TECHNOLOGICAL AND SOCIAL CHANGE OF MARINE MAMMAL HUNTING PATTERNS IN BERING STRAIT

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Introduction

Large marine mammal hunting has been the primary adaptive strategy of Bering Strait[2] insular populations through the historic period and, based on archaeological data from St. Lawrence Island, possibly for more than a millenium before earliest Euroamerican contact. Organized crews of young to middle-aged males in large walrus skin-covered boats (umiaq in Iñupiaq, angyak in Siberian Yupik) provided the vast majority of biomass for the insular populations via the cooperative harvest of migratory bowhead whales and Pacific walrus. Additionally, crews opportunistically harvested bearded seal, smaller seal species, and less frequently, belukha whales in conjunction with the hunt for the larger species.

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1 This paper is adopted from "Bering Strait Insular Eskimo: A Diachronic Study of Population Structure and Ecology." It should not be reproduced without the permission of the author.

2 In this context St. Lawrence Island is considered a Bering Strait Island although it is more geographically located in the northern Bering Sea.

The general patterns of large marine mammal hunting by insular populations have persisted to the present time, despite technological changes including the use of rifles and outboard motors. The use of large skinboats (22-26' at St. Lawrence Island and on the average 36' at King and Diomede islands) also persisted throughout this time, except for the period from approximately 1869 to 1950 on St. Lawrence Island during which time large wooden whaling boats were used as a substitute for the large skinboats.[1] Therefore the social institutions of skinboat captaincy and crews also persisted into the contemporary period. The captain/crew organization was necessary to provide adequate labor requirements to operate the large craft and to carry out the complex hunting strategies associated with large marine mammal hunting. In approximately 1970 another technological change -- the use of primarily 16' aluminum boats for walrus hunting -- commenced. King Islanders residing in Nome were the first to use aluminum boats for this purpose. The first documented use of aluminum boats at Gambell on St. Lawrence Island was in 1974. Diomede Island hunters were the last to introduce the use of aluminum boats for walrus hunting in 1980. The sequence of interconnections between the use of aluminum boats and the institution of the hunting crew and implications of these changes for cooperative crew hunting in the future at St. Lawrence, King and Diomede islands are the subjects of this paper (Figure 1).

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[1] Smaller skinboats continued to be used on St. Lawrence Island for harvesting seals or for use when ice conditions prohibited the use of the heavy wooden whaling boat.

