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IMPLICATIONS OF A PARADIGM SHIFT: THE CASE OF OIL DEVELOPMENT IN ALASKA

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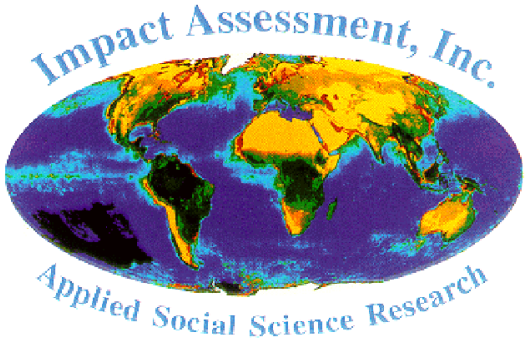

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IMPLICATIONS OF A PARADIGM SHIFT: THE CASE OF OIL DEVELOPMENT IN ALASKA

Abstract: This paper reviews the history of the U.S. Department of Interior, Minerals Management Service, socioeconomic studies program carried out in support of OCS oil leasing in Alaska -- with a view to how shortcomings in the traditional SIA paradigm affected the course of 30 years of research. The paper explores the evolution of the study program over time and the difficulties encountered in attempting to examine long-term social and economic change with tools and methods derived from traditional social impact assessment. The conclusion focuses on the advantages of more robust approaches to cumulative impact assessment, methodological advances associated with geographic information system approaches to looking at larger scale processes, and more sophisticated long-term demographic analyses to better understand local and regional differences, as well as changes occurring over shorter and shorter periods of time.

Background

The U.S. Department of Interior, Minerals Management Service (MMS) was inaugurated in 1982 as the agency responsible for managing the Nation's natural gas, oil, and other mineral resources on the Outer Continental Shelf (OCS) (its predecessor agency, the Bureau of Land Management, had been providing these services since 1973). MMS's stated mission is:

> *"To manage the mineral resources on the Outer Continental Shelf in an environmentally sound and safe manner and to timely collect, verify, and distribute mineral revenues from Federal and Indian lands."*

The agency meets its mandate by leasing those portions of the outer continental shelf (those areas within the U.S. 200-mile limit that are outside of state waters), conducting legally required studies and analyses prior to such sales, and for the collection of lease-sale payments and royalties from actual oil development on behalf of the federal government. MMS offshore lease sale activity is second largest source of revenue for the U.S. government (second only to the IRS). Since 1982, the agency has collected and distributed to the U.S. Treasury, States, and Indian Tribes, in excess of $135 billion.

The agency is organized into six divisions: (1) leasing; (2) engineering and operations; (3) environmental; (4) economics; (5) information technology; and (6) resource evaluation. The two divisions of importance to this paper relate to the "dual" missions of the agency: (1) mission of the "Leasing Division" to lease federal offshore lands to yield the highest return to the U.S. taxpayer; and (2) the mission of the "Environmental Division" to evaluate the potential social and environmental effects (in support of potentially mitigating those effects).

The work of the Environmental Division[1] is distributed among the three "regions" of the agency, including the Alaska, Pacific, and Gulf of Mexico (GOM) OCS Regions (MMS headquarters is located in Washington, D.C.). The Alaska OCS Region has, over this period, been one of the two principal centers (with the GOM OCS Office) of MMS activity – in spite of the fact that no oil had been extracted from the Alaska OCS region until November 2001 (BP's Northstar facility in the Beaufort Sea).

The Alaska OCS Environmental Program is organized into three sections: (1) Leasing and Environment; (2) Resource Evaluation; and (3) Field Operations. The Leasing and Environment Section, in turn, consists of a Leasing Activities Program and an Environmental Studies Program (ESP). This paper centers on the study activities undertaken since 1973 under the auspices of the Environmental Studies Program.

Since 1973, the ESP has funded studies in the Alaska OCS Region valued at over $265 million. These studies span the entire range of environmental issues, including chemical and biological oceanography, atmospheric studies, whales and other marine mammals, seabirds, anthropology, sociology and economic studies. Of these studies, approximately $246 million was committed to biological and other environmental concerns, and the remaining $19 million was committed to human (social, cultural, and economic) issues. The $19 million of socioeconomic studies contracted over the 30-year period represent perhaps the largest concerted socioeconomic studies program in the U.S., producing hundreds of study reports in support of MMS requirements.

MMS Environmental Study Program Overview

A number of points must be made from the outset concerning the MMS Alaska OCS Environmental Studies program. First, its mission was specifically to develop "information from studies on environmental, social, and economic concerns to be used in making decisions about selection of areas for leasing, environmental assessment, mitigation, and monitoring" concerning its own OFFSHORE lease-sale activities. It was not mandated nor tasked to consider the effects of oil development, *per se*, in Alaska. This distinction is often overlooked when considering the program's effectiveness and productivity since the 1970s. Oil development on the Alaska OCS only produced its first barrel of oil in November of 2001. This means that the study program was, for nearly three decades, attempting to study something that could only be understood by analogy (admittedly, a very close one) to on-shore and near-shore oil development on State of Alaska lands (i.e., in Prudhoe Bay and Cook Inlet). Nearly all of the studies undertaken by MMS during this time period were completed "in anticipation" of oil development that never materialized (at least until 2001).

[1] This Division is responsible for ensuring that MMS meets all of its legal obligations under the pertinent legislative authorities, such as the OCS Lands Act (OCSLA), the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Clean Air Act (CAA), and the Oil Pollution Act of 1990 (OPA 90).

Secondly, while this may seem to be a somewhat unproductive use of resources, the underlying research has proved of considerable value to state, borough, and community planning agencies intent on developing or protecting local resources. The studies undertaken and completed by the agency have served as the primary basis for many key decisions taken at all levels of government in Alaska.

Thirdly, the studies will be of critical importance in anticipating and planning for potential environmental, biological, and human consequences in the event future oil development does take place in any of the lease sale areas – and the chance such development will take place seems increasingly likely. By way of example, the early studies of Cook Inlet for potential federal lease sales provide a detailed baseline characterization of the area established many years before a successful federal lease sale. Upcoming lease sales on federal lands within Cook Inlet will benefit significantly from all the prior MMS studies carried out in the region. The massive research effort committed to documenting the impact of oil exploration and development on the North Slope (associated with State of Alaska lease sale activities) provides a critical backdrop to effects that can be expected from the new offshore drilling platform on the federal OCS.

