

maritime anthropological studies

MAST

Vol. 2(2) 1989

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MAST (Maritime Anthropological Studies) is an international journal of anthropology on fishing and maritime communities. Published twice yearly by the Department of European and Mediterranean Studies (Euromed) at the University of Amsterdam, the Netherlands, **MAST** aims to disseminate knowledge of contemporary and historical societies and cultures of people exploiting maritime environments.

Articles, comments, books for review, and business correspondence should be addressed to:

Euromed/Mast
Anthropological-Sociological Center
University of Amsterdam
O.Z. Achterburgwal 185
1012 DK Amsterdam
The Netherlands

Subscription price per volume (including postage): private individuals Dfl. 35.00 (US\$ 18.50), and institutions, libraries, etc. Dfl. 70.00. (US\$ 37.00). Please transfer the amount in Dfl. or US\$ to our postal giro account no. 3691970 or to J. Verrips/MAST, ABN Bank account no. 545446406, Amsterdam, the Netherlands, or pay with International Money Order.

Typists: *Hannie Hoekstra & Gerda Bekker*

Cover design: *Yvon Schuler*

Printed by Krips Repro, Meppel, The Netherlands

ISSN: 0922-1476

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Vol.2, No. 2

1989

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Competition for Cultural Images

Fisherman versus Logger in Southeast Alaska

John B. Gatewood

Lehigh University

ABSTRACT The literature dealing with conflicts among user-groups in the coastal zone usually focuses on competition over marine resources or territorial use rights. Occasionally, however, competition is for a more subtle prize. With the rise of tourism in Alaska, the old competition between fishermen and loggers for social preeminence has taken new forms. Which occupational group best symbolizes the 'frontier' history and spirit of Southeast Alaska, at least which is the better advertising image? The struggle for cultural dominance reaches its crescendo each Fourth of July, when towns sponsor public logging contests with no comparable forum for fishermen. The paper discusses the role each occupational group plays in town life, focusing especially on the symbolic messages conveyed in the Fourth of July celebrations. [Southeast Alaska, occupational cultures, symbolic conflict, tourism.]

In the popular imagination, Alaska is America's last frontier. It conjures a complex image of anachronism, nostalgia, ruggedness, vitality, naturalness, adventure, and individualism. Residents of the 'lower 48' states tend to regard someone who has been to Alaska in a very different way than a person who has traveled, for example, to Europe, the Caribbean, or Hawaii. Whereas European travel signifies *savoir faire* and financial wherewithal, Alaska connotes intrepidity and strength of character.

The image is not altogether lost on residents of Alaska, either. Although most of the non-Native population lives in cities with indoor plumbing, public sewage and power, paved streets, network news, and the full complement of modern amenities, a friendly frontier ambiance permeates social life. While few have actually shot a bear, skinned a moose, driven a dog team, or panned for gold, people who have done such things live nearby, and at least the opportunity is close at hand.

Not surprisingly given the geographical size and diversity, different regions of the state support different versions of the general Alaskan image. The northern and central portions give rise to the 'frozen North' image, with dog sleds, frigid winter temperatures, midnight sun, and so forth. In stark contrast, the southeastern region is a rainforest with mean annual temperatures warmer than central Illinois. Geographically and culturally, Southeast Alaska resembles Oregon and Washington, with fishing and logging being the principal colorful occupations.

Just as there are different 'Alaskas,' so, too, the culture of the southeastern region is not a simple melody sung in unison, but rather a polyphony of voices. Southeast Alaska is home for a number of peoples,¹ and ethnicity is a prominent aspect of social relations. Yet, one's ethnic heritage is but one among many

important social identities. There are other cleavage planes in Southeast Alaskan life that cross-cut ethnic distinctions.

This paper is about the competition between two occupational groups – fishermen and loggers – for cultural dominance in Southeast Alaska. Both groups exploit renewable resources and thereby provide a stabilizing influence on Alaska's historic boom-or-bust economic cycle. Both industries have figured prominently in long range plans for economic development of the state. And, both are predominantly male occupations that involve physical isolation from centers of population. With the rise of tourism and a larger neutral audience, the historic rivalry between the two occupational groups has only increased.

The competition for cultural images is rooted in Southeast Alaska's regional economy, so the first section provides a review of trends in the targeted industries. The second section describes the town of Ketchikan, Alaska, one of the places where fishermen and loggers meet and compete with one another. The third section compares and contrasts fishing and logging as occupational cultures. Finally, I analyze the annual Fourth of July celebrations as a form of symbolic conflict, a conflict aggravated by the increasing self-consciousness of these two groups as tourist attractions.