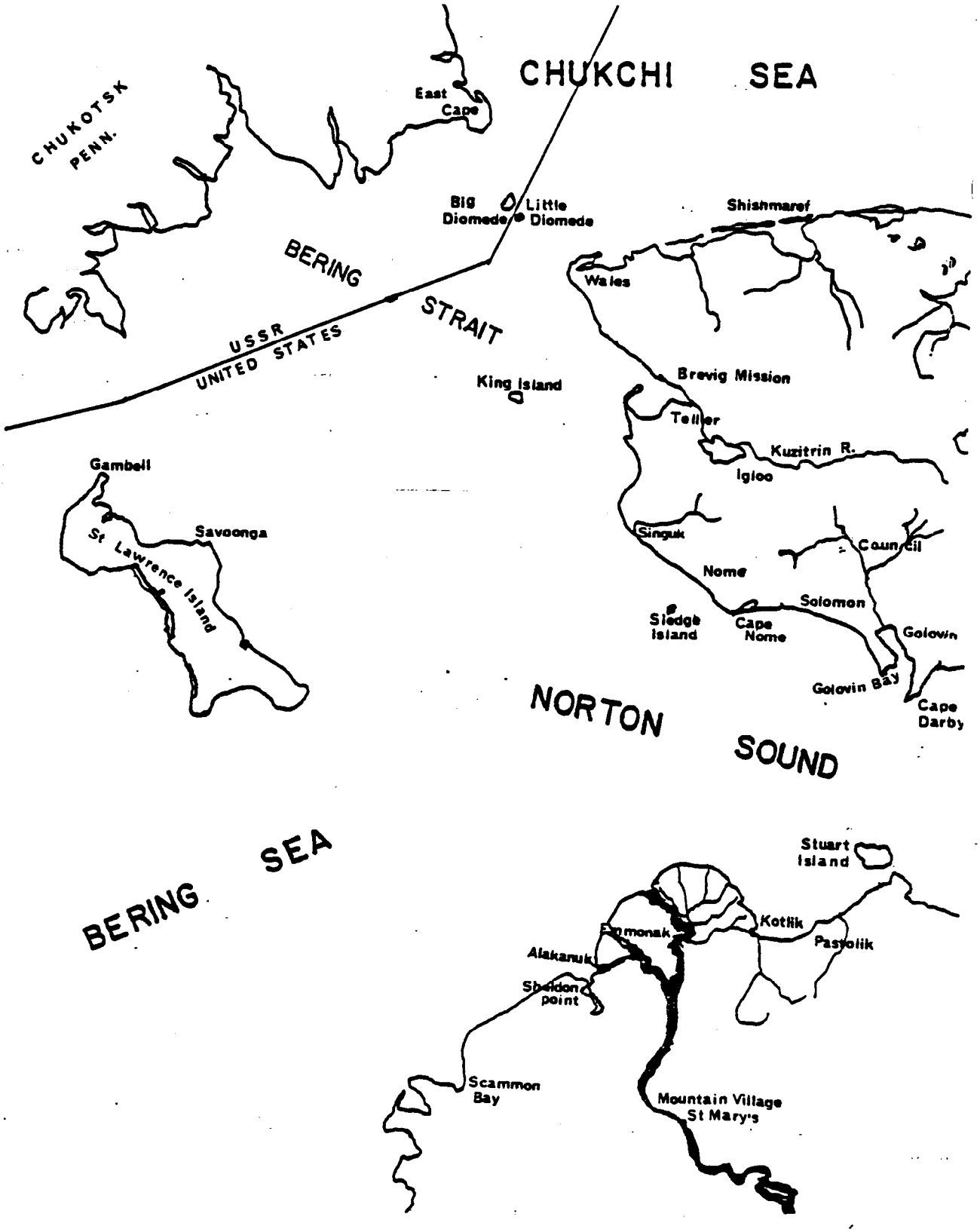

Figure 1: Bering Strait study communities.

The Data

Archaeological and ethnohistoric data used in conjunction with ethnographic analogy indicate that successful cooperative large marine mammal hunting requires a population base with an adequate number of males in young to middle-aged cohorts to establish minimally two and preferably more skinboat crews (Bockstoce 1976; Freeman 1979). These demographic requisites are not likely to be found in communities with a population of less than 100 or in populations which do not demonstrate a sex and age profile with a large base of young people of both sexes and a balanced decline of all sex and age cohorts towards the older end of the profile.

There are four study communities of concern in this context. These include the Siberian Yupik-speaking communities of Gambell and Savoonga located on St. Lawrence Island and the Iñupiat communities of King Island (currently a discrete subcommunity of Nome) and Diomede located on Little Diomede Island. In 1980 Gambell and Savoonga had populations of 419 and 448 respectively, a result of population growth trends which have continued since the major population decline on the Island in 1878-1880 and the resultant low of 261 in 1903. In 1980 the King Island subcommunity in Nome numbered 313, an increase over the relatively stable 200±/ average population of the community when located on the Island. In 1980 Diomede had a population of 146, a level which has increased in the last two decades but which closely corresponds to population levels documented during the late eighteenth and early nineteenth centuries.

On St. Lawrence Island the same captain/crew configuration conducted both spring whaling and walrus hunting in that sequence prior to the introduction of aluminum boats. Savoonga, established as a reindeer camp

in 1916, had no whaling crews until 1973, but walrus hunting was conducted with local skinboat crews and whaling with Gambell crews prior to that time. The initiation of Savoonga whaling crews in 1973 was associated with the use of snowmachines for hauling the large skinboats overland, a distance of 30+ miles, to the southwestern shores of the Island, since whaling and early season walrus hunting were not possible along the north-central and northeast shores of the Island due to ice conditions and the migratory paths of bowhead whales and walrus (Figure 2). On St. Lawrence Island a boat crew engaged in whaling or walrus hunting numbered seven to eight young to middle-aged males. Crew size was influenced by minimal labor needs necessary for hauling the boat over ice, hauling walrus out of the water or towing whales back to shore, and butchering of walrus in a timely fashion and by the fact that large boats with large crews were prestigious for a particular captain and his kinship group.