MMS Program Approach and Methodology

While the methodological orientation of the studies[2] themselves evolved over the 30-year period in concert with the underlying scientific disciplines of sociology, anthropology, history, economics, and so on, the general model or framework of the studies program remained fairly constant. Studies were normally conducted at the level of the lease sale itself – Norton Sound, Beaufort Sea, Bristol Bay, etc. – with an emphasis on the effects of the specific sale on communities within the specific geographic reach of the project. The studies tended to focus on the anticipated immediate and short-term effects of the proposed lease sale, and concentrated primarily on the material and measurable economic consequences of exploration and operation scenarios. A five-year projection scenario was considered to be a "long-term" scenario. This approach was entirely consistent with what was, over this period of time, the "classic" model of impact assessment employed throughout MMS and the rest of the nation. This tradition model, often referred to as the "boomtown" impact assessment model, can be summarized as follows:

> . . . we label as "classic SIA" the model that emerged from a group of impact studies conducted in the 1970s and early 1980s that addressed large, government-sponsored projects such as coal-fired generating plants, strip mines, and hydroelectric dams, mostly in rural areas of the western United States. While this model is often called the boomtown model, we label it classic because it was the first SIA model, the root from

[2] These studies included sociocultural, socioeconomic, demographic, cultural resource, social indicators, ethnographic case studies, biographical case studies, harvest disruption, institutional change, employment impact studies, commercial fisheries, subsistence harvest disruption, transportation systems analyses, and village economic studies, among many others.

> which later versions grew, and because it established an underlying logic, set of goals, and list of concerns that still resonate in SIAs that later emerged. Its longevity also makes it classic; for 20 years it has remained a frequently used approach and the predominate model for energy-related projects. As such, it is the approach on which the BLM and MMS began to build their assessments of the social and economic effects of the OCS leasing program (Luton and Cluck, 2003).

Again referencing Luton and Cluck (2003), this traditional "model" was

> . . . formulated to measure impacts: (1) in small and easily definable areas (e.g., communities, counties); (2) from single, often one-dimensional causes (e.g., a generating plant); (3) of developments of relatively short duration (e.g., several years); (4) where the impacting agent is externally imposed (i.e., no evolutions of existing enterprises); and, (5) where the impacting agent overwhelms the community's institutional structures, infrastructural capacities, and labor force.

Shortcomings of the Paradigm and their Effects on the MMS Alaska OCS ESP

As noted in the background section, the focus of the agency on providing lease-specific information resulted in an emphasis on the direct effects of oil exploration and development activities on the specific lease areas being considered for sale. Because coastal Alaska communities (with the exception of the North Slope and Cook Inlet) had no history of direct oil-related development activities, the employment of the traditional SIA model appeared logical and consistent with impact assessment practices throughout the U.S.

Unfortunately, the emphasis of the program on direct effects, on relatively short-term effects, and on narrowly defined geographic areas and communities, led the agency and its study program to entirely miss the larger, more pervasive and enduring effects of "oil development" itself on Alaska and on every community and individual in the state (remembering, of course, that their mandate focused only on OCS-related impacts). In the following discussion we have selected a few typical study topics (education, housing, and local governance), contained in virtually every EIS and study product produced by the agency, to highlight how the agency's focus on the "trees" led to their failure to appreciate the significance of the "forest" of cumulative oil development impacts taking place in Alaska – and thereby jeopardizing their own future efforts to disentangle onshore from offshore impacts.

Education: In order to set the stage for the discussion, however, we first present a "table exercise" investigation into the potential OCS-related impacts on local education in a community of 300 located within an OCS lease sale area. In this exercise we begin by asking what impacts might be associated with offshore exploration. Try as we might to imagine how an offshore oil exploration rig might affect the local education system (i.e., unauthorized landing, unanticipated local purchasing, unexpected labor demand on the community, an accident scenario), the

potential effects of the exploration phase on local educational institutions seem fairly remote. The effects of a potential development scenario, on the other hand, could be significant if the specific community or nearby location (along the lines of the original Valdez enclave) were used as the principal support base. However, over time, it came to be accepted that the support system would be consistent with the one that evolved in support of Prudhoe Bay (i.e., living in Anchorage and commuting for one-week-on, one-week-off work patterns). Thus, it becomes difficult to envision likely scenarios where community educational systems might be directly affected by oil production activities 10-50 miles off the coast.

Housing: Housing, in the early days of the program, seemed to be an excellent candidate for impacts associated with offshore oil exploration and development. Very few small coastal Alaskan communities of the 1970s and 1980s could claim to have adequate housing even for the existing population, much less for the additional residents potentially associated with offshore oil production activities. As a result, early scenarios would argue the need for temporary housing for transient workers, short-term offshore workers, or the construction of near-by oil worker-only enclaves. With the eventual acceptance of the fact that offshore workers would likely reside in Anchorage (or other large community with easy airline access), the concern with housing impacts receded.

Local Governance: Our final example, local governance, was a common impact assessment variable of the 1970s and 1980s – often within the context of a general pre-conceived notion of the frailty of local institutions of social control, leadership, and the absence of community financial infrastructure. Early studies considered the impact of a few unwanted "outside" or "white" residents on community decision-making, their impact on social relationships, on local economic structure, on traditional cultural values. Here there were early examples of changes occurring in Barrow associated with the Prudhoe Bay experience, the assumption of leadership positions (at least important administrative positions) by "outsiders," and so on. But it was soon apparent that local leadership structures had not been significantly disrupted in traditional native communities by the arrival of a few "outsiders" (although a longer term perspective may be needed here).

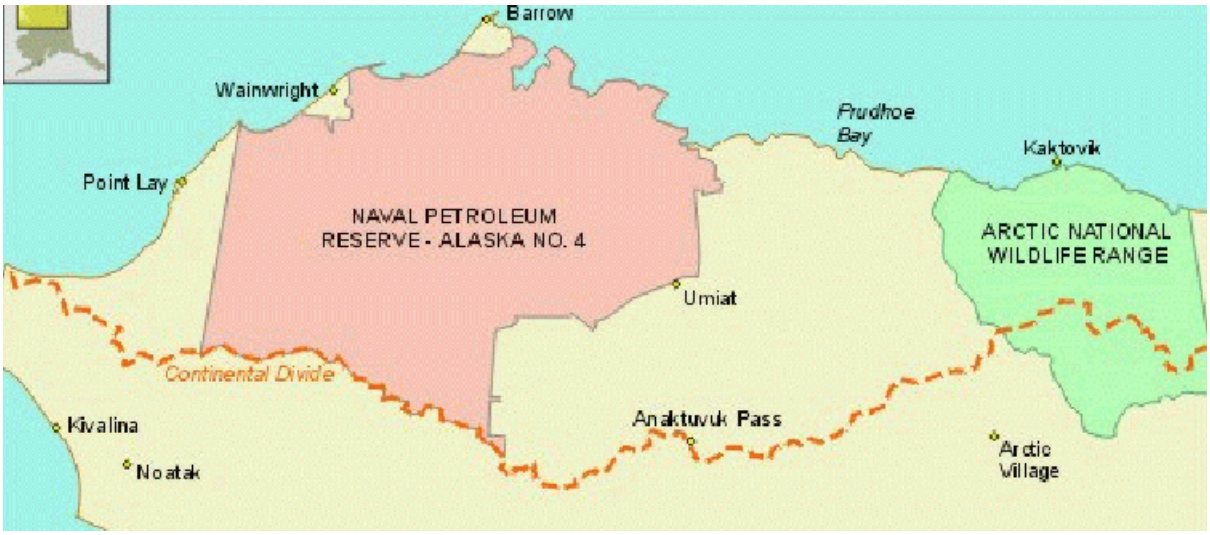
Simply stated, a temporally and geographically constrained assessment of a narrowly defined source of change (e.g., oil exploration, development, or production activities) severely limited the range, nature, and severity of impacts that could be considered in the assessment. The following discussion is intent on elucidating how this constrained impact "model" prevented the observation and documentation of the longer-term, larger-scale, impact occurring in these communities as the direct and indirect effect of oil development in Alaska.

