
enactment of bowhead subsistence whaling quotas by the International Whaling Commission (IWC). IWC regulations have continued in modified form. These regulations account for the generally lower number of bowhead landed since 1976. The data show no evidence of a long term decline in bowhead harvest prior to the enactment of whaling quotas.

Inupiat consumption of subsistence resources has continued at relatively constant levels despite the limits placed on bowhead harvests (see Figure 4). In 1977, 45 percent of Inupiat households derived at least half their meat and fish from hunting and fishing (Kruse, Kleinfeld, and Travis, 1982). Given a sampling error of plus or minus 4 percentage points in the 1977 data, this figure was virtually unchanged in 1988 (Nebesky 1989). Consumption of subsistence resources has remained high in Barrow as well as in the smaller villages.

Male Inupiat participation in subsistence activities has increased over the last decade (see Figure 5). The only major resource for which participation has not increased is spring bowhead whaling.
Education

In 1970, no high school programs existed on the North Slope. The federal Bureau of Indian Affairs operated several elementary school programs, but students who desired a high school education had to leave their families to attend boarding schools located thousands of miles south. In 1975 the North Slope Borough School District began operating high school programs in community halls, churches, or other available space in each village. Between 1976 and 1983, the district constructed new high school buildings in all nine villages. District operating expenditures grew from $10 million in 1977 to $30 million in 1986.

Statistics on educational attainment are somewhat misleading because they include elderly Inupiat who had little or no opportunity to attend high school. Even adults now in their 30's and 40's could only attend boarding schools. The standard reporting figure on educational attainment includes all adults 25 years and older. It thus constitutes a lagging indicator of change.

Despite the limitations of available data, the dramatic increase in the percentage of Inupiat completing high school over the last twenty years is clearly evident (see Figure 6). Also apparent, however, is the lack of growth in the percentage of Inupiat who possess a college degree. The local availability of attractive employment opportunities not requiring advance degrees may explain this discrepancy.
Labor Force Participation

We have already seen that hunting and fishing activities constitute an important and continuing element of the Inupiat economy. One might expect that subsistence production would come at the expense of expanded participation in the wage labor market. Data displayed in Figure 7 shows moderate increases in male labor force participation in each of the last two decades and major increases in female labor force participation. Inupiat women (including those not in the labor force) now work for wages a mean of 6.3 months per year.

In 1988 the North Slope Borough (including the school district) accounted for 61 percent of all Native employment. The mining industry accounted for only 3 percent of all Native employment.

Family Incomes

In 1970, the average Inupiat family received $14,248 in 1990 U.S. dollars. The official poverty level for a family of five in the United States in 1988 was $14,305, and this figure does not reflect the substantially greater cost of many goods and services on the North Slope. Thus the average Inupiat family in 1970 received an income with a purchasing power well below poverty level.

By 1977, the mean Native family income had almost doubled (see Figure 8). It doubled again in three years to a mean of over $50,000 in 1990 U.S. dollars. The mean family income declined to $43,376 by 1988, the last year for which household data is available.

As important as the gain in mean family incomes is the increasingly flat income distribution among Native households on the North Slope (see Figure 9). Income
distributions for 1970 and 1980 are of limited value because the top income categories used nationally were so low. The 1988 income distribution is not artificially constrained. Approximately equal numbers of households fall in each of the $10,000 intervals between $10,000 and $40,000. In 1970, the poorest 20 percent of all North Slope Native households accounted for 3.5 percent of all household income (Kruse et al 1980). The comparable figure for the U.S. as a whole was 5.7 percent. In 1988, the poorest 20 percent of North Slope Native households accounted for 4.4 percent of all household income. While the income distribution of Native households remains somewhat more unequally distributed than that of the U.S. as a whole, it has moved in the direction of greater equality over the last 18 years. The distribution of household income on the North Slope has been largely determined by North Slope Borough wage scales.

Housing

Over half the village houses in 1973 (59 percent) consisted of 57 or less square meters (Dupere and Associates, 1973). The average Inupiat home offered just 10 square meters of living space per person. In 1970, the Alaska State Housing Authority (1970) classified 60 percent of homes in Barrow as "deteriorating" - and houses in Barrow were generally in better condition than those in other villages. Houses typically were single room structures constructed of materials left behind by various military and oil exploration activities.

By 1977 the average floor space per person had increased by 30 percent to 13 (see Figure 10, Kruse et al 1980). Average household sizes dropped from 5.6 in 1970 to 4.9 in 1977. Three years later the average household size had declined to 3.9. By 1988, the average floor space per person had risen to 24 square meters while the average number of
Inupiat living in each housing unit remained constant at about four (Nebesky 1990).

Violent Deaths

Changes in the incidence of deaths due to accidents, homicides, and suicides are difficult to interpret because the population size is so small. Between 1977 and 1988 a maximum of 12 and a minimum of 1 violent death was recorded for Inupiat residing on the North Slope (ISER 1990). Figure 11 displays the number of violent deaths per 1,000 population for the North Slope Borough and the Northwest Arctic Borough. Both regions show large variations in the violent death rate by year. It is clear, however, that the violent death rate on the North Slope has generally not been higher than the violent death rate in the Northwest Arctic Borough. The rates in both regions are much higher in most years than the U.S. average - .6 violent deaths per 1,000 population in 1988 (U.S. Department of Commerce, 1990). The higher rates in the Northwest Arctic Borough, however, suggest that the rates observed for the North Slope are not the product of mining activities. While mining activities started prior to the reporting period on the North Slope, activities associated with the Red Dog Mine in the Northwest Arctic Borough only started in the late 80's. The mine, expected to produce 2.1 million tons-per-year of mined ore, was not completed until 1989.