The number of crews at Gambell through time has ranged from approximately 13 during the 1930s through the 1950s to an average of 18 in the 1960s and early 1970s or prior to the introduction of aluminum boats. There was no documentation of crew number at Savoonga until the 1960s. During this decade there was an average of 17 walrus hunting crews at Savoonga. The extent to which Savoonga hunters were integrated into Gambell whaling crews prior to the time when Savoonga crews began whaling with their own boats has not been recorded.

In 1974 St. Lawrence Island hunters began to purchase and use 15-18' aluminum boats for walrus hunting. By 1980 Gambell had 39 crews and Savoonga 42 crews for walrus hunting, an increase of 117 percent and 147 percent respectively from the average number of crews in the 1960s and early 1970s. Although population increases during the last two decades

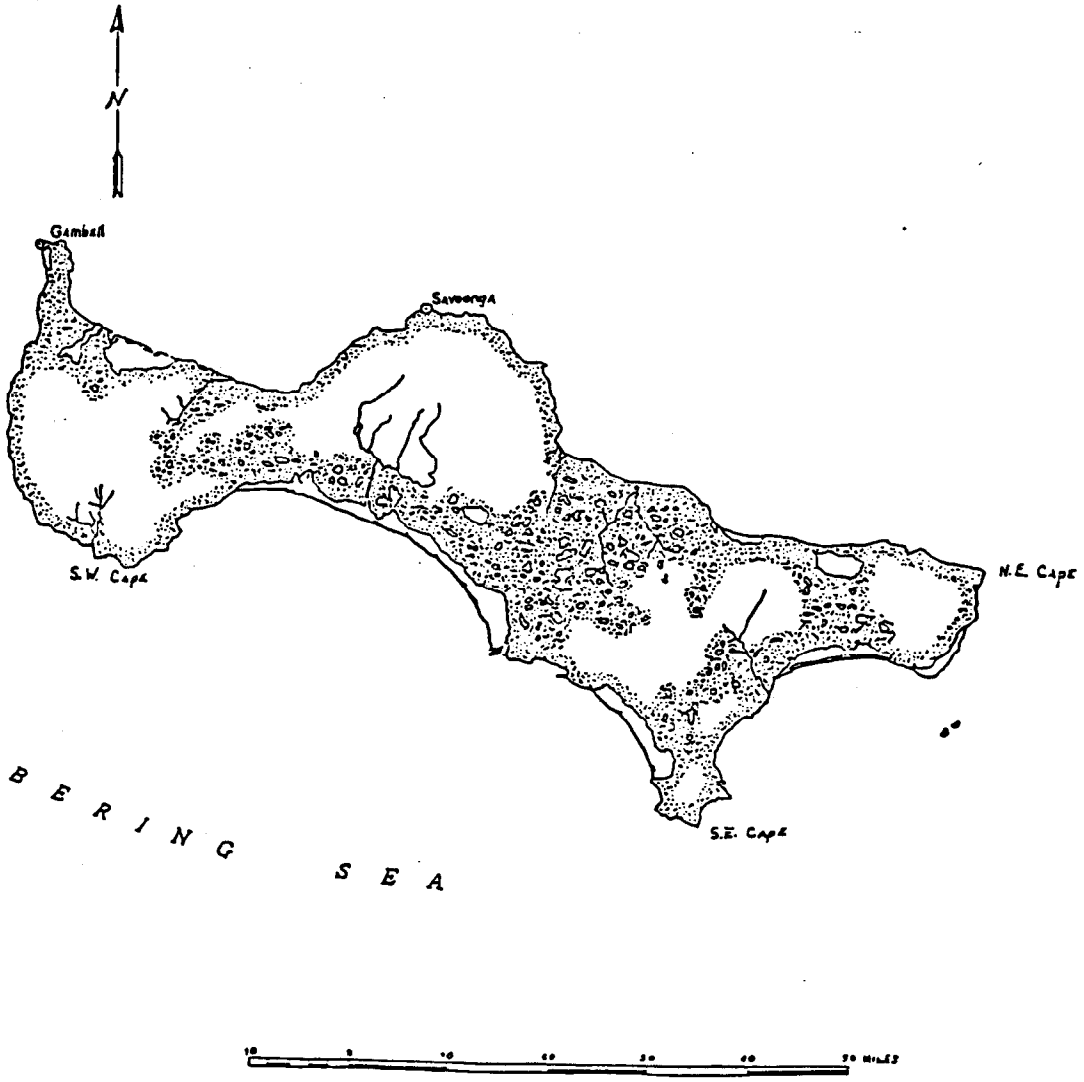

Figure 2: St. Lawrence Island.