The Early History of Oil Development in Alaska:

This section, obviously, represents only the most cursory overview of the role of oil in shaping the history of Alaska. It is nevertheless essential for the reader to understand the larger historical context within which the MMS Alaska OCS oil and gas environmental studies program implemented its research program. First, it must be emphasized that oil was discovered in Alaska in 1853, over 150 years ago, in Cook Inlet, with the first oil claims being recorded in 1891. An early major oil discovery was made in 1902 at Katalla, about 110 miles southeast of Valdez, a refinery was constructed, and a local oil boom ensued which continued until the refinery was destroyed by fire in 1933.

Oil had also been discovered by early explorers (e.g., Leffingwell), and local residents, in widespread local oil seeps on the North Slope in the early 1900s. The Mineral Leasing Act (41 Stat. 437) was passed in 1920. Its title was "An Act to promote the mining of coal, phosphate, oil, oil shale, gas, and sodium on the public domain." Following extensive characterization studies by the U.S. government, the 23,000,000 acre Naval Petroleum Reserve was established by Congress in 1923 (30 U. S. C. 191). The stated objective of the Act was "to secure a supply of oil for future national security needs."

Map of North Slope NPR-Alaska No. 4 (NPR-A)



With the initiation of WW II, and immediate recognition of the importance of the North Slope strategic reserve, the U.S. government withdrew the entire North Slope of Alaska - 48.8 million acres - under the public land laws for the exclusive use of the U.S. military. The war had provided ample evidence of the strategic importance of domestic sources of oil, and an aggressive oil and gas exploration program was initiated in Naval Petroleum Reserve No. 4 (later National Petroleum Reserve-Alaska, NPR-A) in 1944 – with a total of 36 wells being completed by the end of WW II (see map). Oil companies also immediately recognized the economic

importance of potential oil reserves and by 1955 had leased over 5 million acres of potential oil tracts throughout Alaska. Atlantic Richfield (later ARCO) struck oil in the Swanson River area of Cook Inlet in 1957 and was soon producing over 900 barrels of oil per day (by 1968, Cook Inlet was producing nearly 200,000 barrels per day, representing more than 20% of the Alaska government's total revenues). It was also in this year (1957) that Secretary of Interior Fred Seaton, in order to encourage private oil development on the North Slope, revoked the previous military withdrawal imposed on 20 million acres of the North Slope of Alaska. Thus, by the time Statehood was under consideration by Congress, a total of 43 million acres (i.e., the release of 20 million acres in addition to the existing 23 million acre Naval Petroleum Reserve) had been made available for oil development on Alaska's North Slope. Many historical, economic, and political factors played a role in the decision of Congress to consider, and ultimately approve, Alaska's statehood in 1958 – but certainly one of those factors was the strategic importance of Alaska's mineral resources to the national economy.

This Kenai Peninsula discovery, and resulting profits, further accelerated oil exploration activities on the North Slope. These explorations resulted in one of the largest discoveries in the U.S. on State of Alaska lands near Prudhoe Bay in 1968. From this point forward, the history of Alaska is the history of the impact of oil revenue on the State, its urban centers, local communities, and individual residents.

The Pervasive Impact of Oil Development on Alaska Economy and Society

While I will attempt to hold to a strict chronology, the ramifications of the discovery and development of oil on the North Slope branch out so quickly as to make it difficult to follow the "synergistic" effects as they radiate out through society and down through history. For purposes of this paper, I concentrate primarily on the impacts of the North Slope oil royalties[3] and taxes[4] distributed directly to the State of Alaska.[5] The following graphic depicts the present status of oil development activities on the North Slope only.

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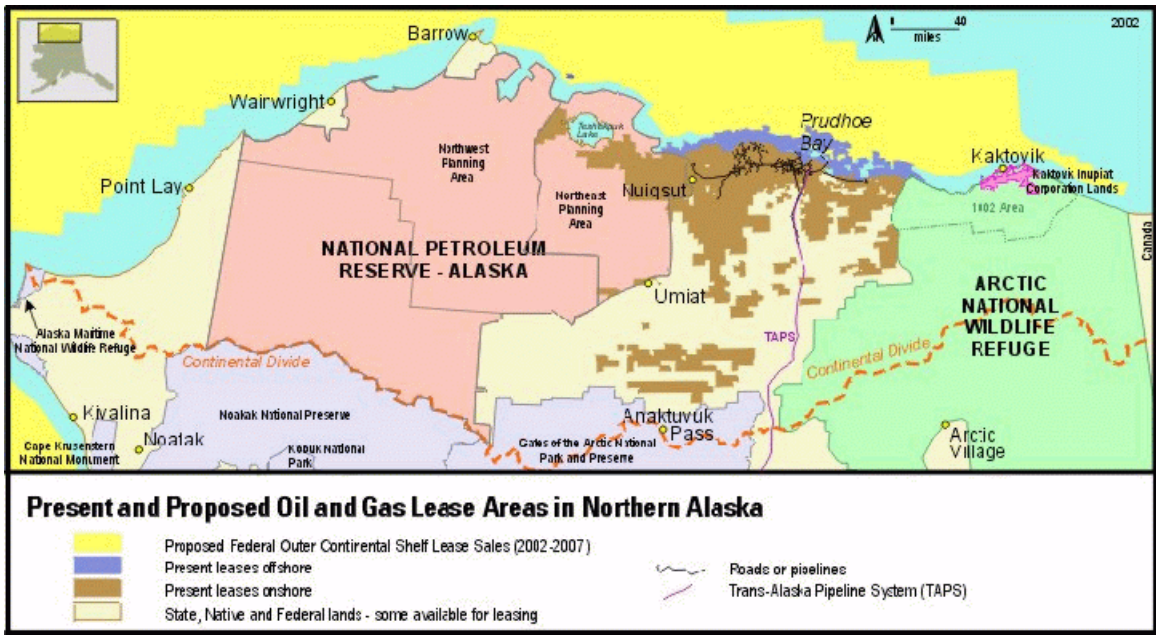
[3] Federal mineral royalty revenue sharing with the State of Alaska differs depending on the type of federal land ownership involved. For example, the federal government allocates 50% of federal mineral royalties to the State of Alaska for oil recovered from NPRA, 27% of its oil royalties from 8-g Lands (i.e., 3-6 miles offshore), and 90% of all other onshore royalties. The debate concerning the distribution of oil royalties from ANWR development continues in Congress. The Alaska Delegation, in fact, is divided with Don Young supporting a 90% allocation to the State, and Ted Stevens supporting a 50%-50% distribution (Anchorage Daily News, 3/5/01).

