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CULTURE, CANNERIES AND CONTEMPORARY DYNAMICS
OF THE BRISTOL BAY SALMON FISHERY

(DRAFT WORKING PAPER)

Steve Langdon, Ph.D.
University of Alaska, Anchorage
(Impact Assessment, Inc.)

Prepared for

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MMS/OCS
Department of the Interior
Anchorage, Alaska

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I. INTRODUCTION

The commercial salmon fishery, especially the harvesting sector, is today the major source of earnings and the economic foundation for residents of the Bristol Bay area. Although this is true for the region and its population in aggregate it is particularly true of the Bristol Bay native population, and of the population which occupies the villages. A measure of economic diversity is found in the regional centers of Dillingham and the Bristol Bay borough although even in these locations the residents, both Native and non-Native, are significantly linked to the harvesting sector of the commercial fishing industry, particularly the salmon industry.

This paper will explore the nature of the contemporary adaptation to the commercial fisheries. A major thesis of this paper is that the contemporary pattern of participation in the commercial salmon fishery by Bristol Bay Native residents has significant continuities with patterns of production and orientation towards resources that are characteristic of "traditional" culture.

A second major thesis is that the nature and history of the relationship which has developed between Bristol Bay Native population and representatives of the commercial salmon industry have reinforced aspects of "traditional" culture. Subregional or community to community differences in orientation to the salmon resource today often reflect differential histories of contact with the canned salmon industry. This is not to suggest that I consider the commercial salmon industry the sole or even the major source of cultural change for the Bristol Bay Native population. Other major forces of cultural change which are recog-

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nized but not taken up in this paper, are Christian religious missionaries, intermarriage, traders, population decline from disease, education, and most recently, mass media. They are not dealt with because the aim here is to explicitly focus on orientation to resources, especially salmon, that are evident in Bristol Bay Natives pattern of participation in the commercial fishery.

The third major thesis of this paper is that there are forces of change in the salmon industry at this time which appear to be straining the "traditional" adaptation of Bristol Bay Native fishermen to fishing. A model which integrates socioeconomic and sociocultural forces and factors will be presented to 1) account for present variability in orientations towards the salmon fishery found among Bristol Bay Natives 2) identify the "stress points" on "traditional" patterns in the fishery and 3) describe the processes of change that appear to be occurring and are likely to continue to occur barring major institutional changes or political interventions. Examples of alternative scenarios will also be presented based on field data from several communities.

The paper will proceed sequentially through each of these major theses, concluding with the model of change as well as the alternatives.

II. Traditional Patterns of Orientation to Resources

Prior to contact with Europeans, the Bristol Bay region appears to have been in a state of flux, particularly in the northern and western sections of the region. In the north and northeast, the Tanaina Athabascans appear to have been

establishing footholds in the Lake Clark and Upper Mulchatna regions (Van Stone 1967). In the west and northwest, populations of various Yup'ik speaking groups seem to have been moving eastward into the area, possibly as the result of warfare (Oswalt 1967). Along the southern shore of Lake Iliamna a somewhat more stable situation appears to have existed although there is evidence of population movement here as well.

Although there is no clearly agreed upon picture of ethnic distribution in the Bristol Bay area, most authors agree on at least five major ethnic groupings in the Bristol Bay region. In the west were the Togiagmiut who occupied the Togiak River drainage, the shores of Togiak Bay west to Cape Pierce and the shores east to about Metervik Bay. This population appears to have been supplemented regularly and frequently by immigrants from the Kuskokwim drainage. Immediately east of the Togiagmiut were the Aglegmiut who occupied Nushagak Bay, the lower portions of the Nushagak River, the Kvichak River and extreme southern end of Lake Iliamna, and territory as far east and south as the Branch River and Nonvianuk Lake. Up the Nushagak River were inland Yup'ik speakers known as the Kiatagmiut who occupied the drainage of the Nushagak River west to the Tikchik Mountains and east to Lake Clark and perhaps Lake Iliamna. The upper stretches of the Mulchatna River, around Lake Clark and on the northeastern shores of Lake Iliamna, was territory occupied by Tanaina Athabascans. Some authors claim that the Aglegmiut stretched all the way down the north side of the Alaska Peninsula to Fort Moller. Others, however, suggest that from Naknek south, the

population was Peninsular Eskimo who spoke the Suk rather than Yuk dialect of Yup'ik and were culturally and ethnically linked to the populations on the southside of the Alaska Peninsula.

Although ethnically distinct, all of these populations, with the possible exception of the Tanaina, appear to have shared in common a major subsistence focus on the abundant salmon resources of Bristol Bay. There were variations based on geographic location; the coastal groups continued the small marine mammal orientation of the Bering Sea Eskimo culture and the interior groups focused on large mammals such as moose and caribou and smaller mammals such as beaver and hare. But salmon with its annual pulsation of abundant food provided much of the basic sustenance for Bristol Bay Natives. The annual appearance of salmon was the foundation for survival and also fundamental to the orientation of the population toward resources and production.

At the risk of overgeneralization, five predominant themes in the traditional cultural orientation toward salmon, natural resources in general, and production will be identified.

1. Seasonal Round. Each group practiced a seasonal round of resource use that included as a central focus concentration on salmon streams in July, perhaps on salmon lakes in August to harvest and dry fish for winter use. Around this central focus were adhered a variety of activities depending on location and preference. In the spring coastal groups would pursue sea mammals, (seal, walrus, and occasionally beluga), sea bird eggs, and a variety of intertidal resources. In the spring, interior peoples who trap squirrels and beaver, and hunt moose. Following

salmon harvesting, upriver people would hunt moose and caribou in the fall. Berry picking was an important fall activity for all groups whether coastal or interior. In the winter upriver people would hunt hare and fish for whitefish and trout from under the ice of the frozen rivers and lakes. On the coast, winter meant hunting for seals on the sea ice and collecting intertidal resources such as clams and mussels if hunting was unsuccessful.

There was a natural progression to this cycle that was embedded in the cultural meanings of the people from the labelling of lunar months to the monitoring of the changes in the weather. Although residents had permanent winter villages which occupied usually from 4-6 months out of a year, utilization of the range of resources available and necessary to survive required complex movements from one location to another during the course of the year. Locations which were returned to frequently might even be the site of another residence and certainly different campsites for different resources came to be linked with certain families or kinsmen within an ethnic group.