account for a large portion of this increase in number of crews, the use of aluminum boats has also been a significant factor. Essentially, a dual captain/crew structure began to emerge on the Island, one for whaling and one for walrus hunting. In 1980 the large skinboat crews from both villages which whaled were organized on the basis of traditional patterns. The captain was usually the eldest hunting male of a family group composed of fathers, brothers, sons, and brothers' sons and associated females. The composition of whaling crews reflected this kinship pattern (Table 1). It is interesting to note that in 1980 there was no incidence of males participating on St. Lawrence Island whaling crews who were related to the captain through the captain's wife. The core of these crews was clearly a set of males which included the captain, his younger brothers, his sons, and his brothers' sons. Additionally most other males were related to the captain through his sisters and daughters. The importance of age which is associated with well-developed hunting skills and knowledge of the environment and with the ability to recruit and maintain crews is demonstrated in 1980 data (Table 2). In 1980 the average age of the 22 Gambell whaling captains was 50.1 years and the average age of the 8 whaling captains in Savoonga was 47.5 years.

Walrus hunting crews on St. Lawrence Island provide an interesting contrast. Of the 39 walrus hunting crews at Gambell in 1980, 37 used aluminum boats, 1 used a 23' skinboat, and 1 used an 18' wooden boat. Since 1979 Savoonga crews have exclusively used aluminum boats for walrus hunting. In the cases of both villages, walrus crew size was three to four, a decrease of three to four members from that of the whaling crews. Interestingly, most walrus crews are subdivisions of the larger whaling crews which had fissioned along traditional lines of age, authority and

TABLE 1: KINSHIP RELATIONS OF WHALING CREWS, 1980 -- ST. LAWRENCE ISLAND[1]

Key: Br = brother, C = captain, Da = daughter, Fa = father, Hu = husband, Mo = mother, Ru = relationship unknown, Si = sister, So = son, Ur = unrelated

Crew Type	Crew Composition	Gambell	Savoonga	Total
1	C: Br, So	1	0	1
2	C: Br, So, BrSo	2	1	3
3	C: Br, So, BrSo, FaSiSo	1	0	1
4	C: Br, So, FaBrSo	1	0	1
5	C: Br, So, MoSiDaSo	1	0	1
6	C: Br, So, DaHu	1	0	1
7	C: Br, So, SiHu	0	1	1
8	C: Br, So, Ru	1	0	1
9	C: Br, BrSo	0	2	2
10	C: Br, BrSo, SiHuBrSo	1	0	1
11	C: Br, BrSo, MoSiDaHu	1	0	1
12	C: Br, BrSo, Ur	1	0	1
13	C: Br, FaBrSo, Ru	1	0	1
14	C: Br, MoSiHu, SiSo	0	2	2
15	C: Br, FaBr, FaBrSo, Ru	0	1	1
16	C: So, BrSo	2	0	2
17	C: So, SiSo	3	0	3
18	C: So, SoSo, Ur	1	0	1
19	C: So, SiSoSo, Ru	1	0	1
20	C: BrSo, BrSoSo	1	0	1
21	C: BrSo, FaBrSoSo	0	1	1
22	C: BrSo, Ru	1	0	1
23	C: Ur	1	0	1

[1] One or more numbers of a crew may be of the relationship expressed in the equation. These crew equations express only the nature of relationships, not the frequency with which they reappear on the same crew.