[4] Taxes include production taxes, state corporate income taxes, and property taxes (and, today, an oil spill surcharge). Royalties are established by contract between the producer and the state (on average, 12.5%).

[5] The State of Alaska legislature passed, last year (2003), the "Stranded Gas Act" that conveys to the Commissioners of Revenue and Department of Natural Resources the authority to negotiate alternate fiscal systems pertaining to the taxes that could be levied on North Slope gas resource extraction. This measure was energetically promoted by the oil company lobbyists who are concerned about the ability of the state to alter future taxation principles – as opposed to the more conventional contractual basis for royalty payments.

Present and Proposed Oil and Gas Lease Areas in Northern Alaska (USFWS, 2004)



I argue here that oil has been the dominant force of social change in Alaska since 1968. The gross state product in 1963 was $5.6 billion, of which $145 million was derived from oil (pop. 250,000).[6] Seven years later, in 1970, oil contributed $1.4 billion (pop. 309,000) – a ten-fold increase. A little more than a decade later, in 1981, oil contributed $11 billion (pop. 434,000). On a *per capita* basis, each Alaskan earned $580 in 1963 from state oil revenues. In 1981, they each earned $25,000. Today, the Alaska Permanent Fund (the state's savings fund) alone contains over $28 billion and earnings from the fund now contribute more to the state budget than royalty revenues from ongoing oil development itself!

It is important to also note that the above figures considerably understate the magnitude of the sudden impacts associated with oil development. Not included in this revenue stream, for example, is the economic impact of construction of the Trans-Alaska Pipeline System. Once the title to lands had been established, the oil companies immediately launched the largest privately funded development project in U.S. history – the construction of the Trans Alaska Pipeline

[6] The population of Alaska remained largely unchanged from 1900 (63,592) to 1940 (72,524), composed primarily of rural native communities, with nascent communities near Juneau, Fairbanks, and Anchorage. The advent of WW II had a marked impact on Alaska. Of the total Alaska population in 1940, only 1,000 residents were military. By 1943, over 152,000 military personnel were stationed in Alaska (briefly raising total population to 233,000). By 1946 the population fell to 99,000 but Cold War military assignments, and the construction of the Alaska Canada Military Highway, increased the population to 128,000 by 1950. Today, the population of Alaska is approximately (434,000 White; 97,000 Native/Indian).

System (TAPS – one of the largest pipeline systems in the world). Construction began in March of 1975[7] and was completed, two years later, in May of 1977, at a cost of $8 billion. This 48 inch, 800-mile-long pipeline stretches from Prudhoe Bay across three mountain ranges, rivers, snow, and ice to the Port of Valdez. At its peak, it employed 28,000 workers (almost 20% of the state's total workforce), with over 70,000 different employees working on the project over the 2-year period. Thirty-one lives were lost in construction-related accidents. Over 14 billion barrels of oil have been transported since its completion – the profits accruing to the oil companies over this 30-year period have been astronomical.

While these are staggering numbers, the purpose of this paper is to characterize *how* these revenues, in both direct and subtle ways, affected the course of rural Alaska social and economic change from the early 1970s to the present – and *why* these changes need to be understood in order to fully understand actual and potential OCS oil-related impacts. In order to understand the effects of this revenue stream at the local level, I focus on four areas: (1) passage and implementation of ANCSA; (2) village "incorporation" and associated consequences; (3) local level education; and (4) the permanent fund dividend.

ANCSA: First, the discovery, and the soon to be recognized immensity of the reservoir, far exceeded initial expectations. The immediate problem, of course, was how to get the oil from Prudhoe Bay to any market in the world. The coastal ice made vessel transport a very difficult proposition. No pipelines existed, and the nearest suitable open-water port lay 800 miles to the south in Valdez Bay, and across land whose title had been the subject of decades of harsh and, seemingly, unresolvable debate between State, Federal, and Native interests. The "Native Lands Claims" issue, as it was to be called, had lain fallow for all these years because of its relative unimportance, complexity, and remoteness from Congressional concern. Suddenly, the "Native Lands Claims" issue was of paramount importance – oil companies joined Native interests and state interests to press Congress to immediately address and resolve these claims. It was, from the Native perspective, a fortuitous confluence of factors – they had, for many years, been pressing for settlement of their claims, and would have been pleased to settle for far less acreage and money at any point prior to the discovery. Within three years of the discovery of oil at Prudhoe Bay, oil interests, joined at the hip with Alaska Native interests, with the active support of the Alaska delegation, were able to push through passage of the "Alaska Native Lands Claims Settlement Act of 1971" (ANCSA) – thereby releasing the great Alaska oil boom.

Because so much has been written on this issue, I will only briefly highlight a few of the consequences of ANCSA – always mindful that its passage, and the nature of the structure of the Act itself, its heavy emphasis on "legal corporations" that would ultimately become open to public purchase, owes much to the role played by the oil industry in promoting and influencing the ultimate shape and structure of the Act itself (although other authors have argued that this was an entirely Native initiative). The primary objective, of course, was to establish surface title

[7] In fact, "construction" of the pipeline, in the larger sense, had been initiated immediately after the discovery of the field – at least as early as 1969.

to facilitate construction of the pipeline. The Act, however, was as much about ultimate access to the subsurface estate – oil – as it was about "Native" land claims. Oil companies, by their very nature, take a very "long-term" perspective on their needs, and assiduously plan for contingencies. They quickly understood that Native (i.e., non-Federal and non-State) ownership of the oil lands, held in corporations that would be compelled to "make a profit," corporations that had virtually nothing else of value to market, could not have been better. Their future in Alaska was secure.

ANCSA, in simple terms, resulted in the organization of Alaska Native communities into 12 for-profit corporations (and 12 regions) with a 13th corporation established for urban and "outside" Natives without current ties to one or another of the other 12 regional corporations.[8] These corporations were imposed as a requirement on the regions, with 220 individual communities that were also entitled to land and resources, also being required to establish for-profit corporations to manage, for a profit, the resources they were allocated. Under the Act, about 79,000 Alaska Natives were enrolled, each receiving 100 shares of stock in the regional corporation in which they were enrolled.[9] This was the first time such an approach to resolving Native land claims had been attempted. Native regional corporations would be given land and "seed" money to create their own profit enterprise, as well as the freedom to control their own destinies. This was a social engineering project on a massive scale – and the outcome of this experiment has yet to be fully evaluated.