2. Territoriality. Territoriality among foraging or hunting and gathering populations has been the subject of considerable debate and discussion in anthropology in recent years. Although the debate over the nature of territoriality, in particular the notions of defensible property rights, is still unclear among nomadic foragers in marginal areas, it appears that under conditions of resource abundance, particularly linked to identifiable locations, and population density that proprietary rights to natural resources develop among hunting and gathering people.

The classic case of this emergence is along the Northwest Coast of North America.

Although the resource equation in Bristol Bay provides the natural conditions necessary for the development of proprietary claims to natural resources, the Bristol Bay Native populations do not appear to have developed those concepts to the degree of codification found among Northwest Coast groups. The major reason for this appears to be the relatively low population density of the region given the resource base.

Why was the population density so low given the tremendous size of the salmon runs? One possibility is that the abundance of those runs is highly variable - significant variability has certainly been apparent in the past fifteen years. In such circumstances, Liebig's Law might hold. Liebig's Law holds that populations adapt to the minimal conditions of the most important variables to their survival and not to either mean, median, or optimal conditions. If such were the case then a population linked to minimal conditions of salmon abundance would be considerably lower than one linked to average or optimal conditions. A second possibility is that harvesting and processing methods used were insufficiently developed to take full advantage of the salmon runs which spurt through the Bristol Bay systems in almost ejaculatory time. This is certainly plausible given the amount of wastage which occurs in the contemporary period due to the complexity and expense of harvesting and processing the massive runs in such a short time. A third possibility is that runs of the magnitude experienced in the historical period may not have been characteristic of pre-contact periods or only for relatively

short periods of time. A major dampening of salmon productivity may have been volcanic activity of the Alaska Range. Ash, rock and other detritus can have serious short term effects on salmon but it would take greater levels of volcanic activity than we have recently observed to depress salmon stocks. A more real possibility is winter temperature. Bristol Bay salmon are in a marginal environment where the shift of annual temperature downwards one or two degrees can cause substantial reductions in run size due both to freshwater freezing, declines in productivity (food) for red smolts in lake systems, and declines in marine productivity which affects oceanic survival and return rates as well. Our present environmental regime is somewhat warmer than that which characterized North America from 1500 to 1800A.D. but the importance of those cooler temperatures to salmon abundance cannot be precisely determined.

Despite the lack of clear proprietary claims to salmon resources, the movement of the Aglegmiut into Bristol Bay (Van Stone 1967) may well be linked to surplus population in the Kuskokwim-Nunivak Island lowlands spilling over under conditions of conflict over resources in that area.

The territoriality that is apparent in the Bristol Bay area appears to occur at two levels. Within ethnic or village groups, patterns of customary locational use were recognized usually on the basis of kinship. Others members of the ethnic or village group would avoid use areas of others or use them only when invited or permitted to. Hunting and collecting of most resources in the broad general use range of the ethnic or village group

allowed to all members of the group. Membership was customarily founded on birth or marriage.

The second principle was that resource use within the broad geographic range of the ethnic group was recognized by other such groupings. Since the great majority of resource harvests took place within a group's own annual range, this principle was rarely violated. Mutual respect for resource use territories seems to have been widespread. If resources were to be used in other areas, either permission or participation with a kinsmen would normally be the legitimate method of occurrence.

It should be emphasized in closing that because population density was relatively low, there appears to have been little reason to go beyond the customary range for resources. There was consequently little opportunity or reason for the development of more restrictive property concepts and methods of enforcement.

3. Domestic Mode of Production. When Marshall Sahlins first identified the domestic mode of production (Sahlins 1972), he conceived of his theoretical construct as applying to horticultural groups in which the household or "domestic" unit produced and consumed its own foodstuffs, equipment, technology, and whatever exchange that occurred was done primarily according to generalized reciprocity between households of relatives. A key point in the construct was that labor and land were not conceived of as exchangeable commodities and therefore the exchange sector of the economy was quite small. Another major point of this conceptualization was the lack of overarching political leadership that had the power and authority to direct others to specific activities for objectives not of their own choosing. Ambi-

tion and motivation were channeled into the role of "big man" who were able to generate additional production, primarily from their kinsmen with the goal of enhancing the shared status and influence of the kin group by the mechanism of feasting and redistributing goods to other groups.

The application of the concept of the domestic mode of production to Bristol Bay Natives, particularly Yup'ik groups, is reasonable with certain qualifications. First, there is little evidence for a role of "big man" attainable through redistribution. Although such a pattern can be identified among Inupiat groups further north, particularly those who participated in bowhead whaling, Yup'ik groups are quite egalitarian. Second, the household should not be conceived of as the unit of production and consumption but rather the bilateral extended kin group is more likely to have served this function. Recall that Yup'ik societies were characterized by the kashgee, or men's house, where the adult males spent most of their time. These were physically distinct from the semisubterranean houses where the wives and children lived. In smaller villages, the unit of production might have been most of the adult males functioning together for certain activities and cooperating in small groups for other activities. Processing and consumption was done, however, at the household level.

With these key qualifications, the domestic mode of production defined by production and consumption of food and most other items within the domestic sphere can be seen as characteristic of Bristol Bay Native groups in general.

4. Production for Use. One of the important dimensions that

co-occurs with the domestic mode of production in economies with limited systems of exchange is that most production, be it the harvesting of natural resources for food, tool-making, pottery-making, or any other activity of production is undertaken with the primary aim of use by the producer or someone related to the producer. Food is produced primarily for consumption; if the acts of production garner more than the domestic unit needs, then the surplus will be shared with others or given to others. Sahlin's developed the concepts of generalized and balanced reciprocity to account for how the flow of goods between households in the domestic mode of production occurs without the mechanism of commercial transaction.