Changes in Inupiat Institutions

In 1970, three of the six existing villages were incorporated as first or second class cities under state law. The remaining villages obtained second class city status by 1982. More important than these formal institutions, however, were the social groups centered around the whaling captains and village elders. In addition, Inupiat leaders had in 1966 formed the Arctic Slope Native Association (ASNA) to
advance their land claims with the federal government (Knapp and Morehouse, 1991).

The two years following 1970 brought major changes in the institutional structure of the North Slope. The Alaska Native Claims Settlement Act of 1971 (ANCSA) established the Arctic Slope Native Regional Corporation (ASRC) and eight Native village corporations on the North Slope. The corporations are wholly owned by Inupiat shareholders. The village corporations received over 4,000 square kilometers of land and the regional corporation received 16,000 square kilometers of land and subsurface rights to the village corporation lands. In addition ASRC received some $52 million of which $23 million was distributed to the village corporations. The intent of Congress was that the corporations would use the land and capital to produce a continuing source of income for their Native shareholders.

The corporations established by ANCSA had to wait for both their land and money until an enrollment of Natives had been completed and competing claims for lands had been resolved. ASRC initiated a joint venture in 1977 to provide petroleum-related design and engineering work (ASRC nd). Since that time, ASRC has established at least 80 percent ownership of five subsidiaries active in the petroleum industry. In 1988, these firms accounted for over $90 million in gross revenues.

Alaska's state constitution provides for the establishment of a regional form of local government minimally empowered with education, planning and zoning, and taxation responsibilities. Additional powers such as police and utilities can be added. North Slope residents were successful in establishing the North Slope Borough in 1972. As a Home Rule borough, the North Slope Borough has all legislative powers not prohibited by law or charter. As mentioned above, the Borough moved immediately to establish a regional education system. By 1986, the Borough had
established line departments in the following areas: planning and community services, housing, public works, health and social services, environmental protection and conservation, police, search and rescue, fire, and industrial development. In addition, the Borough financially supports the Inuit Circumpolar Conference, the Commission on History, Language, and Culture, the Alaska Eskimo Whaling Commission, and the Fish and Game Advisory Commission.

North Slope Borough revenues are largely based on property taxes received from the oil industry. In 1977, the assessed value of property in the Borough was $1.8 billion. The tax base grew to a peak of $13.6 billion in 1987 (see Figure 12, preceding page). Borough annual revenues totalled $30 million in 1977, peaked at $377 million in 1985 and fell to $318 million in 1989. In per capita terms, 1989 revenues were $73,000 per Inupiat resident or $54,000 per village resident.

In addition to operating expenditures, the North Slope Borough also spent $73 million in 1989 on the final phases of its capital improvements program (CIP). Between 1977 and 1988, the Borough spent $1.4 billion on the CIP, constructing new schools, health clinics, airport facilities, water and sewage systems, public housing, electric power and heating systems, telecommunication centers, warehousing and maintenance facilities, roads, and fire stations.

Is the North Slope a "Positive" Case?

The purpose of the above discussion is to provide a factual basis for concluding whether or not, in general, the conditions have changed for the better for the North Slope Inupiat. Ignoring for the moment any attribution of causality, the data show that the Inupiat are better off today than they were in 1970. They have retained their numerical majority in all their traditional settlements; they have continued to harvest similar quantities of fish and game; more adults have completed high school; increased numbers of men and women have entered the wage labor force; incomes have risen dramatically from poverty levels and become more evenly distributed; housing conditions have improved; violent deaths, while high in comparison with national figures, show no upward trend and have been lower than a neighboring Inupiat region which has only recently experienced any large mining development. These indicators of improved conditions are incomplete but broad in scope. It is unlikely that other indicators would tell a different story.

It appears, then, that we can conclude that the North Slope is a "positive" case. Does this mean that it is a positive case of the effects of mining on indigenous peoples? As we have seen, direct mining employment of the Inupiat has been minimal. Nuiqsut, the nearest Native village to an oil field, is located some 60 miles distant. The immediate force for change on the North Slope has been the North Slope Borough itself. Yet the North Slope Borough would not have been formed if no oil development occurred on the North Slope. Without the massive investments at Prudhoe Bay and Kuparuk no significant property tax base would have existed. The tie between oil development and borough revenues is obvious. Equally plain is the pervasive role of the borough in the lives of Borough residents. The North Slope is a positive case of the effects of mining on indigenous peoples; and, as we shall see, the
positive outcome is largely because Inupiat leaders were successful in overcoming industry and state government objections to the formation of a regional government capable of capturing and directing monies from the oil industry to local residents in the form of jobs, housing, environmental protection, and public services.

A Framework for Analysis

One of the principal difficulties in generalizing or predicting impacts of mining developments on indigenous peoples is the blurred boundary between conceptual categories and the myriad of individual facts that seem relevant in a particular case. O'Faircheallaigh identifies many impact categories and demonstrates the diversity of outcomes that have been experienced in each category. He challenges us to identify explanatory factors. Being familiar with our own set of cases, it seems at first easy to comply. Yet are the factors relevant to explaining the North Slope case relevant to the impacts of mining in New Guinea? When do "factors" simply become "facts"?

While not having an answer to this question, it seems reasonable to assert that my "facts" are "factors" and to do so in such a way that others can easily differentiate the two at least with respect to their own case. Table 1 is intended to be a self-explanatory introduction of the factors affecting outcomes of mining activity on indigenous peoples. Figure 13 presents a simplified conceptual diagram of the relationships among the factors identified in Table 1.