The effect of ANCSA on the regions and communities within its purview, has been immense. We must remember that the Act itself, as well as its mechanisms of implementation, had been actively promoted by oil interests (albeit discretely). Remember, also, that the initial negotiated distribution ($4 billion) could not have happened were it not for the critical importance to the oil companies of establishing clear title so that construction of the pipeline could immediately commence. Finally, also note that Congress's decision to allocate, in 1975 dollars, $4,000,000,000 from the U.S. Treasury to 79,000 Native Alaskan's would NOT have happened were it not for the certainty of an even larger long-term federal revenue stream associated North Slope oil development.

What ANCSA did bring about was a restructuring of social and economic relationships within and between Alaska communities, between communities and the state, and between communities and local, regional, national, and international business interests. Regional and community

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[8] It should be noted that in 1968, just prior to passage of ANCSA, Joseph H. Fitzgerald, former Chairman of the Federal Field Committee investigating "aboriginal" land claims, determined that Alaska Natives only owned 500 acres in fee simple title and another 15,000 acres in restricted title, and that all but 900 Natives lived on lands in the public domain.

[9] "Each Native may hold his stock or sell it as he desires, and you or I may buy stock if we desire without racial restrictions. In short, 'aboriginal rights' are to be exchanged for useful and relevant civil rights," Joseph H. Fitzgerald, Congressional Testimony.

"corporations" held title to land, had independent sources of income, and important decision-making authority. They were assigned both corporate and social responsibilities for the welfare of their communities and the resulting conflict between social and profit objectives has continued to be a significant source of debate. This is not to say the outcome has been predominantly "bad" or "good," only that the relationships have been irreversibly altered as a result of the Act. Senator Henry "Scoop" Jackson, who was Chairman of the Senate Interior and Insular Affairs Committee at the time of the passage of ANCSA, remarked, in his 1981 keynote address to Alaska Federation of Natives, that

> "This is a debate which I have watched for the past thirteen years. It is a debate for which there are no ultimate answers. At one time, I thought it was a serious mistake to mix social welfare objectives with the traditional Corporation's more limited objective of maximizing profitability. Today, I must confess to having changed my mind. The Regional Corporations are totally unique. Their performance cannot be measured by gross revenue and net profit standards alone. Judgments about their performance must be made on the basis of total performance in the achievement of shareholder goals."

Village Incorporation: Another obvious impact was that ANCSA served as an important catalyst for the physical stabilization of communities that had previously been quite mobile. Communities traditionally moved from one location to another, depending on the season, local site conditions, waste management, and even changes in aesthetic perceptions. ANCSA "forced" communities to select a "permanent" village site – a commitment had to be made to a particular geographic location. Lands were then selected surrounding that site. Individuals, of course, personally selected the locations of their summer fish camps, remote subsistence camps, or family summer cabin sites, but the movement of communities from one location to another was generally curtailed (although, of course, some have managed to make such a change under unusual circumstances).

This tendency was compounded, over time, as the State of Alaska Legislature, and its Department of Community and Regional Development, elected to utilize some of its immense oil royalty income to fund "community development" measures throughout rural Alaska. However, because monies could not be disseminated to unincorporated rural communities, a massive effort had to first be initiated to "incorporate" them all. Given the financial incentives available to those promoting incorporation, it was not long before the vast majority of Alaska communities were incorporated.

In order to become incorporated, of course, communities must first elect officials and establish a local "tax" of some minimal amount. These actions (combined with the effects of ANCSA), in turn, introduced a very different form of leadership and political control to communities that were, in traditional parlance "primus entre pares" communities. Incorporation was a "trigger" or release mechanism for the flow of "benefits" derived from North Slope oil revenues. It enabled the delivery of the desired "gifts" of financial support for community development – construction of new roads, the advent of HUD housing (sponsored, in part, by the newly formed

and funded Alaska Housing Finance Corporation, also out of oil royalty monies, which contributed 20% of the HUD finance costs), Public Health Service sewer and water systems, local health clinics, power generators, and financial underwriting for the entire range of community needs – on a scale vastly disproportionate to community population.

A Native resident that left home for an education "outside" in the early 1970s would have had difficulty believing what she found on her return. Almost every community, within a five-year period, had established its "permanent" location, had built a "community" center/government office, and had constructed dozens of permanent homes on graded streets. Each home had been provided with electricity, with indoor plumbing, satellite telephones had been installed, and many communities had already installed in their community centers their first televisions – and for many residents, it was their very first experience with the medium (and whose effect, alone, would have made an excellent doctoral dissertation). Finally, she would also have discovered, normally on the edge of town, a brand-new school, identical except in its details, to schools installed in virtually every small community in Alaska over the preceding two years – schools built to exacting standards, equipped with the entire spectrum of facilities, cafeterias, hard-wood gyms and basketball courts, and constructed at an astronomical cost (compounded by distance and absence of any ground transportation). Our hypothetical student, who had to leave home to continue her schooling, would have been astonished. Children would no longer have to leave their community to go to elementary school. It is to this subject, education, that we now turn.

Education: The issue of "western" education, particularly the conditions and timetable under which it was implemented in rural Alaska, must be addressed specifically. The changes precipitated by a 1972 civil suit have had a profound impact on Alaska society, and have continued to reverberate through the social, economic, and political matrix of every Native Alaskan community.

An abbreviated background may be useful for those not familiar with Alaska education history. The Alaska Organic Act of 1884, required the Department of Interior (USDOI) to provide education for all Alaska children and, in 1885, the first General Superintendent for Education (Sheldon Jackson) was appointed. By 1895, 19 grade schools had been established, most of which were run by missionaries – with Christian doctrine as a core component of the curriculum. The objective of this education was promote the adoption of Christian values and the abandonment of "old customs." Alaska became a U.S. Territory in 1912, and by 1917 the Territorial Legislature had established a school system reserved only for non-Natives, with the USDOI schools continuing to "educate" the Native population. In 1926, three Native vocational schools at Eklutna, Kanakanak, and White Mountain were founded. In 1931, the Bureau of Indian Affairs (BIA) assumed responsibility for the Native population, continuing the established "assimilation" agenda, which then continued through the end of WW II. For more advanced (secondary) education, highly qualified Native children were removed from their families and sent to Mt. Edgecumbe, a boarding school in Sitka, Alaska. Following the war, the BIA transferred responsibility for local schools to the Territory of Alaska (in 1951). Following statehood in 1959, all these schools became part of the State-Operated School System in 1966.