A key dimension of production for use without an exchange economy is that there is little or no liquidity associated with any resource. Once you have produced enough for your needs (tools, weapons, boats) or those of your domestic group (housing, clothing, food) there is no particular incentive for further production. Furthermore, one uses an object until it is no longer useful in the sense that it can do the task for which it was intended. At that juncture it is discarded, perhaps with some usable parts retained. A key feature of this pattern is the capabilities and limitations of the available technology. Although vast quantities of salmon went unutilized (presuming runs of historic magnitude in precontact time) by Bristol Bay Natives by modern standards, their own demands for use and their own technologies for storing the resource constrained the harvest to enough to get them through the winter to the next spring. Even if they had wanted to store additional quantities of salmon

in years of abundance for potentially lean years in the future, they could not do so because the drying and storing techniques available to them could only maintain the nutritional value from the resource for a limited time. It is unlikely that the nutritional value could be retained for more than a year and certainly no more than two years. This fact, plus the obvious constraints of technology and labor to the harvesting and processing of the fish, combined to limit the quantities of salmon harvest to what could be caught, processed, and used.

Combined with the perception that the resources will reappear in their appropriate time and place, if humans comported themselves in an honorable and respectful manner towards the fish and animals, and the reality that they almost always did return (and if they didn't harvests could be increased from other resources), production for use was a viable solution but had as an important antecedent condition and constraint that only a relatively low population could be supported in this fashion.

5. Value in Natural Resources and Kinsmen. Because of the primary pattern of production for use characteristic of the economy of the Bristol Bay Native population, notions of stored value were probably unknown or quite limited. Stored value requires something like currency or a unit of value on which there is general agreement. Since food supplies were normally available in sufficient quantity to support the domestic group, there was little reason to have stored value to be able to convert to food in times of shortages. Intensification of production from other resources, movement to other areas or

obtaining assistance from kinsmen seem to have been the basic responses to conditions of resource shortage. Stored value for exchange was therefore of little utility to assisting one over difficult times. Stored value is also important in the context of an exchange economy offering a vast array of goods and services which people, upon exposure to, quickly acquire a desire for. However, with demand limited by a relatively narrow range of goods and services as prevailed in the precontact Bristol Bay economy, there would again be limited utility in having stored value. Why have stored value if there is nothing to convert it to? A final reason for stored value is to sustain a person when they can no longer produce for themselves; in the modern context, when they are in retirement. But in order for stored value to be important here again it must be capable of being converted to food, shelter, clothing and heat necessary to survival in western Alaska. If no such conversion is available, then stored value is of little utility.

This notion of stored value for periods of scarcity and old age does, however, lead down another path in the traditional Bristol Bay economy. Mutual use of technology and sharing of resources amongst kinsmen are important and continuing principles among many Bristol Bay residents. Some have suggested that giving constitutes a means of obtaining status. Another, and more appropriate view in my estimation, is that giving represents investment in kinsmen. Stored value in the Yup'ik culture is deposited in ones kinsmen through giving and caring. These are people who can be called on in times of shortage and scarcity. Most importantly, investment in your children and in having a

large family can be seen as the stored value to be called upon in old age when you can no longer produce for your own use. By developing respect in and providing for one's children, one can store value to support you later in life. In providing for you when they are returning the value stored in them, and further they are able to perceive the value in providing for their own children. For survival when older is dependent on the value stored primarily in one's offspring when they are young. One kind of stored value in Yup'ik culture is thus in kinsmen - in offspring for old age and in brothers, sisters and others for times of need.

By storing value in kinsmen, one is investing in their productive capabilities. But their capabilities, and one's own capabilities are only as productive as the natural resources which can be called upon. So the second form of stored value in Yup'ik culture is in the natural resources. One's own survival is intimately linked to availability of those resources. Certain aspects of Yup'ik ritual appear to be linked to storing value in natural resources by giving to them (in the same way one gives to relatives to store value?) directly. Riordan (1983) reports on the seal party in which parts of the harvested seal are returned to the ocean to insure that the seal will replenish itself. Although her interpretation is considerably deeper symbolically and cosmologically, it serves to display how the Nelson Island seek to create a positive future environment for themselves by investing in natural resources. Wolfe (p.c.) however the men of Quinhagak, a village deeply and powerfully

influenced by the Moravian religion, take oranges and candy bars out with them on seal hunts which they "give" to the seals prior to hunting them.

Some would contend that this is religious behavior which seems to surround significant aspects of existence which humans little understand or have little control over. It involves dimensions of faith that somehow the actions one engages in are efficacious i.e. will have the hoped for effect. But the notion that giving to animals reflects faith in the efficacy of that action to create more animals in the future is not that dissimilar to the faith of modern economic maximizers that the money they invest in mutual funds can be converted in the future to goods and services they desire. Now it appears that faith in the convertability of money is better grounded than faith in the efficacy of investing in animals. Nevertheless both are grounded in cultural perceptions that what they have done in the past on faith has worked, and what works is a powerful reinforcer. In the Yupik view seals and salmon you can eat, money you can't. Offspring can shoot seals and catch salmon, money can't.

These then are key dimensions in the Bristol Bay Native, especially Yup'ik, cultural orientation toward natural resources and production. Contact with explorers, traders, and missionaries in the 19th century brought some changes to the seasonal round but by and large left cultural orientations toward resources and production intact.

III. The Commercial Salmon Industry and Bristol Bay Natives

In the latter part of the 19th century, a new industry entered Bristol Bay and with it came more people than had ever come before and more change that had ever occurred before. The new industry was the canned salmon industry and it came to tap the commercial wealth of the salmon, the foundation of Bristol Bay Native cultures. Even though it brought more change than had occurred previously, even the coming of the canned salmon industry did not alter basic Bristol Bay Native orientations toward production and natural resources.

As has been recounted by Cooley (1963), Van Stone (1967) and others, in the early years of the canned salmon industry's involvement in Bristol Bay the Native population was only minimally involved in the industry and then only in the processing sector. The beginning of the season corresponded well with the traditional round of activities and Bristol Bay Natives made themselves available for wage labor. However their demand for cash and the goods available from it were apparently neither particularly attractive to them or the supply was not reliable for they were unwilling to put the full season in the cannery which the cannery operators required to get their pack put up. After meeting their limited targets, Bristol Bay Natives would apparently leave cannery employ to begin putting up their own fish for the coming winter. After the perception had been established that they were unreliable workers, the canned salmon industry refused to hire them and chose instead to import a Chinese labor force. Bristol Bay Natives were relegated to picking up a few days of work a year during peak periods when the canneries needed additional labor to handle the large runs. Even

then they were only allowed to work in the processing sector. Van Stone (1967) notes that canneries refused to purchase salmon from Native setnetters who occupied beach sites at the mouths of the Nushagak, Kvichak, and Naknek Rivers where they put up their fish for transport back to their villages and winter consumption. Although Van Stone suggests that this was the result of a perception that fish handled by Eskimos were unclean or unfit, it is equally likely that the strong unions controlled by fishermen from California and Washington were a factor in the decisions not to allow local residents into the harvesting sector.