Since I am attempting to explain why the North Slope is a positive case I focus on the factors which I believe account for outcomes rather than on an exhaustive enumeration of the outcomes themselves. The factor labelled "well-being" embodies most of the outcomes described in the first section of this article. Included under well-being at the individual level would be self-esteem, the match between aspirations and expectations, and perceived satisfaction with and objective indicators of the domains of daily living (e.g. job, marriage, leisure activities, physical health). Household level aspects of well-being would include income and housing quality among others. The family constitutes a generally higher level of social organization and would include the quality of economic and social relationships among households containing family members. Examples of such relationships would include sharing of subsistence products and cooperative labor. Community level aspects of well-being would include the viability of formal organizations and long term economic relationships such as those necessary to the operation of whaling crews in North Slope villages. Finally, cultural aspects of well-being would include the viability of Native language and the degree to which traditional knowledge and skills are transferred between generations.

It is beyond the scope of this article to attempt to draw the rich interrelationships between domestic and wage production and in-kind services on the one hand and different levels and domains of well-being on the other. I also do not attempt to discuss the role of individual choice in domestic and wage production decisions, a topic most central to my own research interests (Kruse, 1991). Rather, I ask the reader to accept as a given that changes in both domestic and wage production and changes in in-kind services are central to changes in well-being. While other connections exist (e.g. competition for marriage partners and well-being), we can account for much of the difference in case outcomes by focusing on factors which explain changes in these three variables.
<table>
<thead>
<tr>
<th>FACTOR</th>
<th>MEANING</th>
<th>DEPENDENT FACTORS</th>
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<tbody>
<tr>
<td>Native Organization</td>
<td>Degree to which Natives have organized to deal with external forces for change</td>
<td>Land Use Controls</td>
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<td>Local Position on Development</td>
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<td></td>
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<td>Work Rules, Housing, Contracting, Use of Non-local Labor, Training</td>
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<tr>
<td>Local Government Powers</td>
<td>Ability to regulate land use, tax property</td>
<td>Land Use Controls</td>
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<td>Housing</td>
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<td></td>
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<td>Work Rules, Housing, Contracting, Use of Non-local Labor, Training</td>
</tr>
<tr>
<td>Percent Population that is</td>
<td>Ability of Natives to rely on democratic mechanisms for local control</td>
<td>Land Use Controls</td>
</tr>
<tr>
<td>Native</td>
<td></td>
<td>Local Position on Development</td>
</tr>
<tr>
<td>Local Profit Institutions</td>
<td>Existence of local businesses capable of providing mining support services</td>
<td>Local Position on Development</td>
</tr>
<tr>
<td>Land Ownership</td>
<td>Ownership of lands required for mining activities</td>
<td>Land Use Controls</td>
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<td></td>
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<td>Work Rules, Housing, Contracting, Use of Non-local Labor, Training</td>
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<tr>
<td>Local Position on Development</td>
<td>Strength and uniformity of support or opposition to development</td>
<td>Separation of development from community</td>
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<td>Compactness of Development</td>
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<td>Scheduling &amp; Engineering</td>
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<tr>
<td>Local Land Use Controls</td>
<td>Ability to determine location and characteristics of local land uses</td>
<td>Separation of development from community</td>
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<td>Compactness of Development</td>
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<td></td>
<td></td>
<td>Scheduling &amp; Engineering</td>
</tr>
<tr>
<td>Mine Type</td>
<td>Set of characteristics defining mine: extent of surface disrupted; labor force, water, gravel requirements; type of transportation infrastructure required; profitability of mine</td>
<td>Separation of development from community</td>
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<td>Compactness of Development</td>
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<td>Work Rules, Housing, Contracting, Use of Non-local Labor, Training</td>
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<td>FACTOR</td>
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<tr>
<td>Mining Company</td>
<td>Set of characteristics differentiating mining company from other companies developing the same type of mine: experience in other locations, financial health, shareholder interest in effects of mining activity, corporate specialization in mining activity, union/ non-union shop.</td>
<td>Separation of development from community Compactness of Development Scheduling &amp; Engineering Work Rules, Housing, Contracting, Use of Non-local Labor, Training</td>
</tr>
<tr>
<td>Separation from Community</td>
<td>Degree to which development is physically and socially isolated from community</td>
<td>Competition</td>
</tr>
<tr>
<td>Compactness of Development</td>
<td>Degree to which &quot;footprint&quot; of development is minimized</td>
<td>Loss or destruction of land, habitat, wildlife Dislocation of wildlife, agriculture Access to land, wildlife</td>
</tr>
<tr>
<td>Sensitivity of Environment</td>
<td>Sensitivity of local flora and fauna to products of development including noise, dust, water loss, alteration of surface, air and water pollutants</td>
<td>Loss or destruction of land, habitat, wildlife Dislocation of wildlife, agriculture Access to land, wildlife</td>
</tr>
<tr>
<td>Scheduling &amp; Engineering</td>
<td>The degree to which facilities and activities are specifically modified to reduce negative byproducts of development</td>
<td>Loss or destruction of land, habitat, wildlife Dislocation of wildlife, agriculture Access to land, wildlife</td>
</tr>
<tr>
<td>Competition</td>
<td>Non-local (including new resident) competition for subsistence resources, jobs, marriage partners, housing</td>
<td>Domestic production Wage production Well-Being</td>
</tr>
<tr>
<td>Loss or Destruction of Land, Habitat, Wildlife</td>
<td>Extent to which original land use is eliminated; productivity of habitat or wildlife populations decline</td>
<td>Domestic production</td>
</tr>
<tr>
<td>Dislocation of Wildlife, Agriculture</td>
<td>Extent to which wildlife or agricultural lands are relocated</td>
<td>Domestic production</td>
</tr>
<tr>
<td>Loss of access to land, wildlife</td>
<td>Extent to which travel to agricultural or hunting and fishing areas is disrupted</td>
<td>Domestic production</td>
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<td>FACTOR</td>
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<tr>
<td>Work Rules</td>
<td>Modification of work environment, leave and hiring policies to complement domestic production and maintenance of social relationships</td>
<td>Wage production</td>
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<tr>
<td>Housing</td>
<td>Location and availability of housing for non-locals</td>
<td>Competition</td>
</tr>
<tr>
<td>Contracting</td>
<td>Extent to which mining activities are contracted to local firms</td>
<td>Wage production</td>
</tr>
<tr>
<td>Training</td>
<td>Extent to which training builds on common patterns of social interaction</td>
<td>Wage production</td>
</tr>
<tr>
<td>Local Services</td>
<td>Set of services provided by government</td>
<td>Wage production</td>
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<td></td>
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<td>Well-being</td>
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<tr>
<td>Individual Choice</td>
<td>Set of behavior choices based on perceived circumstances</td>
<td>Domestic production</td>
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<td>Wage production</td>
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<td>Migration</td>
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<tr>
<td>Domestic Production</td>
<td>Activities which directly produce food or other goods for domestic consumption and or indirectly produce such goods through a localized cash or barter system</td>
<td>Well-being</td>
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<td></td>
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<td>Wage production</td>
</tr>
<tr>
<td>Wage Production</td>
<td>Wage or self-employment in a cash economy which has a significant non-local component</td>
<td>Well-being</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Domestic production</td>
</tr>
<tr>
<td>Well-being</td>
<td>The set of individual, household, family, community, and cultural characteristics perceived to contribute to life quality</td>
<td>Individual Choice</td>
</tr>
</tbody>
</table>
Figure 13. Factors Affecting Outcomes of Mining Activity on Indigenous Peoples