This was the situation when, in 1972, a class-action lawsuit was filed against the State-Operated School System (Hootch v. Alaska State-Operated School System) claiming that this pattern of dual (white and Native) school systems was discriminatory. The suit is referred to as the "Molly Hootch" decision after the lead plaintiff in the case. Deciding in favor of the Plaintiffs, the Court directed Alaska to remedy the situation. After much wrangling and delay, the suit was finally settled with a Consent Decree (Tobeluk v. Lind) that established minimum physical size and quality criteria for elementary schools to be constructed in Alaska rural communities. The State, in the agreement, agreed to cover the costs of meeting these standards in every one of the 126 villages included in the litigation. The outcome of this decision was the construction of $2.5 million dollar schools (in 1975 dollars) in each community. Subsequent legal and state decisions would ultimately provide education through high-school in any community with a minimum number of students.

The immediate impact of the construction of these schools in all of these rural communities was significant. The social effects of the operation of these schools, however, were far more profound. Now, in addition to dealing with the simultaneous effects of land claims settlement, the community and individual selection of lands, television, telephone, formal government (Native non-profit and profit corporations, city government), a construction boom in HUD housing, power plants, PHS sewers and streets, and so on, the community would now have to accommodate the necessary number of "school teachers." Of course, Alaska was already suffering from a dearth of good teachers and had, increasingly, been drawing on newly graduated teacher's from U.S. northern tier states (Washington, Montana and, most heavily, from Minnesota). Thus it was that hundreds of mostly young, inexperienced, elementary (and later high-school) teachers suddenly appeared in every one of the 126 rural Native communities – literally thousands of these teachers "invaded" rural Alaska at nearly the same point in time.

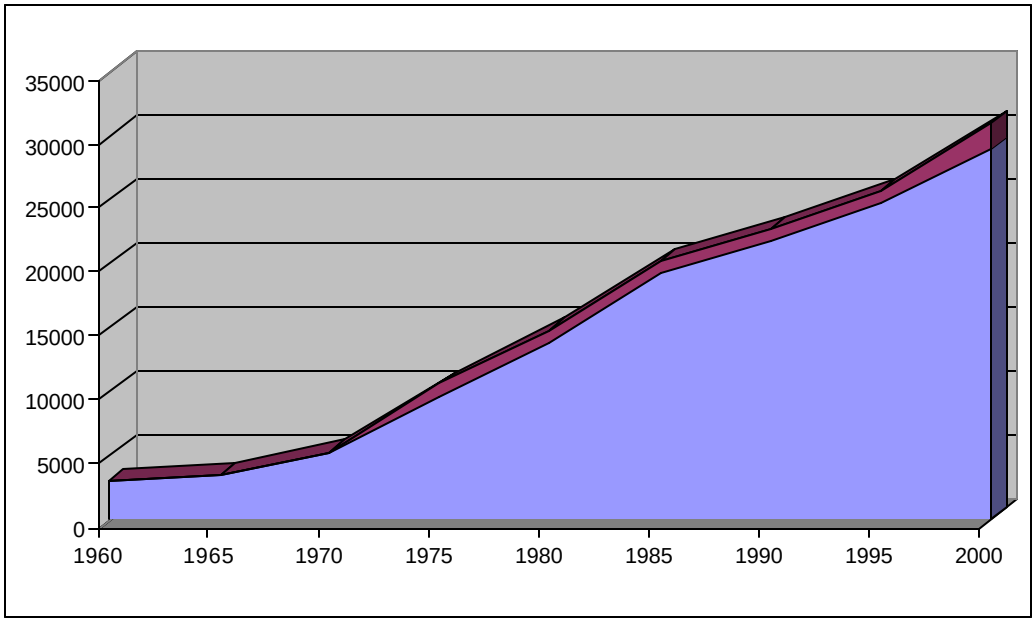
Suffice, here, to say that their arrival aggravated and confused the residents even in those communities that had most actively promoted the idea of community-based schools. Many reported, at the time, that they had never really thought through the implications of bringing in so many young, white teachers, most with no prior teaching experience, most trained in the methods and curricula of 1975 Minnesota. Not a one spoke a word of Alutiiq, Iñupiaq, Tlingit, Yup'ik, or other Native language. Many of the children would later remember the experience of going to school and pretending to understand their teachers, of being snapped on the wrist for speaking their Native language, and of going home crying in frustration. Many recall the distress of trying to remember the names of items familiar to any Minnesotan, but entirely absent in rural Alaska. Most adults, and almost all elders, spoke no English. Teachers attempted to integrate themselves into "their" communities, but it would be years before friendships could be established, and it continues to be the dominant pattern today that the teachers return "home" to the "lower-48" for their summers.

The impact of the Molly Hootch decision, and the willingness of the State of Alaska to agree to a Consent Decree with an initial cost of construction of $315,000,000 (in 1976 dollars) – with massive annual support, maintenance, and faculty costs – have been enormous and continuing.

The most important point to note here is that the issue would not have been settled, in the fashion it was settled, in the absence of the immense revenues available to the State of Alaska from North Slope oil royalties.

Alaska Permanent Fund: The implications of the surge in oil revenues resulting from the sale and transshipment of oil through the pipeline were immediately evident to the Alaska State Legislature. It was soon recognized that State revenues would be "exceedingly" large and that some novel method of investing and protecting these revenues for the longer-term would need to be created. The solution was creation of a "permanent fund" setting aside 25% (sometimes 50%) of oil royalty revenues received by the State for investment in a "public savings account" for the benefit of present and future generations of Alaskans (transforming a state mineral asset into a financial asset). It has proven to be a profoundly important and innovative public policy decision. In order to make such legislation possible, Alaskans would first have to approve to a constitutional amendment. This was accomplished in 1976 (by a 2 to 1 margin) and enabling statutes were passed by the Legislature creating the permanent fund in 1980. Since that time, each year the State of Alaska distributes a check to each family amounting to $1,000 (in some years, considerably more) for each and every resident of the state – this means, for a family of five, an annual distribution of $5,000.

Alaska Annual *Per Capita* Income
(showing contribution of Permanent Fund distribution)



ISER, 2001.

The above figure depicts two important points. First, per capita annual income in Alaska increased from $5,000 in 1970, to almost $10,000 in 1975 – doubling in 5 years. From 1975 to

1980, it had grown to almost $14,000, and from 1980 to 1985 it grew to almost $20,000.[10] It should be noted that the majority of this increase is accounted for by pipeline, construction, and other workers involved in the erecting the buildings, homes, roads, and other required oil-related infrastructure in Anchorage, Fairbanks, and Juneau. It is also true, however, that the spurt in local construction, financial support for community development, and local revenue sharing brought major economic benefits to every community – with a corresponding increase in *per capita* income. The difference between white and Native *per capita* income has been dramatic.