Here then we see that lack of access to either the processing or harvesting sector, perhaps by choice in the case of the former, served to reinforce the traditional cultural orientation toward resources and production. By providing only limited access to cash and by both allowing and requiring traditional production activities and seasonal round to continue, the canning industry buttressed traditional cultural patterns. Several recent writers of the dependency school have suggested that when capitalist penetration is only partial in that labor and other resources in preexisting modes of production are not totally converted to marketable commodities then alternative modes of production derived from traditional modes are likely to emerge. Such appears to have been the case in Bristol Bay.

Bristol Bay Natives from the Naknek area and Egegik area appear to have been able to enter the fishery earlier than elsewhere in the Bay. Part of this is attributable to the epidemic of 1918-1919 which had a devastating impact on most

western Alaska Native populations, but was especially severe in its impacts on the relatively sparsely settled northside of the Alaska Peninsula. The decline in population brought about consolidation of the remaining groups near the canneries at Naknek, Egegik, and Pilot Point. On Lake Iliamna, up the Nushagak River and in the Togiak area population decline also occurred at this time but the response was to relocate traditional villages. Although some people relocated to the vicinity of the canneries, the majority of Bristol Bay Natives continued to pursue their seasonal round from the villages.

Van Stone (1967) reports that by the late 1920s a few Native fishermen had penetrated the harvesting sector and in the 1930s more Native workers began to be hired in the canneries proper. Major entry into both the harvesting and processing sector did not occur until World War II when the canneries' supply of labor for harvesting and processing from the stateside unions dwindled due to wartime demands. Native workers were brought in from all over western, northwestern and central Alaska in addition to Native workers from Bristol Bay. Following the war, canneries began the practice of importing all-Native crews from all over Alaska. Native fishermen from the eastern side of Bristol Bay appear to have entered the fishery in greater number in war and immediate postwar years. In the western part of the Bay, many males continued to work in the canneries alongside their wives. This was particularly true of men from the Nushagak River and from Togiak. Men from these communities gradually entered the Nushagak fishery during the 1950s often first as crewmen for Native fishermen from Dillingham, Clark's Point and Ekuak.

Up until 1954, there was no commercial fishery in the Togiak district. An occasional tender would accompany a group of fishermen and bring the catch back to the Nushagak district for processing. Residents of Togiak who wished to participate in the commercial fishery, either in the canneries or catching fish, had to travel to the Nushagak. A small tent community of Togiak villagers used to occupy the beaches between the current small boat harbor and the Peter Pan cannery in the summer. Men would work as crewmen and women in the canneries until the end of July when they would return home to put up fish. Finally in 1957, a cannery was built at Togiak and almost immediately most Togiak villagers ceased their arduous annual pilgrimage to Dillingham and stayed home; the men and boys caught fish for the cannery with drift nets out of skiffs and set nets on the shore. The women and girls worked in the cannery and put up fish.

With the repeal on the ban on power vessel in Bristol Bay in 1951, canneries were faced with the problem of upgrading their fleets since the old sailboats, although serviceable as power boat "conversions," were hardly designed for efficiency under motor power. By the early 1960s, several canneries in the Nushagak district were ready to upgrade their fleets and at this juncture sold many of their old conversions to Nushagak and Togiak village fishermen. Thus began the new relationship with the canneries which continues to this day among many of the Native fishermen of Bristol Bay.

The relationship that developed between the canneries and

Bristol Bay Native fishermen is important to understand because it provides a degree of insulation from economic forces and thus has assisted the persistence of traditional patterns among village residents. This is not to suggest that canneries or relationships with the cannery alone have been responsible for the continuation of traditional patterns and values for this certainly would be an incorrect overstatement. Nor should it be seen as without cost because surely as the villagers have benefitted from an arrangement that allows the balancing of commercial involvement in the salmon fisheries with village life and quasi-traditional cultural patterns of orientation toward resources and production, so to the canneries have benefitted by ensuring themselves a stable supply of fish and a healthy profit margin.

What were the relationships established between the canneries and the Native fishermen of Bristol Bay? They were not dissimilar from patterns established with other fishermen, both Native and non-Native in other parts of Alaska. Fishermen need boats, nets and other equipment to catch fish. If they are not able to raise the cash to buy a boat and equipment, a cannery may agree to let them fish a boat which the cannery owns if the cannery operators feel the fishermen is skilled enough and responsible enough to operate the boat and catch fish with it. An agreement is struck in which the fishermen leases the boat from the cannery, and perhaps nets and other equipment too depending on his own circumstances, and agrees to deliver all of his fish to the cannery for a given price. In the 1950s and early 1960s the fishing of cannery boats was the norm. Later in

the decade, but especially after the establishment of limited entry in 1973, canneries acted as lending institutions for the fishermen providing them with loans, often at low or no interest, to buy boats. This, of course, was almost as good as having lease arrangements because through such long-term mortgages, canneries were able to insure a stable supply of fish for themselves. It almost goes without saying that the prices which canneries paid for fish under these arrangements were far below what an open market would bear. But they did provide an attractive package of additional benefits which at least made up somewhat for the low price for fish they paid.

Canneries provided a wide variety of services to fishermen who leased vessels from and to fishermen who bought vessels through them. They provided living quarters and storage for boats. By purchasing in quantity for their fishermen they were able to get equipment, engines, nets, radios, and a wide variety of other necessary and not so necessary goods at prices below that which the individual fishermen could get for themselves. And they were even able to pass on part of that savings to the fishermen, usually, and still make a little on it for themselves as well. They provided transportation, often at minimal charge, for things fishermen might purchase in Seattle and need shipping to Bristol Bay. They operated cannery stores that brought in canned foods, clothes, and other goods every spring which otherwise might not be available. And in some locations those cannery stores stayed open through the winter run by the cannery watchman. Such stores were not tax write-offs, not part of the

overhead of the fish business; they were profit-making enterprises in their own right as Moser (1899) documented at the turn of the century.