Regional Perspective on Southeast Alaska

Southeast Alaska is a land of blues and greens and grays. In sunshine, the spectrum is about equally divided into blues (the sky and ocean) and greens (the forests). Most of the time, however, the cloud cover and drizzly rain transform everything into varying shades of gray.

The coastline is formed by mountains shooting up to heights of several thousand feet, enveloped most of the way in a cloak of evergreen trees, and numerous small streams cascade down to the ocean. From a passing boat the forest appears inviting, but hikers soon find the terrain a formidable challenge. What looks like solid ground is just as often decaying vegetation, and it takes several months to learn to walk in the woods of Tongass National Forest. The difficulty of overland travel coupled with the omnipresent rain and slate-colored skies contribute to an overall feeling of isolation and closeness.

Indigenous peoples used the forest resources to fashion elaborate plank houses, sea-going canoes, and totem poles. The abundance of salmon supported a dense aboriginal population and a comfortable subsistence economy. With the arrival of the White Man, however, these same natural resources, along with precious minerals, gave rise to large-scale and somewhat colonial industries.

Attracted initially by gold strikes and seasonal work in the salmon fishery, the influx of non-Native peoples has resulted in a substantial population increase in Southeast Alaska during this century (see Table 1). Especially since statehood in 1959, the demographic profile is increasingly losing its frontier characteristics, i.e., the sex ratio is becoming more balanced and the age distribution has greater variance. Today, approximately half the region's population live in two smallish cities: Juneau, in the north, and Ketchikan, in the south.

Table 1. *Population Figures, 1900-1980*

Census	Total in Southeast	Ketchikan Borough
1900	14,350	2,170
1910	15,216	3,520
1920	17,402	5,670
1929	19,304	6,781
1939	25,241	8,226
1950	28,203	9,485
1960	35,403	10,070
1970	42,565	10,041
1980	53,794	11,316

Note: Data for 1960, 1970, and 1980 are from the U.S. Bureau of the Census, *Characteristics of the Population*; other years are from Rogers (1960:358-67). The area included in 'Ketchikan' before 1970 was somewhat larger than what is now included in the Gateway Borough.

Prior to World War II, the primary industries in Southeast Alaska were, in rough order of importance, fishing, minerals, and logging (Rogers 1960:71-124). Today, the region's mineral industry is all but defunct, although sand-and-gravel production totaled \$2.28 million in 1985 (Anonymous 1985:32). Fishing and logging continue to be mainstays of the region's economy, but both have a history of cyclic ebb-and-flow.

Salmon fishing reached its peak production during the 1920s and 1930s. Over-exploitation resulted in dwindling harvests from the 1940s onwards, prompting Rogers in his 1960 assessment of the region's economy to call fishing a "fading future" (Rogers 1960:93). With stringent regulatory schemes in force the past two decades, recent catches are increasing, but the maximum sustainable yield is likely to be well below the peak production years (see Table 2).

One of the major changes in Southeast Alaska's salmon fisheries occurred as regulatory control passed from federal to state jurisdiction. Company owned fish traps, which caught up to 70% of the salmon in a season, had become symbolic of the rampant absentee capitalism that drained away Alaska's resources with little or no return to residents (Rogers 1960:12). Preparing the way for statehood, the Secretary of the Interior declared fish traps illegal in 1959. Since then, salmon are harvested only by purse seines, gillnets, and hook-and-line.

In comparison with fishing, logging got off to a slow start in the region. Prior to 1954, the volume of timber cut was very small – ranging from 20 to 70 million board feet per year – and it was used mainly for local construction, such as docks, fish traps, and houses. In 1954, however, \$52.5 million of outside capital built Ketchikan Pulp Company, and the U.S. Forest Service entered into a series of large-scale timber sales to facilitate the development of an export industry. Logging operations to supply this new pulp market began in earnest, and timber

Table 2. Ten-Year Annual Averages of Salmon Catch in Southeast Alaska

Period	Number of Salmon Caught
1905-14	19,857,000
1915-24	40,720,000
1925-34	35,385,000
1935-44	39,242,000
1945-54	24,710,000
1955-64	15,571,000
1965-74	15,166,000
1975-84	21,558,000

Note: Data to 1954 are from Rogers (1960:96); 1955-1959 are from U.S. Bureau of Commercial Fisheries, *Statistical Digest* No. 50, 1960; 1960-1984 are from Alaska Department of Fish and Game worksheets and reports.

production jumped to around 190 million board feet in just a couple of years (Rogers 1960:74-75).