Native Organization  Local Powers  % Native Population  Local Profit Institutions  Land Ownership

Local Land Use Controls  Local Position on Development  Mine Type  Mining Company

Separation from Community  Competence of Development  Sensitivity of Environ.  Scheduling & Engineering

Compaction  Loss or Destruction of Land, Habitat, Wildlife  Dislocation of Wildlife, Agric.  Access to Land, Wildlife

Competition

Individual Choice  Domestic Production  WELL-BEING

Domestic Production  Wage Production

Individual Choice  Migration

Wage Production

Work Rules  Housing  Contracting  Training  Local Services

Domestic Production  WELL-BEING

Individual Choice  Wage Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING

Wage Production  Domestic Production  WELL-BEING
The Case of the North Slope

Native Organization

There were two linchpins to the success on the North Slope: a constitutional provision for the establishment of a regional form of government with broad powers including taxation; and an organized Native leadership. Oil development was not the first external force for change faced by the North Slope Inupiat. In the early 1960's the U.S. Department of Interior tried to stop Barrow residents from spring duck hunting and the U.S. Atomic Energy Commission proposed to use atomic energy to create a harbor 30 miles southeast of the village of Point Hope. In both cases, residents successfully organized to oppose the action (McBeath and Morehouse 1980, 22-24). These efforts prompted northwest Alaska village leaders to meet in Barrow to discuss common interests in 1961.

Another external force for change was represented by state land selections under the 1958 Statehood Act. In 1966 Inupiat protested state plans to lease lands for oil and gas development on the North Slope, ultimately producing a freeze on state selections and a key impetus for Native land claims (McBeath and Morehouse 1980, 19-23).

The ability of the North Slope Inupiat to present an organized response to North Slope oil development at Prudhoe Bay in the early 1970's is in part attributable to earlier successes in opposing external forces for change. In addition, the oil exploration and military activities in the 1950's, an expansion of the national guard and local involvement in the federal "War on Poverty" programs in the 1960's contributed to the emergence of a cadre of Native leaders on the North Slope (McBeath and Morehouse 1980, 28-35). These leadership experiences provided the basis for the formation of a regional political organization, the Arctic Slope Native Association (ASNA), in 1966. The ASNA proceeded to secure public support among Inupiat residents to claim all lands north of the Brooks Range.

The ASNA was not completely successful in achieving its land claims and ultimately opposed the ANCSA settlement on the grounds that it failed to transfer title to sufficient lands on the North Slope to the Inupiat. It also opposed oil development, fearing destruction of subsistence resources. As prospects for achieving its land claims goals diminished, the ASNA turned its energies to the establishment of a borough (MacBeath and Morehouse 1980, 77). Thus we see a direct link between the organizational development of the North Slope Inupiat and the formation of the North Slope Borough, the principal link between the mining activities and the Inupiat.

Local Government Powers

Authors of Alaska's state constitution benefitted from an awareness of the strengths and weaknesses of the various forms of local government adopted by the lower 48 states. They decided that a stronger form of county government armed with the power to levy taxes and assigned with the responsibilities of education and land use planning would address many of the faults observed in other forms of local government. Without this regional form of government, Inupiat leaders could not have captured a portion of the value of mining activities through property taxes.
The creation of the North Slope Borough was not a mere formality, however. Inupiat leaders had to overcome several pieces of legislation introduced by the governor which would have substantially reduced the chances that the borough could be created and severely limited the revenues the borough might collect. Inupiat leaders also had to face the objections of the oil industry. The North Slope Borough was not legally created until the state Supreme Court issued its decision in 1974.

Just as we cannot attribute the success of the North Slope case solely to the leadership ability of the North Slope Inupiat, we cannot simply conclude that the opportunity to establish a regional form of government was sufficient. Both ingredients proved to be critical.