Perhaps most importantly for Bristol Bay Native fishermen, the canneries provided "grub stake" loans. If a fishermen did not earn enough during a poor fishing season to purchase the food and supplies needed to get his family through the winter, the cannery would provide the needed supplies and put the debt on the fishermen's bill to be deducted from his next season's earnings. This practice was quite similar to that practiced by fur traders across the subarctic of North America and was another mechanism, albeit one which the cannery operators had to watch carefully, by which fishermen could be bound to produce year after year for the same firm.

Perhaps equally as important the cannery, unlike banks, could carry a loan for a fishermen who could not make a payment due to a poor season. They could make allowance for flexible payment schedules. If things got to bad, they could foreclose on the vessel and resell it to another fishermen.

At the end of every fishing season, the cannery would issue a settlement statement to the fishermen on which were listed the fishermen's earnings for the season, charges for goods and services which the cannery had provided for him during the course of the season, and payments on his vessel mortgage if he should have them. For the Bristol Bay Native fishermen, this relationship, which has many of the characteristics of the classic patron-client relationships identified in other parts of the world, was his survival. All of his management decisions and

needs were taken care of for him by one institution. Cannery superintendents had the power of life and death, of success or failure and it is little wonder that patterns of extreme deference and unquestioning acceptance became established.

From the cannery's point of view the Native fishermen was also a bargain. Van Stone (1967) indicates that they became steady, able producers although their earnings usually lagged behind the non-Bristol Bay fishermen for a number of reasons. But more importantly, I suspect, they were appreciated by cannery operators because they took almost everything at face value. A woman who was a bookkeeper for a major cannery in the late 1950s reports that at the end of the season, "outside" non-Native fishermen would come to the superintendent and hound him for verification of nearly every charge that appeared on their statement. Often the cannery superintendent would have to cut adjustment checks in order to mollify fishermen or correct errors. She recalls that the superintendent looked fondly on his Native captains because they would politely come to the office, pick up their check and statement, fold it up without ever looking at it, smile and walk out the door. With these characteristics the Native fishermen did not have to be a highliner to be attractive to the cannery operators; all he had to do was be productive enough to cover the boat payment and he would make money for the cannery.

The cannery could also consider the Native fishermen a bargain, if in addition to his own delivery of fish, his wife and perhaps a child or two were working in the cannery. Such an

arrangement would reduce the costs of transportation and some of the room and board needed to support the imported labor.

But not all Native fishermen's wives went to work in the canneries. Wives of fishermen from Nushagak River communities such as Ekwok, New Stuyahok, and Koliganek continued to go instead to traditional set net sites at Lewis Point near the mouth of the Nushagak River and put up subsistence fish while their husbands and sons fished commercially. In addition, upriver fishermen often fished only the peak of the red season commercially and then retired back upriver to put up chum salmon for dog food.

Likewise men and women from Nondalton on Lake Clark were available to the canning industry for only a limited time. The involvement of residents of Nondalton in the Bristol Bay fishery appears to have been sporadic because they had the option quite often of going fire fighting for the Bureau of Land Management. However when they did come down to fish and work in the canneries of the Naknek-Kvichak district, they too were often available only during the peak periods as they would quickly depart back up to their fish camps on the Newhalen River at the mouth of Lake Clark to put up their subsistence fish for the winter.

The canneries in their relationship with Native fishermen and families took on a paternalistic role which suited their profit-making goals as well as suiting the objectives of the Native fishermen to live in his traditional village and continue relatively similar patterns of production from natural resources. To this day, many village fishermen continue to retain linkages to canneries with which they first began their commercial fishing

careers. These ties appear to be between a given cannery and fishermen of a particular village. Thus fishermen from different villages tend to have ties with different canneries.

IV. Contemporary Variations among Bristol Bay Fishermen

This section will identify some important dimensions of variability which currently characterize the Bristol Bay drift gillnet fishermen. First comparisons between resident Bristol Bay fishermen and non-resident fishermen will be presented.

Table 1 indicates the differences in gross earnings between Bristol Bay resident fishermen and non-resident fishermen. In the past decade, two trends can be identified. First, the gap between the groups which was large at the beginning of the decade, due in large measure to inferior and older equipment (Rogers 1972), decreased through 1977. Since that time, however, it appears that the gap has begun to widen again. The implications of this fact will be taken up in the next section.

Table 2 indicates a number of differences between the Bristol Bay resident drift gillnet fleet and the non-resident drift gillnet fleet as reported by Larson (1979). There is substantial evidence of technological difference between the two groups of fishermen which may in large part account for the differences in gross and net earnings between the two groups.

Table 3 provides an indication of the differences in gross earnings and vessel length between fishermen in various Bristol Bay villages. Noteworthy is the smaller average vessel length of the western villages. This table indicates that vessel lengths tend to be longer in the villages of the east side and the

TABLE 1

CHARACTERISTICS OF BRISTOL BAY RESIDENT AND NON-RESIDENT
DRIFT GILLNET FISHERMEN IN 1979

Characteristic	Bristol Bay Residents	Non-Alaskan Residents
Mean Gross Earnings	\$52,147	\$81,002
Mean Net Cash	\$23,480	\$34,723
Days Spent Fishing	33	27
Fuel Consumption (gals.)	735	849
Vessel Value	\$22,895	\$46,170
Fishing Gear Value	\$6,460	\$11,782

Source: Larson (1980)

TABLE 2

MEAN DRIFT GILLNET EARNINGS OF BRISTOL BAY RESIDENT AND NON-BRISTOL BAY RESIDENT FISHERMEN: 1975-1980

Year	Bristol Bay Resident	Non-Bristol Bay Resident
1975	\$5,401	\$9,144
1976	\$12,944	\$13,275
1977	\$15,398	\$17,394
1978	NA	NA
1979	\$52,147 ^{21,454}	\$78,087
1980	\$28,287	\$37,054*

* This figure is for all Bristol Bay drift gillnet fishermen. Since Bay residents comprise approximately 35% of the fleet, the non-Bay resident average earnings were likely between \$42,000 and \$45,000.