In 1971, as part of the Alaska Native Claims Settlement Act, Native corporations regained ownership of approximately 464,000 acres of forest lands in Southeast Alaska. Because timber harvested on these lands is not subject to the primary manufacturing requirement of the U.S. Forest Service, the Native corporations have been able to develop an export business in round logs (unsawed, unpulped trees) with Japan (Anonymous 1986a:7). In general terms, however, the logging industry is slacking off in recent years (see Tables 3 and 4), as a result of international competition (Anonymous 1986b:10).

From a regional economy perspective, logging and its related processing industries provide more benefits than fishing because there is a greater return to resident labor (Tuck & Huskey 1986). Loggers work most of the year, and the pulp and sawmills hire workers year round. By contrast, the seasonality of the

Table 3. Timber Harvests in Southeast Alaska by Major Ownership (Million Board Feet, log scale)

Owner/Agency	1980	1981	1982	1983	1984	1985
Tongass National Forest	452	386	345	251	250	265
State of Alaska	5	5	6	6	5	3
Native Corporations	70	122	209	232	202	263
BIA/Annette Island	15	3	3	3	1	1
TOTAL	542	516	563	492	458	532

Note: From Anonymous (1986a:10).

Table 4. Forestry and Related Industry Employment, Wages, and Export Value, 1980-1985

Year	Annual Average Employment	Annual Total Wages	Wages Per Employee	Total Export Value
1980	3,556	\$112,565,284	\$31,655	\$339,474,000
1981	3,192	\$103,749,116	\$32,503	\$278,278,000
1982	2,924	\$ 97,567,622	\$33,368	\$277,593,000
1983	2,632	\$ 93,816,570	\$35,645	\$272,954,000
1984	2,354	\$ 82,863,447	\$35,201	\$219,034,000
1985	2,300	\$ 86,000,000	\$37,400	\$215,138,000

Note: From Anonymous (1986a:17-18). Figures reflect statewide statistics, but virtually all exports are from the Southeast Region.

salmon runs creates a demand for short-term, migrant labor both in terms of manning the boats and working in the canneries. Thus, although the value produced from fishing generally exceeds that from forest products, a higher proportion of fishing revenues is siphoned away to non-resident companies and laborers.

From the viewpoint of Native peoples, however, fishing is generally better than logging. Northwest Coast Indians have exploited and depended upon marine resources for several millennia, and fishing, even in today's industrialized commercial fisheries, provides a certain continuity with indigenous culture patterns. By contrast, logging is clearly White Man's work. Thus, although the Alaska Native Claims Settlement Act restored ownership of forest lands to Native corporations, making it possible for indigenous peoples to gain from logging activities, few actually work as loggers (an exception is the village of Klukwan)².

The last major industry in Southeast Alaska is a relative newcomer: tourism. Records for this emerging industry - e.g., the number of out-of-state visitors, their expenditures, and jobs created - are not as good as for other industries, but statewide tourism is clearly gaining in importance (see Table 5).

In summary, the principal industries in Southeast Alaska today, in order of dollar value, are fishing, tourism, and logging. Unlike the early and now faded mineral industry, all three exploit renewable resources. Of the three, tourism offers the best chance of continued growth, increasing at an annual rate of approximately 7% (Anonymous 1986b:35). While fish and timber production are constrained by natural replenishment rates, the growth potential of Alaskan tourism is relatively unbounded and the industry is still in its infancy.

The serendipitous aspect of this triadic economic structure is that tourism can actually build on the other two. As an activity, tourism often has complex motivations, and researchers increasingly emphasize that tourist behavior can only be understood in terms of "how it relates to the individual's long-term psychological needs and life-plans" (Cohen 1984:377). In addition to the short-term

Table 5. *Non-Resident Tourism Statistics, 1980-1986*

Year	Number of Visitors	Total Sales to Tourists	Primary Industry Employment
1980	570,600	\$360,400,000	7,925
1981	596,300	\$416,200,000	8,280
1982	623,100	\$480,700,000	8,900
1983	646,000	\$551,700,000	9,160
1984	672,000	\$620,000,000	9,875
1985	700,000	\$659,400,000	10,565
1986	787,000	\$700,000,000	n.a.