TABLE 2: AGE OF WHALING CAPTAINS AND STRIKERS, 1980 -- ST. LAWRENCE ISLAND

Crew No.	Gambell		Savoonga	
	Age of Captain	Age of Striker	Age of Captain	Age of Striker
1	43	ND	52	27
2	41	19	40	34
3	54[1]	23	46	36
4	54	29	70	39
5	48	36	36	35
6	56	30	47	36
7	27[2]	31	42	45
8	54	20	47[3]	42
9	57	33	--	--
10	61	49	--	--
11	41	34	--	--
12	49	25	--	--
13	49	41	--	--
14	49	ND	--	--
15	63	28	--	--
16	43	32	--	--
17	55	40	--	--
18	57	27	--	--
19	63	31	--	--
20	46	30	--	--
21	45	43	--	--
22	47	27	--	--

ND = no data

1 This captain is frequently unavailable due to employment. In his absence his 48-year old brother is captain.

2 This captain's father resides in Nome.

3 An older brother started this crew but left Gambell for employment.

skill. Many of the new captains in 1980 were strikers on the whaling crews. The striker of a whaling crew was normally the second in command and commonly ascended to captaincy after the retirement or death of his father or eldest brother. In 1980 the average age of 39 walrus captains in Gambell was 42.9 years and the average age of 42 walrus captains in Savoonga was 43.8 years (Table 3). This is a decrease in average age of captains of 7.2 years and 3.7 years for Gambell and Savoonga respectively. Since the aluminum boat was a purchased item requiring cash as opposed to knowledge of skinboat construction and access to female hides -- access to which was jealously restricted by existing captains in the past -- walrus captains at Gambell and Savoonga in 1980 could be individuals who did not inherit the role of captain or acquire necessary technology via traditional means. However, in actuality new captains still had to have the experience, kin support, and social prestige necessary for recruiting and maintaining crews.

The King and Diomede island cases are somewhat different. There is no ethnohistoric or historic data or data derived from ethnographic analogy which indicate that King Islanders engaged in bowhead whaling, although there is some archaeological evidence that they may have done so, at least sporadically, prior to contact. Historic and ethnographic sources indicate that hunters from both Big and Little Diomede islands hunted bowhead, although the focus of hunting on Little Diomede has clearly been walrus during the last half of the 1800s and throughout the 1900s. In the case of King and Diomede islands, the habitat of these small, rocky islands without beaches was not adequate for the populations to be as self-sufficient as was the case at St. Lawrence Island. The populations of both islands moved annually to the mainland after walrus migrations ended in early July to obtain salmon, caribou or reindeer, berries, coastally

TABLE 3: AGE OF WALRUS CAPTAINS, 1980 -- ST. LAWRENCE ISLAND

Crew #	Gambell	Savoonga	Crew #	Gambell	Savoonga
1	43	52	22	49	45
2	41	48	23	26	48
3	43	27	24	43[1]	43
4	48	40	25	55	42
5	54	34	26	32	36
6	45	55	27	30	46
7	36	46	28	27	40
8	48	46	29	34	47
9	30	44	30	37	36
10	56	39	31	40	47
11	31	23	32	27	45
12	27	35	33	47	52
13	54	70	34	57	36
14	45	39	35	31	48
15	57	34	36	63	36
16	61	47	37	46	49
17	41	54	38	30	55
18	49	23	39	46	59
19	49	39	40	--	51
20	47	45	41	--	47
21	48	42	42	--	50

[1] This captain's father is a whaling captain who does not walrus hunt probably because of his age. Some of the whaling crew remain with the son for walrus hunting.

nesting migratory waterfowl, and other resources, and to trade with mainland populations for other resources not available at their home islands. The large skinboats used for crew hunting of marine mammals were essential for transporting the entire populations of the islands to the mainland. This factor may, in part, account for the very recent (1980) interest of Diomeders in aluminum boats. The entire King Island population was relocated to the mainland by the early 1960s and maintained skinboats primarily for walrus hunting from mainland sites. Nonetheless, King Islanders continued to attempt travel to the Island during walrus hunting season or hunted relatively great distances offshore from the mainland, therefore requiring large and seaworthy craft.

Boat crews on King and Diomede islands were somewhat larger than those of St. Lawrence Island. The ideal crew was composed of 9-10 allied hunters including the captain, although actual crew size reflected the number of functional captains and the availability of young to middle-aged males in the community at any point in time. The only males not participating in crew hunting were the very old, the very young (under the age of 12 to 14), the infirm, or the socially ostracized (termed "lazy men" by informants). There was no acceptable social position for an able but non-hunting young to middle-aged male in King and Diomede island societies with the possible exception of the shaman (angekok).