Sources: CFEC (1982), Langdon (1981), Larson (1980), and Rogers and Kreinheder (1980)

- could we get data showing # of vessels by residence, etc.?

TABLE 3

MEAN VESSEL LENGTHS AND GROSS SALMON EARNINGS OF BRISTOL BAY
RESIDENT FISHERMEN BY VILLAGE: 1980

Village	Mean Vessel Length (n)	Mean Gross Earnings (n)
Aleknagik	29.9 (13)	\$28,636 (11)
Dillingham	31.0 (52)	\$32,023 (44)
Egegik	27.9 (10)	\$35,857 (7)
Iliamna/Newhalen	27.8 (15)	\$23,750 (8)
Koliganek	31.0 (6)	\$26,667 (6)
Manokotak	27.0 (9)	\$23,750 (8)
Naknek	31.8 (16)	\$31,000 (13)
New Stuyahok	30.8 (13)	\$31,167 (12)
Togiak	26.9 (25)	\$12,176 (17)

Source: Langdon (1981)

regional center (Dillingham) as opposed to villages on the west side. Koslow (1982), however, notes the difference between east side villagers and the non-local fishermen beside whom they fish. Only 72.4% of the resident fishermen from his sample of east side villages had 32-foot vessels while over 95% of non-resident fishermen had 32-foot vessels. Thus, despite the fact that resident fishermen on the eastside of the Bay have larger vessels on average than residents of west side villages, east side residents are not at parity with non-local fishermen in terms of vessel size.

Table 3 also gives an indication of the type of variability in earnings between villages although it should be noted that the income distribution reported here is for one year in which a strike occurred. Fluctuations in earnings do occur. Time-series data on earnings by villages are presently being analyzed and will provide for a more detailed understanding of patterns of variation in earnings within and among villages.

V. Forces of Change

The discussion that follows focuses on the dynamics of the drift gillnet fishery and does not deal with the set gillnet fishery for two reasons. First, drift gillnets harvest about 80% of the fish. Second, set gillnet variation in harvest levels are a function of the site, that is the location where the set net is deployed (there are good sites and bad sites) and the environment (amount of sun or rain and the migration route salmon follow on their return to their home streams) and not a function of

fishermen's skill or technology. The model of change uses as variables the characteristics of fishermen and their technologies as these are deployed in the search for salmon and earnings.

Several assumptions should be identified at the outset. It is assumed that stocks stay fairly abundant over the next 5-10 years and that there are no major disasters. It is assumed that the gradual linear trend in processing continues as fresh and frozen production gradually assumes a larger share but do not eliminate canned production. It is assumed that limited entry is not drastically changed and that the loan programs for entering the fisheries are not drastically altered. Given these assumptions, a number of dynamic forces can be identified and linked together into a model of change in the fisheries.

The first and most important force stems from the underlying structure of the state's limited entry system. Although the number of permits has been limited, this does not constitute a ceiling on effort since each of those individual units can increase their capacity to catch fish through technological upgrading and the addition of more crewmen. Department of Fish and Game records indicate that the percentage of drift permits participating in the fishery has risen from 74% in 1977 to 98% in 1982. Furthermore, as new entrants come into the fishery through permit purchases, they are faced with significantly higher overhead expenses than fishermen who were granted a permit in the form of the costs of the permit. They therefore must be highly competitive to insure that their permit payments are met.

Increasing competition between bigger and better equipped vessels is a fact of the limited entry system driven by the entry

are deviations from this theoretically possible situation in that fishermen from different locations have tended in the past to fish in certain districts. For Bristol Bay Native fishermen, the districts in which they fish tended to be linked to their home villages and traditional resource use areas. They thus are forms of territoriality. This is the case, to a greater or lesser extent from Fort Heiden to Togiak. In general, the pattern is more characteristic and fishermen feel more linked to a single district in the Togiak and Nushagak districts than do the resident fishermen of the Ugashik, Egegik, and Naknek-Kvichak district.

In analyzing the movement of British Columbian fishermen between different districts and fishing grounds during the course of the season, Hilborn and Davis (1980) hypothesized that fishermen were income maximizers and as a result their patterns of movement would reflect the abundance of fish in districts at different times of the season. In a truly integrated fishery in which there were no local ties, nor technology, information, or skill differences earnings differentials among fishermen would disappear as movement between areas would continue to occur until earnings were equal in throughout the fishery. Where fish runs were large there would be a lot of fishermen to divide up the earnings and where runs were small there would be fewer fishermen to divide up the earnings, thus equalizing earnings among fishermen. His tests of these hypotheses tended to support the basic thesis with the notable exception of Native American fishermen in certain areas who persisted systematically in local fisheries when other segments of the fleet were attaining

significantly higher earnings in other locations.

A similar situation appears to be emerging in Bristol Bay which I hope to later be able to demonstrate statistically. There has been an increase in the movement of fishermen between districts in the past several years. The flow of that movement is important to consider because it is linked to technology and social factors. Over the years the Naknek-Kvichak, Egegik, and Ugashik districts have shown greater movements of the local fishermen who usually fish these districts. That is there is more movement of local fishermen between the three eastern districts than one finds in the western districts. Fishermen from Dillingham, Aleknagik, and the Nushagak villages have generally preferred to fish in the Nushagak district only rarely moving east or west until the last three years. Likewise, very few Togiak fishermen leave the Togiak district to fish in other districts. In 1982, 91% of 44 sampled Togiak resident drift gillnet fishermen spent their entire fishing season in the Togiak district.

The impetus behind the recent trend toward greater movement of fishermen between districts appears to be the non-Bristol Bay resident fleet operating primarily out of Naknek and traditionally concentrating its efforts in the Naknek-Kvichak district. In recent years, more and more fishermen from this district have been fishing the king run in the Nushagak in June before transferring to the Naknek-Kvichak district for the district's biggest red run and then returning to the Nushagak after the peak in Naknek-Kvichak in order to catch the normally slightly later peak in the Nushagak district. Nushagak fishermen

seem to have responded to the recent influx in two ways. An increasing percentage of Nushagak River fishermen in the last two years have begun transferring to the Naknek-Kvichak district to fish. A second response apparently followed more Nushagak fishermen has been to transfer eastward into the Togiak district earlier than usual. Through out the late 1970s through 1981, the normal number of drift gillnet boats to operate in the Togiak district was between 100-110 of which 80-85 were Togiak residents. In 1982 that number jumped to 150 as more boats came over from the Nushagak and fishermen estimate that the number may have gone as high as 250 in 1983. Thus the traditional territorial patterns of fishermen from villages fishing predominantly in districts where there village is located are apparently breaking down. For Bristol Bay resident fishermen, this is an extremely uncomfortable time in which fishermen are wracked by principles of appropriate fishing by which they have been raised and fished according to most of their lives coming into conflict with survival in the fishing i.e. making enough to cover the boat payment, pay some bills and put food on the table for the winter.