Note: From Anonymous (1986b:30-31 with corrections). In 1979, 1983, and 1986, actual surveys were conducted; other years are estimates. Figures reflect statewide tourism.

quest for recreation, tourists often view their sojourns to distant places as a search for "authentic experiences" that, owing to the alienation of modern life, are thought to be elsewhere (MacCannell 1976:3). The occupational cultures of fishing and logging in Southeast Alaska exude just the sort of unreflexive, uncomplicated, genuine qualities that urban tourists find appealing. Thus, fishing and logging are not only productive in their own rights, but by contributing to the distinctive cultural ambiance of Southeast Alaska – its 'authenticity' – they help attract tourists to the region. As colorful forms of production, they, along with the region's natural beauty and indigenous peoples, contribute to the growing tourist industry. Both fishermen and loggers are aware of this, at least subliminally.

Portrait of a Town: Ketchikan, Alaska

Ketchikan, at the southern end of Alaska's southeastern panhandle, is one of the towns where fishermen, loggers, and tourists meet. It stretches along the western edge of Revillagigedo Island for about three miles, overlooked by snow-topped Deer Mountain rising up three thousand feet from the sea. At the northern edge of town is the Alaska Marine Ferry dock, just across Tongass Narrows from the modern jet airport. Cruise ships dock near the center of town about two and a quarter miles south, and small seaplanes land and take off almost constantly amidst a variety of fishing and pleasure boats. The number of cars is surprising given that the highway only goes about thirty or so miles around the island then just stops.

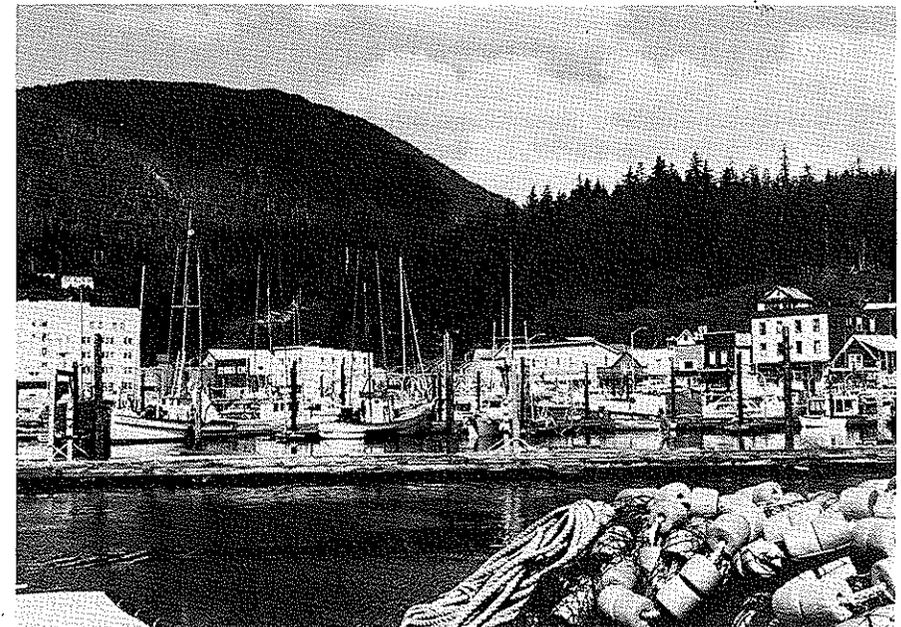
In the 1930s, during the heydays of fish production, Ketchikan was billed as 'Salmon Capitol of the World.' Today, it is billed as 'Alaska's First City,' meaning the first one people encounter when traveling up from Seattle and the lower 48 states. Tourist shops, selling 'Indian bracelets,' soapstone carvings, miniature totem poles, fur coats, and Kodak film, line the city's central dock and down-

town area. The forty to fifty bars provide haven from the rain and recreation for fishermen and loggers as well as the occasional tourist.

The town is more than just a watering hole for transients, however. It is a regional center of retail businesses, banks, schools, hospitals, and government agencies. Townspeople play in summer softball leagues, go to movies, watch television, and buy their groceries in modern supermarkets just like residents in any other American town. In all, Ketchikan feels like a very compact, bustling city. There is a lot of movement, a lot of coming and going for an urban center of only 7,000-11,000 people, especially during the summer months when the population swells with seasonal workers following the migrating salmon back to Alaska.