Between 1930 and 1970 the number of crews ranged from 2 to 4 with an average of 2.9 for King Island. Between 1958 and 1970 the number of crews at Diomede averaged 3.2 and ranged from 2 to 5. Relative populations stability which limited the number of available crew members, a high level of competition between captains, the control of female walrus hides and the knowledge of how to construct skinboats by captains, the

need for kin support in recruiting and maintaining crews, and the need for a surplus of food and raw materials necessary for crew support discouraged the frequent emergence of new captains unless they were the eldest sons of existing captains.

In the early 1970s some King Island hunters began to use 16' to 18' aluminum boats for walrus hunting. The use of aluminum craft did not occur until 1980 at Diomede Island. As in the St. Lawrence Island case, the use of aluminum boats influenced captaincy and the number, size, and composition of crews. In 1970 there were 2 King Island skinboat crews which hunted for walrus approximately 20 to 50 miles off the mainland coast. By the spring of 1974 there were 4 King Island skinboats and 1 aluminum boat that hunted off the mainland from Cape Woolley adjacent to the Island and from the Island itself. The following winter one captain was killed and none of his male relatives assumed captaincy of the crew. That boat was never reskinned, and the deceased captain's male relatives joined other crews. One of the other skinboats used in 1974 was not reskinned. The crew disbanded and the captain became a crew member on other boats. One of the 1974 skinboat captains operated a second skinboat until he sold it in 1978. In 1977 he purchased an aluminum boat and alternately used both the remaining skinboat and aluminum boat to the present time. By 1980 only 2 King Island skinboats were operational, and the captain of one was 76 years old. The remainder of captains and crews was deployed in 6 aluminum boats, 2 of which had been modified to enhance speed.

The crew size of King and Diomede island skinboats remained relatively large (8 to 10), although the formation of aluminum boat crews resulted in some reshifting of membership on the skinboat crews. In 1980 none of the newly emerged King Island aluminum boat captains had been skinboat captains

previously. Aluminum boat crew size remained large ranging from 4 to 7 members in comparison to that of St. Lawrence which ranged from 3 to 4 members. There was, of course, no walrus captain/whaling captain dichotomy at either island.

Unlike the St. Lawrence Island case, the dominant pattern of captain and crew interrelationships in King and Diomede island societies was in large part based on kinship links established through marriage. Table 1 revealed that there were no wife-based kinship ties in St. Lawrence Island crew structure. In 1930, 1940, and 1980 King Island crew composition was primarily affinal in nature. These affinal ties were more complexly extended through mechanisms which included adoption, naming, step-kinsmen, half-kinsmen, and crossing multiple generations to identify a common link (Table 4). Although King Islanders stated that these kinship ties associated with boat crew membership were primarily through lines of related males, clearly female connections between livng and deceased men were often integral to the process of establishing some basis for kinship bonds. In addition, King Island males were keenly cognizant of the means by which their own marriage or the marriages of sisters and daughters could be used to consolidate crews. Although the role of sons, brothers, and brothers' sons was significant in skinboat crew formation in King Island and Diomede Island cases as it was at St. Lawrence Island, this core of closely related males did not participate in crew composition at the same level as that observed for St. Lawrence Island.

Tables 5 and 6 present data on captains' ages and crew size for King Island in 1930 and 1940, captains' ages and type of boat for King Island in 1974, and captains' ages, crew size, and type of boat for King and Diomede islands in 1980. The average age of King Island

TABLE 4: KINSHIP RELATONS OF WALRUS CREWS, 1930, 1940, AND 1980 -- KING ISLAND[1]

Key: Br = brother, C = captain, Da = daughter, Fa = father, Hu = husband, Ru = relationship unknown, Mo = mother, Si = sister, So = son, Ur = unrelated, Wi = wife, Wix = co-husband related by wife exchange

1930

Crew #[5]	Crew Composition
1	C: Br, BrSo, BrDaSo, SiHu, SiSo, DaHu, Ur
2	C: So, Br, DaHu, DaHuBr, DaHuFa, DaHuSiSo, DaDaHu, DaDaHuFa, Ur
3	C: Ur[2]