Percent Population that is Native

Maintaining a substantial Native majority is at least important to competition for jobs, wildlife, and marriage partners; it is absolutely necessary if the principal institution mediating the effects of development has to operate on democratic principles. This is exactly the situation in which Inupiat leaders found themselves. The creation of the North Slope Borough offered the opportunity to use petro dollars to create an educational system, improve living conditions, employ residents, and protect subsistence resources. Yet because the Borough is a local government formed under State law, its agenda is subject to the pleasure of the majority of borough residents, both Native and non-Native.

Today the Inupiat constitute only 40 percent of the population present on a given day on the North Slope. For voting purposes, however, the more accurate figure is 74 percent. The difference is principally due to a decision by the industry to rely on an enclave form of development based on rotation employment and group quarters. All but a handful of the remote site workers maintain a permanent residence off the North Slope.

The Borough’s own activities directed toward the improvement of village living conditions were responsible for most of the increase in the village non-Native population since 1970. When asked, Would you like things to be built fast in your village even if it means many whites will come or would you like things to be built slow in your village and have only a few outsiders come? 72 percent of North Slope Inupiat residents in 1977 preferred the slow development approach (Kruse et al 1980). Native leaders feared that changes in state law might undermine the Borough’s ability to achieve its goals, however, and proceeded at a maximum pace with a Capital Improvements Program (CIP). While village construction projects generally used significant numbers of non-Native workers, most were housed in temporary construction camps near the village and these workers had relatively little contact with residents.

Today most major village construction projects have been completed. Natives constitute over 90 percent of the populations of Atkasook, Nuiqsut, Point Hope, and Wainwright, and over 80 percent of the populations of Anaktuvuk Pass, Kaktovik, and Point Lay. The major change in village population composition has occurred in the regional center of Barrow, the residence of 51 percent of the North Slope Inupiat. They constitute only 64 percent of
Barrow's population, sharing the community with almost 1,000 whites who are mostly school teachers, medical staff, and administrators and 277 Filipinos who came to Barrow to take advantage of the growing number of service jobs and business opportunities. Despite the obvious change in makeup of Barrow's population, however, the bottom line is that the Inupiat have maintained control of the North Slope Borough since its formation in 1972.

Local Profit Institutions

The great social experiment set in motion by the U.S. Congress of using the for-profit corporation as the vehicle for Alaska Native self-determination was premised on the idea that land and capital were all that the Natives needed to go into business. Missing from this formula in most regions of the state were economically viable business opportunities. Native regional and village corporations have had a difficult time meeting shareholder expectations for dividends, local employment, and a sensitivity to cultural concerns. ___ of the 12 regional corporations have failed to make a profit in the last ___ years of operation (Colt 1991).

The Arctic Slope Regional Corporation (ASRC) stands out as a striking exception. As described earlier, ASRC successfully established five subsidiaries and has gained a significant foothold in the oil industry. North Slope village corporations have collaborated in some of these efforts and shared in their success. Both ASRC and the village corporations have also been involved in construction associated with the Borough's CIP. While many of the employees of the Native corporations and their subsidiaries are non-Native, the Native corporations account for about 17 percent of Native employment on the North Slope (compared with the Borough's 60 percent). Finally, ASRC's bottom line is not tied exclusively to the fate of the oil industry on the North Slope; it has leveraged the minority status of its subsidiaries into substantial contracts both in Alaska and elsewhere.

Land Ownership

Native land ownership to date has had little directly to do with the success of the North Slope case since development activities have mostly occurred on lands leased from the state. Such ownership could be critically important to the success of another case: the development of the Arctic National Wildlife Reserve (ANWR). ANWR oil reserves are located on the coastal plain near the Inupiat village of Kaktovik. Kaktovik has already served as a staging area for exploration activities and conceivably would offer advantages as a site for oil field support activities should ANWR be developed. Inupiat ownership (Borough, Native corporation, and individual) of land may be the most effective local mechanism for controlling the location and design of facilities and the rules which will govern oil field workers.

Local Position on Development

The Inupiat position on oil development has not always been strong or uniform. In the case of the Prudhoe Bay development, strong initial Inupiat opposition centering on the land claims issue spawned the initiative to create
the North Slope Borough. Once the residents began to realize the benefits of industry-funded borough activities, the Inupiat view shifted to tacit support of continued onshore development in the same area.

The presence of regional and village Native for-profit corporations has greatly influenced the real and perceived stake of the Inupiat in oil development. Most of the revenues of the regional corporation (ASRC) are derived from subsidiaries with a strong presence in the oil field support industry. ASRC also owns the subsurface rights to over 20,000 square kilometers of land, including substantial holdings located within the largest estimated untapped petroleum reserve in the United States.

While Inupiat well-being is in actuality more closely dependent on the revenue link between the Borough and the oil industry, the for-profit Native corporations have been more aggressive in their support for additional development. The stance of the Native corporation leadership has influenced the manner in which Borough leaders have dealt with the oil industry, causing them to adopt a less adversarial approach. Whether this has yielded better outcomes for the Inupiat is open to debate; however, it probably has allowed Borough officials to focus their energies more exclusively on village projects.

The principal division in support has taken place over near-shore oil development. Residents of the smaller villages have tended to oppose such development, fearing that development activities will displace marine mammals and possibly disrupt fish and waterfowl populations (Kruse 1983, 181-245). There is a much stronger consensus that offshore oil development poses an unacceptable threat to subsistence resources. In neither the case of near-shore nor offshore activities, however, has Inupiat opposition been effective.

Land Use Controls

The Borough has adopted a land management regulations using its planning and zoning powers. These regulations include a "resource development zone" classification coupled with performance standards. The impact of the land use controls available to the Borough on the Prudhoe Bay development probably has been minor in comparison with such factors as field requirements and technology limitations. However, as discussed below, these controls contributed to the compactness of the Kuparuk development.