But why is it this pattern of vessel movement? In the previous section, significant technological variations among the drift gillnet fleet were noted. The non-local Naknek-Kvichak fleet operating out of Naknek has the highest percentage of large capacity, large horsepower, heavily equipped 32-foot vessels in the fleet. The reason for this is fundamentally the tremendous earnings of 1979 and the higher earnings available from the Naknek-Kvichak district which were also pointed out in the previous section. In 1979, following the tremendous run with

tremendous prices, many fishermen had new boats built because the fleet was in general in bad need of upgrading after nearly a decade of poor runs and fishermen needed tax shelters to protect their earnings. New larger horsepower and larger capacity vessels also provided the possibility for either greater harvests and bigger personal earnings. Although vessel upgrading also occurred elsewhere in the Bay, the quantitative leap taken by Naknek-Kvichak based vessels at that time appears sizable.

These new vessels however began competing intensively with each other in the Naknek-Kvichak district. As this competition developed further, some fishermen apparently decided to take their chances in the less technologically advanced and less competitive Nushagak district fishery. This induced rising competition in the Nushagak district, much to the consternation of resident men who had fished in the Nushagak district their entire lives. As the competition rose in the Nushagak district, fishermen from the Nushagak district began to move into the Togiak district, which as noted above is operating at a significantly different technological level, where their earnings opportunities appeared to be better than staying and fighting it out in the Nushagak district. In each case, technologically superior fishermen under intensifying competition in their own districts have sought relief by moving to districts where vessels were in general not as technologically advanced and where they stood a better competitive opportunity to enhance their earnings.

The implications of differential technological capabilities and differential earnings between segments of the fleet have

implications for the process of entry and exit through permit purchases. First, permit prices appear to be pegged to the earnings potential of the Naknek-Kvichak district and reflect expectations of fishermen purchasing permits to achieve this level of earnings in order to pay for the permit. Prices then are at levels above what Bristol Bay resident fishermen are able to pay if one were to assume that the Bristol Bay Native resident fishermen had expectations to pursue the pattern of most Bristol Bay Native fishermen in the fishery. Bristol Bay Natives with such expectations cannot purchase the permits because they will likely not have the earnings to pay for the permit at the price they must buy it for. Those Bristol Bay Natives who do choose to purchase permits (and there is no evidence outside of one community for Bristol Bay residents having purchased permits from non-Native non-residents) will likely have to display a different orientation to production and kinsmen than is presently practiced by the majority of Bristol Bay Native fishermen. Note that this discussion does not begin to address the difficulties associated with the information necessary to make contacts with non-local permit holders and, more importantly, interact effectively with the lending institutions to get the money to make a permit purchase.

Exit from the fishery through permit sale is another ramification of the difference between typical Bristol Bay Native fishermen's earnings and the market price of permits. As discussed in greater detail in Langdon (1980), it is an economically rational decision for a fishermen with below median or mean earnings to sell his permit at a market price which

reflects a higher rate of earnings. He makes money on it. This is at least one reason for the continuing decline of Bristol Bay resident permit holders.

Perhaps more importantly displayed is the cultural dilemma posed by the potential sale of the permit. Langdon (1980) and the Commercial Fisheries Entry Commission (1983) have documented that transfers among Bristol Bay resident fishermen tend to be gift transactions in the majority of cases while non-resident transactions are sales in the majority of cases. Further, there is a much higher percentage of transfers to kinsmen among Bristol Bay resident fishermen than among non-resident fishermen. Both of these facts are evidence of the domestic mode of production in operation. Parents are faced with the dilemma of investing in the children, as the traditional cultural pattern expects, by passing the permit on to them or investing in stored value (money) for their declining years by selling the permit at market value. To most Bristol Bay residents the idea of children paying parents for permits appears to be nigh on to incomprehensible. Rather the expectation appears to be that children who receive permits have a greater responsibility to care for their parents than do those who do not receive the permit. The problem is that the intergenerational principle of support seems to have declined as younger people appear to be less inclined to support their parents in their declining years, even through earnings on the permits transferred to them. This may stem from perception by the youth that government programs are adequately accomplishing the job or the younger generation may simply be indulging their

own desires to maximize personal earnings to exchange for goods and services. Parents appear to be in a great quandry about whether to sell the permit or give to the children. Many are fearful that offspring may run off and sell the permit and squander the money obtained. And if they decide to pass the permit on, the dilemma is to whom. One young man reported that his father offered him his permit rather than to his older brother because he (the younger brother) had always helped the parents out more with labor, money, and subsistence products. This quandry seems also to be leading to the loss of permits as the traditional cultural pattern of investing in kinsmen (children particularly) seems to be under stress.

Another dilemma posed by the crush of increasing competition, declining earnings, and perhaps interest in more personal wealth is the viability of the domestic mode of production. The domestic mode of production practiced by Bristol Bay Native fishermen has had the characteristic of kinsmen working together and sharing the proceeds fairly equally. In the past, partnerships between men with boats and men with gear were common, and this pattern was deeply damaged by limited entry in that assignment of the permit to one person establishes a dominant-subordinate relationship rather than equal-equal relationship. Bristol Bay Native fishermen have persisted in the domestic mode of production by paying relatively generous crewshares to their kinsmen. In the Togiak district, a payment of 33% of the gross earnings to the crewmen is standard practice. On Nushagak district 32-footers, 25% has been standard for kinsmen.