1940

Crew #	Crew Composition
1	C: BrSo, SiSo, DaHu, DaHuBr, Ur
4	C: Br, BrSo, SiSo[3], BrDaHu(or SiSo), SiSoBr[3], SiSoSiHu[3], SiSoSiHuFa[3]
5	C: Br, FaWiSo[4], FaWiDaHu[4], FaWiDaHuBr, WiSiHu, WiSiHuBr, and Wix

1980

Crew #	Crew Composition
5	C: So, BrSo, FaBrSo(or BrWiMoHu), BrWiBr, FaFaBrDaSo, FaFaBrSo, Ru[6]
6	C: So, WiBr, WiRu[7]
7	C: So, SiSo, DaDaHu
8	C: So, Ur
9	C: Br, FaBrSo, Ru[10], Ur
10	C: (co-captain SiSo), Br, Ur
11[8]	C: Br, FaBrSoSo, Ru
12	C: Ru[9]

TABLE 4: -- CONTINUED

[1] The data from 1930 and 1940 are adapted from Bogojavlensky 1969: 209-210 and 221-222. See Table 6 for corresponding crew numbers.

[2] See Table 6, footnote 2.

[3] The sister adopted two unrelated males, both of whom were on the crew and one of whom married the captain's brother's daughter. SiSoBr is a sibling of one of her adopted sons whom she did not adopt. One of the adopted sons had a sister who also was not adopted by the captain's sister. This woman's husband and husband's father were also members of the crew.

[4] This individual was a step-sibling to the captain (the captain's father married a woman who already had children prior to marrying the captain's mother).

[5] Numbers have been assigned to all known King Island crews from 1930 to 1980. The same crew number is used for a specific crew in Tables 5, 6, 7 and in discussion.

[6] This crew member is a Diomeder whose relationship to captain is recognized but details are unknown. He is also the captain's neighbor.

[7] There were 4 crew members who were related to the captain through his wife, but details of these relationships were not known. One of these related crew members was a maternal uncle of another.

[8] This crew normally hunts with the captain of crew #9 and are also included in the kinship composition of that crew. The captain of crew #11 did not hunt frequently in 1980 because of full-time employment.

[9] This crew and captain normally hunted with the captain of crew #9 and are listed with that crew. Captain #12 usually took out his own boat only when the captain of crew #9 was not hunting.

[10] Two of the crew members, whose relationship to captain is unknown, are paternal cousins (FaBrSons).

TABLE 5: AGE OF WALRUS CAPTAINS AND CREW SIZE, KING ISLAND, 1930 and 1940[1]

	1930		1940	
Crew #[5]	Captain's Age	Crew Size	Captain's Age	Crew Size
1	50	9	60	10
2	60	11	Deceased	--
3	45[2]	9	No crew[3]	--
4	--	--	45	11
5	--	--	35[4]	11

1 Bogojavlensky 1969: 209-210 and 221-222.

2 This captain lacked extensive kinship ties at the Island, because he was brought to the Island as a mainland orphan. He never had any sons. He gained captaincy through economic endeavors. He was the first man to use an outboard motor and designed the bent-ribbed boat. He controlled the store on the Island and used the store's warehouse as his kazgi. He referred to his crew, who were all unrelated to him, as a "company" (Bogojavlensky 1969: 214-220).

3 His crew was dissolved because of disputes with two other men. The kin of the men in the dispute eventually abandoned captain #3. He died shortly thereafter.

4 In 1930 this young captain's father was not aligned with any skinboat faction. His father was involved in the downfall of captain #3. Captain #5 still commanded a boat in 1980.

5 Numbers have been assigned to all known King Island crews from 1930 to 1980.

TABLE 6: AGE OF WALRUS CAPTAINS, CREW SIZE, AND BOAT TYPE, KING ISLAND, 1974 AND 1980; LITTLE DIOMEDE ISLAND 1980

1980

Crew #[5]	King Island	Crew Size	Type of Boat	Crew #	Diomede Island	Crew Size	Type of Boat
5	76	7-10	skinboat	1	44	6-9[4]	skinboat
6	44	2-7[4]	skinboat & aluminum	2	40	4[4]	aluminum
7	70	4-5[4]	aluminum	3	39	4-6[4]	aluminum
8	52	5[4]	aluminum	4	63	ND	skinboat
9	44	5-6[4]	aluminum	5	49	6-10[4]	skinboat
10	42(30)[2]	4	aluminum	6	56	6-12[4]	skinboat
11	47	3[4]	aluminum	7	56	6-12	skinboat
12	40[3]	5[4]	aluminum	8	57	5-9[4]	aluminum