The North Slope Borough also attempted to use federal Coastal Zone Management (CZM) legislation to impose development controls. The Borough met with both federal and state resistance to its initial attempts, however, and ultimately adopted a performance-based plan which leaves most decisions open to negotiation and depends on continued active Borough intervention to be effective. Neither the CZM regulations nor the land management regulations adopted by the Borough offer a mechanism which could be used effectively to prohibit development. The lack of Native control over whether development takes places or not is probably of little consequence for onshore developments since they are supported by the Borough. The lack of control is of major consequence for offshore oil developments, the exploration phase of which has already started.
Mine Type

In reading O'Faircheallaigh's article one cannot ignore the importance of the characteristics of the mine itself. Modern oil fields produce extremely small "footprints", for example, in comparison with strip mines. Producing oil fields also employ few people in comparison with the value of product. They require prodigious amounts of water in the enhanced recovery phase of operations; and, pipelines and field roads can present barriers to wildlife and humans over hundreds of square miles. Also critically important is the profitability of the particular mine. The North Slope oil fields and the associated Trans-Alaska pipeline represent one of the most expensive developments in human history, yet have proved to be one of the most profitable as well.

The positive experience of Inupiat with North Slope oil development activities in part is attributable to the fact that the value of the resource being mined warranted a "first class" approach in development design and maintenance. This is not to say that the development has operated without spills or undesirable emissions; negative environmental effects have been a problem. Environmental problems have been worse, however, in development areas occupied by independent contractors than in areas maintained by the producers themselves.

Mining Company

There is no question whether the corporations operating the North Slope oil fields have access to sufficient capital to adopt the "first class" approach mentioned above. Corporate executives are aware of the sensitivities of their shareholders and buying public; environmental organizations have worked hard to highlight the North Slope of Alaska as a symbol of the last remaining wilderness areas in the United States. These corporations are also poised to extend their activities to the northeast corner of the state in the Arctic National Wildlife Refuge. These factors have shaped the corporate behavior of the major producers. One can imagine a much different outcome were the producers less well capitalized, responding primarily to constituencies with interests far away from the North Slope.

Separation from Communities

Prudhoe Bay developed as an enclave because there was no advantage to locating facilities in or near existing Native villages. The scale of development coupled with specialized transportation needs (i.e. a 48-inch heated pipeline) demanded dedicated port, airport, and housing facilities. Ancillary support activities were best provided at Deadhorse, an older base camp located much closer to Prudhoe Bay than the nearest Native village. The situation could have been much different. Oil exploration activities east of Prudhoe Bay in the Arctic National Wildlife Refuge, for example, have already involved the Native community of Kaktovik. If oil were produced from ANWR, the mothballed Distant Early Warning installation near Kaktovik and the airstrip might attract oil-related activity. Perhaps the most likely development in or near Kaktovik would be the evolution of an independent contractor staging area. Key factors which will influence the separation of development facilities from Kaktovik will be land ownership, Borough land use controls, and the presence or absence of a local consensus on the preferred degree of separation. The
separation of present oil production and transportation facilities from Native communities is of major importance to levels of competition and access to wildlife resources (discussed below).

Compactness of Development

The compactness of the existing North Slope oil fields has been primarily dependent on the type of development (i.e. requiring separate fields with connecting pipelines and roads) and on evolving technology (e.g. well spacing and directional drilling). The more recently developed pads are on the order of ten times more compact than the oldest fields. The apparent compactness of the development is also influenced by environmental constraints. Gathering lines on the North Slope are elevated to avoid degradation of the permafrost. As a result, the fields present a much larger visual presence and impediment to overland travel than if it were possible to bury the lines.

Aside from the influence of technology and the environment, oil field support services account for the largest variation in development compactness. In the case of Prudhoe Bay, these services have posed a significant environmental and visual blight as they spread out over many acres of tundra. The North Slope Borough has attempted to preclude the same uncontrolled growth in the Kuparuk field by building its own compact service and warehousing facility and requiring that the facility be used by all oil field businesses. The requirement to use the facility has proven difficult to enforce and the facility itself has not been self-supporting. The approach has, however, helped to achieve a more compact development.

Sensitivity of the Environment

As Prudhoe Bay was developed, wildlife biologists worried that roads, pipelines, and overall levels of human activity would disturb caribou and result in a decline in herd size. So far, the Central Arctic Caribou Herd has fared well, although the debate on the effect of development on the caribou continues, particularly with respect to the potential effect of ANWR development on the much larger Porcupine Caribou Herd.

The sensitivity of coastal fish to causeways connecting gravel islands to shore has been another source of active debate. The prospect of ANWR development has raised concern about how development requirements for water and gravel might be met without eliminating fish breeding and overwintering habitats. Effects of noise produced by offshore activities on the behavior of marine mammals is a major source of concern to the Inupiat.

All these environmental sensitivities have implications for Inupiat subsistence activities. In an effort to exert some control over development activities, the Borough established a scientific advisory committee composed of recognized experts and placed a scientist on its own staff to coordinate the activities of the committee and the borough's own environmental monitoring activities -- including sponsorship of a program to annually count bowhead whales. The major products of this effort have primarily been informed commentary on industry proposals.

Scheduling and Engineering
Although mine type determines much of the character of the development and therefore much of the development effects, some latitude exists for design modifications which moderate or even eliminate undesirable consequences of development. Some sections of gathering lines at Prudhoe Bay, for example, were elevated enough so that caribou could pass underneath (it turned out that the caribou are attracted to the shade underneath the lines). This factor appears to be particularly important to the possible dislocation of wildlife and loss of access to wildlife (see below).