Alaska Per Capita Income
(White and Native Populations)

Race	1980	1990	2000
White	**$11,405**	**$19,903**	**$26,418**
Native	**$5,103**	**$9,104**	**$12,759**

Source: Alaska Economic Trends, July 1992, pp. 3-4; 2000 Census of Population & Housing, Summary File 4, Tables PCT1 & PCT 130

As evidenced in the above table, Native *per capita* income routinely represents approximately 50% of the White *per capita* income in Alaska. Obviously, the impact of a $1,000 per person permanent fund distribution has had a vastly larger impact on a small rural village of 300 than on an equal number of residents of Anchorage.

But even this analysis understates the severity of the economic disparities in Alaska. As indicated in the graphic on the left, Alaska Native areas to the north and south were ranked among the "500 Highest Per Capita Income Counties, 2000" while those across the central region of Alaska were ranked among the "500 Lowest Per Capita Income Counties, 2000" (qualifying them for "distress" status).

[10] While I have been arguing that ANCSA, and its impacts, were largely a product of the discovery of oil in Prudhoe Bay, it is important to bear in mind the "relative" contribution of each on a *per capita* basis. Steve Colt (ISER) put it nicely in 1993: "Putting the numbers together from the viewpoint of a household of 5, we can see that Prudhoe Bay oil has to date [1993] delivered over $330,000 per household, while ANCSA lands have delivered less than $11,000 . . .much of which never made it to the Native shareholders as dividends."

Analysis of Implications of a Paradigm Shift: Before we begin the analysis, it should now be evident that most, if not all, of the major socioeconomic initiatives beginning in the 1970s had their origin in the discovery of oil, and that the primary source of economic and social change in rural Alaska communities since that time has been the direct or indirect result of oil-royalty revenue available to the State legislature.

Had we been paying attention at the time, and conducting traditional impact assessments (SIAs) of the early oil development process, we could have observed and documented the immense development projects, the scale of the pipeline construction, office building construction, public infrastructure development, employment and demographic consequences, and so on. But it is doubtful we would have noted, at the time, the importance of decisions taken, laws passed, and social policies initiated as a direct consequence of the oil development that would have such immense long-term impact on Alaska society. On the other hand, had we taken a longer-term perspective, and instituted a broad-based social monitoring program at the outset, and continuously enhanced the methodology to accommodate improved understandings of the social consequences as they evolved, we would not only have been able to monitor and understand contemporary changes, we would today be in a position to document and quantify the entire spectrum of impacts of the oil development process over the last 36 years. More importantly, had we recognized, at the time, these cause-effect relationships we would have been in a better position to avoid, mitigate or reverse some of the more adverse consequences.

In the absence of a long-term monitoring program, or sequence of cumulative impact assessments, it would have been difficult to recognize or appreciate the social consequences of key oil-related events. Had oil not been discovered on the North Slope in 1968, few people believe that ANCSA would have risen to prominence and passed Congress by 1975. While it is possible, even likely, that a decade or two later Congress would have passed some form of Native lands claims settlement, it is doubtful it would have taken its present form or assumed such massive scale. Absent the profound financial motivation of oil development, it is doubtful Congress would have considered a settlement of the magnitude of the ANCSA's $2 billion, or the ultimate distribution of 44,000,000 acres in settlement of the Native land claims. It is also possible that different criteria might also have been imposed on the definition of "Native" and that perhaps a different set of mechanisms might have evolved for the distribution and ownership of the lands (rather than specially tailored legal "corporations").

What, then, are the implications of rejecting the traditional SIA model in favor of a more robust monitoring methodology, reliance on long-term measures of change, and consideration of the larger scale forces affecting change? As an example of the implications, let us now return to our "table exercise" and revisit the community issues potentially affected by a particular offshore oil and gas development.

The Molly Hootch decision is regarded as a pivotal event in the history of Alaska education. The point here is that the initial legal decision might well have been issued at the time it was issued, with or without the discovery of oil, but it would have had scant effect had the State of Alaska

not been ready (and able) to respond in the manner, and at the financial scale, they ultimately responded. The construction costs of $325 million, alone, would have represented a major percentage of the total state budget in 1970 – and it would have been very difficult to argue the importance of construction of elementary schools for such a small number of rural village residents over other pressing issues of the time.

With regard to "education," had we understood, at the time, not simply the "intent" of the Court decision, but the actual underlying rationale and financial logic involved in implementing the Consent Decree, we could have "connected the dots" directly between the availability of oil revenues and construction of massive educational facilities in even the smallest of villages. Had we understood the "oil" origins of the implementation decisions, we would have been able to see the effects of potential offshore oil development as "cumulative" impacts, impacts that would have been added to an already accelerated process of social change in the community. Had we understood the link between oil revenues, the school, and the presence of significant numbers of young, inexperienced, teachers in each village, we would have understood the potential impacts of OCS development as a potentially significant additional burden on social and cultural relationships in very small Native communities.

Our table exercise of the potential impact of a specific lease sale on "education" in coastal Native communities seemed to indicate little chance of positive or negative impacts. Now, in light of a better understanding of the larger context of the impact of oil revenue on the State economy, and the broad array of profound and pervasive effects that revenue (and directly derived state and local decisions) brought on the community, it becomes clear that the "additional" impacts of oil development immediately off the coast of the community could have been dramatic – even if no measurable direct impact ever occurred. The additional concern about potential oil consequences, in light of all the turmoil underway in the North Slope, combined with the turmoil and adjustments underway from all of the other indirect effects of state oil revenues, could have been significant. The potential additional residents or even visitors, in the context of 5-10 new "white" teachers taking up residence in the community, could have had significant effects.

MMS was, from an analytic perspective, fortunate that oil was not discovered decades earlier – just a few miles to the north of state waters. Had "OCS" oil been found, it would have been transported in the same pipeline, to the same terminus, for shipment in tankers identical to the *Exxon Valdez* (if not the *Exxon Valdez* itself). Had "OCS" oil been found earlier, it would have provided a component of the oil royalties on which the precipitous expansion of the entire Alaskan economy was based in the 1970s and 1980s. Perhaps, had "OCS" oil played a more significant role in the formative years, we would have recognized earlier how important a careful monitoring program was for understanding the impact of individual lease-sales within the larger State and National context of long-term oil development in Alaska.

Reexamining the potential OCS impacts on community housing concerns, in light of the role of oil revenues in promoting community incorporation, the construction and direct funding support provided for HUD housing, the collateral developments of community power systems, sewer and

water systems, and, later, the construction and operation of community health clinics, we can see a different picture. The "structures" that limited the physical mobility of Native communities and that promoted access to state revenue for "development" purposes also tended to screen non-Native applicants out of the process. It would have been exceedingly difficult for an uninvited white worker to establish residence in a "Native" community. Thus, the traditional concern of SIA could well have been reversed – would it have even been possible for OCS-oil related workers to have established residence in a "typical" Native community?