1974

Crew #[5]	King Island	Type of Boat
5	70	skinboat
6	38	skinboat
13	49[1]	skinboat
14	59	skinboat
9	38	aluminum

1 This captain's wife's 49 year-old brother was in command of the boat during the trip to King Island in 1974.

2 The younger man owns the boat and is the older man's sister's son, but the older man normally takes it out as captain when he is not working and able to hunt.

3 This captain participated as a member of crew #5 when it was active. At other times he took out his own boat with the crew members from #5.

4 U. S. Department of the Interior, Fish and Wildlife Service, 1980.

5 Numbers has been assigned to all known King Island crews from 1930 to 1980.

captains in 1930 was 52 years and in 1940 it was 47 years. This latter age was influenced by the very unusual case of captain #5 who commanded two skinboats at the age of 29 after the death of his father. Based upon crew size for these two time periods, there were 29 and 32 skinboat crew hunters in the community in 1930 and 1940 respectively. In 1974 the 5 King Island captains ranged in age from 38 to 70 with an average age of 50.8 years. Three of the 1974 captains remained active in 1980, one had died, and one had joined another crew. In 1980 the 8 King Island captains ranged in age from 40 to 76 and the average age was 52. Despite the use of aluminum boats, these data suggest that age and experience have remained important in recruiting and maintaining boat crews, although to a lesser degree.

In 1980 the 8 Diomede captains ranged in age from 39 to 63 with an average age of 51. There are no comparable documented data for a previous time period such was the case with King Island. In addition, in 1980 only three aluminum boats were in use, one of which was captained by a man who was also a skinboat captain. The other two men had not been captains previously but held positions of responsibility on elder brother's skinboats. The use of aluminum boats at Diomede is too recent to assess potential impacts on crew formation and size.

Conclusions

The use of aluminum boats for walrus hunting at St. Lawrence, King and Diomede islands has resulted in some changes in the institutions of captaincy and boat crews. These include the following:

(1) Walrus crews using aluminum boats are generally smaller than those of

skinboats, although the smaller crews continued to be organized along the same types of kin-based patterns as those of the larger skinboats. Aluminum boats have not been found suitable for whaling at St. Lawrence, and walrus crews are restructured annually from existing skinboat whaling crews. It could be expected that Diomede may develop the same walrus hunting/whaling dichotomy that has been evident at St. Lawrence Island.

(2) In the case of St. Lawrence Island, the average age of walrus captains is younger in comparison to the age of whaling captains, although newly emerging walrus captains are most frequently strikers on whaling crews captained by elder brothers, fathers, and paternal uncles. The average age of captains at King Island has remained stable since the 1930s, although the range of ages was somewhat greater in 1980.

(3) The acquisition of technology required to permit captaincy has become more accessible and is no longer controlled by existing captains. However, the skills, experience, and kinship network necessary for the recruitment and maintenance of boat crews continues to place restrictions on the number of functioning captains. Additionally, the demographic structure of the communities places additional limits on the number of crews per community which can be operational at any point in time.

(4) Although not discussed in this paper, females have been of critical importance in preparing the walrus hides for covering the large skinboats. Therefore it is possible that the decline in the use of skinboats by King Island hunters in the last few years may eventually influence the role of women in relationship to walrus hunting in King Island society. Since St. Lawrence Island hunters and, to date,

Diomede Island hunters have continued to use skinboats for whaling and for walrus hunting at Diomede, the role of women in these villages probably will not be subject to immediate changes in this context.

While the use of aluminum boats for large marine mammal hunting may have the potential for inducing future changes in patterns of boat crew formation, the institution of captaincy, crew-based distribution of harvested products, and other dimensions of boat crew functioning, to date adaptation to this technology has been patterned in accordance with traditional models. It is suspected that the persistence and central importance of the cooperative hunting of large marine mammals to Bering Strait insular society may at least in part account for the continuation of these crew-related models through time.