Competition

The most common form of competition of concern to indigenous peoples faced with mining developments is probably competition with non-locals (or new residents) for jobs associated with the development itself. In the case of the North Slope, only a handful of Inupiat have actively sought to work in the oil fields. Residents preferred to work in their own villages on projects which would benefit them directly and for Inupiat-controlled employers like the North Slope Borough and ASRC.

There may be a cost to this approach. Many of the remote site workers now holding permanent jobs in the oil fields started work on the construction phase of the development and gained the experience and training they needed to later assume jobs in operations and maintenance. Since the Inupiat were busy working at home they have not benefitted from these years of on-the-job training and could find it difficult to compete for permanent jobs if village employment opportunities disappeared. Inupiat men in particular preferred village construction jobs which are now increasingly rare as the CIP is in its final phases. The Borough is now faced with the task of maintaining a delicate balance between allocating its declining revenues to operations (much of which is located in Barrow) and maintaining the flow of project dollars to the smaller villages.

Competition for wildlife resources is potentially a more serious concern for the North Slope Inupiat than competition for jobs. Thus far work rules enacted by the oil field producers which prohibit hunting and fishing on the North Slope by employees have worked reasonably well. In addition, the oil companies have supported the closure of an area around the Prudhoe Bay oil field to hunting. These actions have been effective in eliminating competition from oil field workers in the immediate development area.

Also of concern is competition that would accompany public use of the single road which links the North Slope with Alaska's major population centers, the Dalton Highway (also called the North Slope Haul Road). The road is currently open for public use to the Brooks Range which defines the southern boundary of the North Slope. The state attempted in open the road north of the Brook Range to public use in 1991 and was opposed by the North Slope Borough; as of this writing the outcome is still in doubt. Guides have also used abandoned airstrips located along the road to get clients into remote areas (Haynes and Pedersen, 1989). Public access by road and via these airstrips could substantially increase pressure on caribou populations.

Potential forms of competition between remote site workers and indigenous peoples are not limited to employment and subsistence. Commercial whalers coming to the Arctic at the turn of the century married Inupiat
women as have men working at distant early warning facilities. The fact that resource development on the North Slope has occurred in enclaves has greatly limited social interactions between oil field workers and Inupiat residents. Racial inter-marriages are still common among the Inupiat, particularly among Barrow women, but what could have been an overwhelming incursion of non-Native men has been avoided due to the use of enclaves.

**Loss of Destruction of Land, Habitat, Wildlife**

O’Faircheallaigh cited numerous examples of mining operations which destroyed agricultural land. In this case only a minute fraction of the total terrestrial and aquatic habitats of the major subsistence species have been destroyed. Modern oil field operations simply do not consume much space in comparison to the immense areas required to support migratory arctic wildlife. This is not to say, however, that there is not an ongoing debate concerning the possible effects of activities over time or if further development occurs. But most of the mechanisms by which development would affect habitat involve the dislocation of wildlife rather than the outright destruction of habitat.

**Dislocation of Wildlife**

As migratory species, caribou, bowhead whale, walrus, waterfowl, and many species of fish are subject to displacements that may, or may not, be associated with an actual decline in population numbers. Inupiat have repeatedly voiced concerns that the noise associated with offshore oil development activities could cause the bowhead to shift their spring migration route away from the near-shore ice leads that offer the principal whale hunting opportunity for the Inupiat. More recently, Canadian and Alaska Athapaskan groups have opposed oil development in ANWR on the grounds that the Porcupine Caribou Herd might be displaced to less productive habitat. At least with respect to current North Slope development activities, however, dislocation of subsistence resources has not been a major concern.

**Loss of Access to Land, Wildlife**

Lands may continue to support agriculture or wildlife while becoming inaccessible to indigenous people. Oil companies were concerned that Inupiat hunting in developed areas could inadvertently pose a threat to exposed pipelines and oil field workers. They pressed to have the Prudhoe Bay area closed to hunting. Hunting is currently allowed near the closest oil field to an Inupiat community (the Kuparuk field, about 60 miles from Nuiqsut), but hunters report having to negotiate crossings of elevated pipelines, roadways built up eight feet or more, as well as being confronted by uniformed security guards (Haynes and Pedersen, 1989).

Most North Slope Inupiat hunting and fishing areas do not require crossing oil fields. This picture could change for the community of Kaktovik if the coastal plain in ANWR were developed. The oil fields themselves could be located between the community and upland hunting and fishing sites; proposed port facilities would be located both
east and west of the village in areas used for seal hunting. These facilities will not necessarily prevent access, however, if access requirements are taken into account in facility design.

Work Rules

Over the last eighteen years the Inupiat have enjoyed the ideal situation of earning oil-generated money by working in their own villages for Native-run employers such as the North Slope Borough and the ASRC. These employers have adopted hiring and leave policies which have allowed Inupiat to continue their subsistence activities. Indeed, significant portions of monies earned have been used to purchase snow machines, ATV's, boats, and other equipment and supplies used in hunting and fishing. Native employers also work around the community cultural calendar.

Figures 14 and 15 indicate the extent to which it has been possible to pursue both wage employment and subsistence on the North Slope. In 1977, Inupiat men who worked six to eleven months during 1976 averaged 5.3 subsistence activities during the preceding twelve months compared with a mean of 3.5 subsistence activities among Inupiat men who worked for wages twelve months. Whereas those working 12 months a year showed substantially less subsistence activity in 1977 than those who worked six to eleven months, levels of activity were the same for the two groups in 1988. Thus, by 1988 the number of months worked bore no relationship to the number of subsistence activities pursued. Figure 15 focuses on the subset of households occupied by a single adult male. In this selected subset of households, just over half the men who worked one to five months in 1987 reported getting at least half their household's meat and fish from their own subsistence activities compared with slightly over a third of men who worked six to eleven months or twelve months.