Finally, we can now revisit the question of the potential OCS-oil related impacts on local governance. Traditional SIA approaches provided little insight into the potential impacts of OCS activities on local leadership structures and relationships. When viewed from a larger perspective, and over a longer period of time, it now becomes clear that local governance was, at the time, undergoing *radical* change. Traditional leadership patterns were giving way to ANCSA corporate leadership, in both profit and non-profit corporations, communities were using formal "voting" procedures to elect their first Mayors, money was being apportioned to create local "government" jobs, administrators, managers, power plant operators, and so on. At a minimum, an event of any kind associated with OCS-oil development would have further accelerated, or undermined, processes that were already underway by the time MMS initiated its research program.

Conclusion: MMS studies were invariably tied to a particular lease sale in a particular area that was scheduled to occur within a period of months of completion of the studies. For this reason, timely study completion was considered critical to MMS. The changes occurring in these isolated Native communities, although radical from the perspective of the local communities, simply could not have been observed in the time normally allotted for field data collection (i.e., from 6-12 months) – again, reliance on traditional SIA methodologies led us to consider only very short-term changes in social processes – processes that we now know occur over many years, not months. Had we understood at the time how and why all of the major social initiatives were occurring at almost the same point in time (i.e., oil-related revenue distributions), we would be able to see OCS-related activities as additional impacts on top of an already elevated threshold of existing oil impacts.

We now know that early MMS impact assessments were being conducted during a period of great social, economic, and political upheaval. Great changes were occurring over very short periods of time from the perspective of those experiencing the changes, but over a period too long for the field researchers to appreciate its pace or significance. Again, this is the same problem faced in conducting impact assessments of issues of virtually any duration or significance, and a principal reason why monitoring methodologies, and longer-term demographic and analytic approaches, must be developed and utilized.

I also believe that in considering sources of impacts with the duration, scale, and distribution effects of a causal agent like oil development, we should focus primarily (not simply as an afterthought) on "cumulative" impacts. In the case of the MMS Alaska OCS ESP, for example,

this may mean a shift away from a project-specific emphasis to a longer-term monitoring perspective in which the particular project is examined for its "additional contribution" to established patterns or trends (economic, social, cultural, etc.).

Also, it is increasingly important to emphasize the need to document the entire range of impact variables, including both outcomes that are intuitively considered "adverse" and those that are considered "beneficial." It is a well recognized, but often unacknowledged, fact that "impact assessments" tend to emphasize the search for "negative" consequences. This is natural, useful in many ways (particularly in response to agency requirements to mitigate, minimize, or avoid adverse impacts), but nevertheless biased. Researchers should be carefully attuned to identify such adverse impacts, but they must also carefully document all of the positive or beneficial effects of the causal agent – even if indirect or secondary. This is very important to decision-makers, local and external to the situation, and ensures that all information necessary to a decision is represented in the assessment. It is also the case that seemingly "positive" outcomes, increased number of jobs, higher paying jobs, and so on, have their own consequences and, may, on their withdrawal, result in their own set of impacts. Key variables must therefore be carefully collected across the entire spectrum of potential impacts to ensure their long-term analytic utility.

Among the most important methods available today, methods that could not have been envisioned in the 1970s, are adaptations of geographic information systems (GIS). GIS offers much more than a "picture" of information (which itself, of course, is very valuable), it offers an *analytic* capability. GIS allows the analyst to portray "relationships" between one kind of information and another, for example, population density in relation to income. Once the appropriate information is assembled, it is possible to compare two or more census tracts, two communities, two states, or two nations. Changes in family, neighborhood, or community health status, income, employment, migration, age, sex, and other demographic variables can be analyzed in relation to each other, in relation to a regulatory change, industrial development, an environmental or technological disaster, or virtually any other significant source of change. Other information, such as the results of surveys (if appropriately sampled and geocoded) can be used to understand any number of more subtle social variables, ideas, changes in values, and so on. These data sources, in turn, have profound broader implications and uses. Health information can be "layered" on top of the assembled geographic, environmental, and demographic information to better understand the distribution of disease, orthophotographic images can superimposed to provide visual understanding of local conditions, topography, and so on. The potential applications are limitless.

We are all familiar with the problem of the "impact assessment" completed for a project, as required by law, and then immediately "shelved" once the project is initiated. The information on which the report was based is simply filed away. Little effort has been committed to evaluating the accuracy of impact assessments. Fewer still are the projects that actually monitor, over time, changes occurring in the key variables in association with the development (the USDOE Yucca Mountain High-Level Nuclear Waste Repository socioeconomic monitoring system is a narrow example of such a program). Fewer still are efforts to monitor changes as a

basis for mitigating adverse consequences. This, after all, was the underlying objective of requiring that "impact assessments" be conducted in advance of major developments. We have allowed our mission to degrade over time from one of providing high quality information for the purpose of avoiding or mitigating adverse or unwanted consequences of a development to its present status as a "ritual" provider of information necessary for an agency or development interest to proceed with their intended action. Even where mitigation measures are "recommended," such recommendations are the exception to the rule, and are rarely implemented.

GIS offers more than an analytic tool, it offers a means of monitoring changes and quickly identifying impacts, even subtle impacts, occurring in a community or state over time. Once the system is "tuned" to the particular issues of importance, GIS offers a means of pinpointing adverse impacts in need of mitigation, and provides the appropriate tool to communicate this information between the analyst and the affected populations. It also offers the perfect tool for collaboration, sharing of information among researchers (still an uncommon practice), standardizing measures (and the creation of new measures), and for building "adaptive systems" of information that can change and improve as new understandings and analytic methods evolve over time. This is, perhaps, its most important characteristic. It is a system that, once designed, can be routinely improved, new data sources and relationships established, and a genuine monitoring program established – *one that is easily accepted and understood by the affected populations, the development "proponents," and the government monitoring authorities*.

This abbreviated overview, of course, only touches superficially on a few of the *agents of change* that came together in the immediate wake of the discovery of oil on the North Slope – and only lightly on the *social, cultural, and economic effects* of so many events taking place over such a brief historical period. This "simultaneity" of effects is precisely what is now referred to as "synergistic" effects, where the total effect appears to exceed the sum of the individual effects taken independently. I believe that all future analyses of impacts, from whatever cause, will likely fall into this category. This is because it is difficult, if not impossible, at the time of the event, to understand ALL of the contributing and interacting factors that give rise to a particular outcome. In fact, it should be obvious that any significant or direct cause-effect relationship must also yield an "effect" that must also be seen as a "cause" of *subsequent* effects. Thus, it is difficult to avoid the conclusion that only long-term monitoring programs are likely to yield the quality of information needed to adequately evaluate the impact of any significant social or economic initiative.