This pattern and rate is much higher than found among non-resident

fishermen who higher far fewer kinsmen as crewmen and pay rates of 5%-15% to the nonkinsmen they do hire. Prior to the 1983 season, labor brokers contacted many Bristol Bay fishermen, both Native and non-local, indicating that they could supply crewmen willing to work for 5%. This is becoming a serious temptation for many Bristol Bay Native fishermen. The wife of one fishermen reported that her husband had finally gotten fed up with his cousin who he had been paying 25% for a number of seasons for what he thought was too little productivity and decided to hire an experienced outside crewmen who would work for 10%. Many Bristol Bay Native fishermen must similarly face this dilemma. Because of the cultural value of equality among kinsmen, many are too ashamed to ask kinsmen who have been working for a third share over the years to take lower shares. They do not even give the local labor a chance to refuse the lower rate because of the hostility, shame and social pressure that are sure to follow. They simply go out and get an outsider. In villages where the age cohort of young males and females between 15-25 is the largest and who are without permits of their own, the decline of positions as crewmen and the decline of earnings from those positions are serious problems. The dilemma faced by the permit holder is that the domestic mode of production demands that he hire more of his kinsmen (because of the decline of permits and the large number of young people) and spread his earnings even farther. At the same time the economic forces demand that he upgrade his boat to compete, and reduce his labor costs to pay for his boat, and perhaps increase his own personal earnings.

The socioeconomic and sociocultural dilemmas posed by the dynamics of the present commercial salmon fishery in Bristol Bay are many and stressful. What are the likely outcomes?

One likely outcome is the emergence and survival of the aggressive, entrepreneurial fishermen who abandons the domestic mode of production, who abandons production for use and becomes a maximizer of personal wealth. These types will enter the herring fisheries and seek to diversify into other fisheries as well. This is the individualist strategy. Further, to the extent that these individuals appear in villages, they will be cycled out into the regional centers as the local social pressures on them will become intense as they violate cultural norms. They will thus tend overtime to be concentrated in Dillingham, Naknek, and perhaps Anchorage as well.

Another strategy which appears to be operating in Manokotak and Port Heiden is adapt the domestic mode of production to the situation of increasing competition by leaving accustomed territorial fishing grounds and going to the Naknek-Kvichak district together. A group of brothers and friends when fishing together can reduce the risks associated with fishing in unknown waters and perhaps carve out a fishing area. This strategy can address the problem of declining earnings due to competition, to a certain degree, and allow for higher crewshares. But it cannot solve the dilemma of limited numbers of permits.

In the village of Port Heiden is the further strategy apparent. Here the village leader coordinates kinsmen to travel and fish together in other districts. This, however, is a long-term pattern not recent arrived at due to the lack of a local red

fishery. In addition, however, this leader has been able to identify permits and use local earnings and state loan programs to bring permits into the community for the younger people. The adaptation to the domestic mode of production is to make all kinsmen permit holders and then hire outsiders as crewmen (and laborers in his local enterprise) and pay them the going rate of low percentages among non-local fishermen.

It is likely that all three of these strategies may appear and that more strategies will be developed to cope with the forces of change in the commercial salmon fishery. All of these strategies require adjustment of or abandonment of certain principles of the traditional cultural orientation to the commercial fisheries.

- lower earnings, of local fishermen - make it harder for them to help children buy permits.

domestic mode of production - long strands so many
paying boat loans goes around hiring kinsmen at
30%.

another stress - passing on the permit vs. selling it.
How do you provide for yourself when you get old?
kid may sell it, squander it.

has that offspring helped them the most?
will that offspring hire brothers & kinsmen?
Maybe his kinsmen would work hard.

in buying fishery, other than Mawotitah & Fogiak, only
Mishkam & Nakwet are coming into it. In the emerging
fishery, Muckogate & other villages aren't joining in.
- declining viability

REFERENCES

- Commercial Fisheries Entry Commission
1982 A Compilation of Data on Residence of Gear Operators, Vessel Characteristics and Fishery Diversification Patterns from Some Major Alaskan Fishing Fleets, 1969-1980. Juneau: Commercial Fisheries Entry Commission.
- 1983 Changes in the Distribution of Permit Ownership in Alaska's Limited Fisheries, 1975-1981. Juneau: Commercial Fisheries Entry Commission.
- Cooley, R.
1963 Politics and Conservation: The Decline of the Alaska Salmon. New York: Harper and Row.
- Hilborn, R. and M. Ledbetter
1979 Analysis of the British Columbia Salmon Purse-Seine Fleet: Dynamics of Movement. Journal of the Fisheries Board of Canada 36 (4):384-391.
- Koslow, A.
1982 Limited Entry Fisheries Policy and the Bristol Bay, Alaska Salmon Fishermen. Journal of the Fisheries Research Board of Canada 39 (3): 415-425.
- Langdon, S.
1980 Transfer Patterns in Alaskan Limited Entry Fisheries. Final Report for the Limited Entry Study Group of the Alaska State Legislature. Juneau: Legislative Affairs Agency.
- 1981 The 1980 Salmon Season and Bristol Bay Native Fishermen: Performance and Prospects. Dillingham: Bristol Bay Native Association.
- Larson, D.
1980 1979 Fisherman's Income Survey - Herring and Salmon Fisheries. Alaska Sea Grant Program Report 80-5. Fairbanks: Alaska Sea Grant College Program.
- Moser, J.
1899 Salmon and Salmon Fisheries of Alaska. United States Fish Commission. Bulletin 18: 1-178. Washington: U.S. Government Printing Office.
- Oswalt, W.
1967 Alaskan Eskimos. San Francisco: Chandler Publishing Co.
- Riordan, A.
1983 The Nelson Island Eskimo: Social Structure and Ritual Distribution. Anchorage: Alaska Pacific University Press

Rogers, G.

1972 Fisheries Management: The Cook Inlet and Bristol Bay Cases. In A.R. Tussing, T.A. Morehouse, and J.D. Dabb (eds.) Alaskan Fisheries Policy. Fairbanks: Institute of Social, Economic, and Government Research.

Rogers, G. and J. Kreinheder

1980 Socioeconomic Data Base for Fishery Areas and Census Divisions. Final Report for the Limited Entry Study Group of the Alaska State Legislature. Juneau: Legislative Affairs Agency.

Van Stone, J.

1967 Eskimos of the Nushagak River. Seattle: University of Washington Press.

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