Figure 14: Mean Number of Male Subsistence Activities By Employment

<table>
<thead>
<tr>
<th>Months Worked for Pay</th>
<th>1977</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>2.9</td>
<td>3.5</td>
</tr>
<tr>
<td>1-5</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>6-11</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>12</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>

Sources: ISER 1977, NSB 1988 Surveys
in 1987. The observed decline between the first two employment categories may have as much or more to do with differences in the amount of food purchased than in amount of food harvested. In any case, wage work on the North Slope has apparently not interfered with an active subsistence lifestyle. Evolving work rules over the last decade may in part explain (along with income gains) how even full year work appears to be compatible with subsistence pursuits.

Housing

One of the principal advantages of enclave development is that housing is integrated with the work environment. Social interactions between workers and village residents are limited simply because there are limited occasions for it to take place. The Inupiat faced a more complex problem when it came to housing workers and other non-Natives who came to villages experiencing their own CIP booms. The enclave approach as proven to be reasonably effective even when the "enclave" is a temporary construction camp located within walking distance of the community.

The North Slope Borough has also played an active role in determining housing opportunities. A significant portion of the CIP program has been devoted to improved housing for local residents. Inupiat residents, like most other Americans, prefer single family detached homes. Of the residential structures built after the incorporation of the borough in 1972 were single family designated for permanent residents who signed up for new housing. The Borough also built multi-family structures and these became the home for most non-Native permanent or semi-permanent residents. Borough control over most housing construction constituted an important means for limiting the influx of non-Natives.
Contracting

Contracting has been important as a factor mediating the impacts of petroleum development on the North Slope in two ways. First, Native corporations have successfully taken advantage of contracting opportunities. Second, contractors constitute the least controllable segment of the enclave developments. The latter effect has largely been limited to land use problems in the enclave area, but could become a major impact of development in ANWR if Kaktovik served as a base for contractors.

Quite unrelated to the direct effects of development, contracting came up as a major issue related to the North Slope Borough CIP. Several contractors, Borough non-Native staff, and Borough leaders were indicted on charges related to corruptive contracting practices. While "the North Slope scandal" is seen by many as an indictment of the entire CIP, it is more remarkable that the Inupiat were able to capture and convert so many dollars into mostly functional buildings, facilities, and equipment during a short time while meeting local employment demands. Perhaps the successes are more a testament to the unprecedented scale of funds available than to efficiency, but the improvements are readily visible.

Training

As mentioned above, the Inupiat have largely lost out on the opportunity to benefit from the on-the-job training received by those remote site workers who started as construction workers and now work as plant operators. At the same time, the Inupiat have had decades of experience working on construction projects and as mechanics and vehicle operators. More recently Inupiat men and women have learned office and administrative skills. The extent to which these skills will remain in demand in the villages depends in large part on future Borough revenues, which in turn depend on oil and gas property values. If oil field jobs continue to exist on the North Slope then it may be that borough revenues will be sufficient to offer local job opportunities as well.

Local Services

Our simplified model of factors is almost complete. Key to the success of the North Slope case, however, is the fact that the organization formed to receive the monetary benefits of development also had clear mandates on how to spend the funds. As a local government, the Borough immediately assumed statutory responsibilities for education. The Borough also was well-placed to receive and administer state and federal program capital and operating funds for housing, health care, transportation, and public safety. Residents felt that they had been ignored in all of these areas for years. Borough leaders looked to urban Alaska for their standards on what facilities local residents deserved; thus the agenda was clear from the beginning: build the entire local service infrastructure virtually from scratch.

In an important way, the well-evolved functions of local government offered a clear road map for how the Borough could best spend its wealth. Another type of organization might have lost much of its opportunity attempting to produce a vision of its priorities. Although one could argue that the sheer magnitude of funds available did not demand any tradeoffs in priorities, the number of directions the Borough could pursue simultaneously was limited by the time
Inupiat leaders had to give to the effort. The result was a revolution in local services and an accompanying boom in local employment opportunities.

Individual Choice and Well-Being

In my introduction to the factors affecting development outcomes, I pointed out that individual choice and well-being are critical elements to our conceptual model but beyond the scope of this paper. Twenty years from now observers may conclude that the apparent gains made by the Inupiat from oil development were lost in dysfunctional buildings, disappearing revenues, and anomie. Even today’s observers point to criticisms voiced by Inupiat residents themselves about job shortages, new houses that don’t work right, and kids who are no longer interested in the old ways. Parallel statements may be heard at the statewide level by experts who reasonably point out that oil production at Prudhoe Bay is already declining and that we have built major public facilities that are too expensive to operate.

No rejoinder can be based on solid fact, but two observations serve as at least grounds for optimism. First is the observation that the Inupiat have been warned since the 1950’s of impending economic disasters. While they have indeed experienced prolonged economic slumps - as when early oil exploration activities ceased in what is now the National Petroleum Reserve Alaska - people have managed to hold on until the next wave of government or industry activity. If and when the next wave will appear is largely beyond Inupiat control, plans of the Native corporations notwithstanding. Whether the next wave is as benign as developments at Prudhoe Bay is another open question. Extraction of the massive coal reserves present on the North Slope, for example, would certainly have a different "footprint".

The second observation is that the Inupiat have chosen to combine subsistence and wage employment activities at a time when they could have abandoned much of their subsistence lifestyle. Elders point to a loss of traditional skills, but the necessary underlying interest is still evident even among young Inupiat adults. Subsistence harvests will continue to comprise a major component of the North Slope economy, enhancing the chances that the Inupiat will be on the North Slope to take advantage of the next big push when it comes along.
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