Coming from a small town in the Midwest, I was struck by the easy acceptance of transients, particularly the fishermen and loggers, and the firm place they have in rhythm of Ketchikan life. Although relatively few fishermen or loggers actually live in Ketchikan, they are an integral part of the town's self-image, as evidenced by the following quote from a Chamber of Commerce tourist brochure.

Ketchikan is a haven for suburbanized visitors who want to bask in the 'real' Alaska. ... Mingle with down-to-earth Alaska types such as fishermen, miners, and loggers at a rinky-tink bar, rub shoulders with a celebrity viewing Alaskan artifacts at Ketchikan's modern museum (Anonymous n.d.).



Fishing boats figure prominently in visitor's first views of Ketchikan

Perhaps the most significant categorization of people in Ketchikan is one based on their diurnal habits, that is, the distinction between 'day' people and 'night' people. Day people typically get up early, go to work, come home, and are asleep by 11 o'clock. They tend to be respectable, solid citizen types, very likely with families. By contrast, night people may or may not be working, but if they are, it is likely to be in jobs having alternating shifts (such as the pulp mill), geared toward entertainment, or episodic such as fishing, logging, or construction. The favorite pastime of night people is 'partying,' which means getting drunk and chasing members of the opposite sex.

The transition of the town from day to night folks occurs about 5:00 to 9:00 p.m., which is still broad daylight in the summer. During this time, day people leave their shops and offices, go home to eat dinner, and relax in front of their television sets or chat with spouses and children. Night folks leave their boat, hotel, apartment, or boarding house, eat at a restaurant, and begin cruising the downtown streets where they run into friends and acquaintances and plan their activities for the evening.

This, then, is the general context or locale in which fishermen and loggers encounter one another. The two groups show some remarkable similarities as well as differences in their use of and orientation toward the town.

Fishing and Logging as Occupational Cultures

The salmon runs around Ketchikan last roughly four months, starting in June or July and ending in October. Salmon are caught by three principal means – seining, gillnetting, and trolling – each with its own lifestyle and work cadence.

Gillnetting and trolling can be done from relatively small boats (25-45 feet) by one or two people, and the associated deck work is not too demanding physically. It is common to find husband and wife teams running trollers and gillnetters. Seining, however, requires crews of five or six, and the boats are about 55 feet long. Although several women work as cooks on seine boats, there are few female deckhands.

Both gillnetting and seining involve fairly short trips. Gillnetters generally return to port after each fishing day to unload their catches. Seine boats stay out a bit longer. Usually, they leave port a day or two before legal fishing periods (which are determined by the Alaska Department of Fish and Game), unload their catches each evening during the opening to company tender boats, and return to port only when the opening is over (see Gatewood 1984). Thus, seiners usually stay out on the water less than a week at a time and sometimes only a couple of days. By contrast, trollers stay out a couple of weeks before coming back to port to unload their iced fish, to fill their fresh water tanks, and to buy groceries and fuel.

In terms of work pace, seining is psychologically intense, hectic, and dangerous and puts a premium on well-coordinated social labor. By contrast, gillnetting and trolling are leisurely and 'laid back' forms of fishing.

For a variety of reasons (Gatewood 1989), seining is higher in the local prestige

ranking than either gillnetting or trolling. Seining is regarded as 'real fishing' (Houshower 1982, indicates that gillnetters, also, accept this view), and it engenders a pronounced 'hard work, hard play' ethos with strong in-group loyalties. Also, the labor requirements of seining attract a large number of seasonal workers to Alaska, i.e., seining draws on a large non-resident population who tend to view their work as a personal adventure. Seiners constitute the most outspoken, visible, and prideful group of fishermen, and they dominate the night spots of Ketchikan when the fleet is in port.

Irrespective of the differences in gear types, virtually all commercial fishing takes place several miles from town, far from the view of townspeople and tourists. Thus, although the visual aspects of fishermen, their boats, and gear are quite familiar and figure prominently in photographs of the town, few townspeople and almost no tourists have seen fishermen plying their skills or understand what fishing really entails. In consequence, the public image of fishermen is based on their town behavior, which consists of mending gear during the day and heavy drinking and general rowdiness at night.

Seine crews, in particular, tend toward flamboyance and attention-getting public behaviors. Bars provide the social forum for developing both intra-crew solidarity and inter-crew prestige rankings. Crews tend to drink together, often competing with others in ostentatious spending. Nearly every tavern in Ketchikan has a bell prominently positioned near the bar. When someone rings the bell, it means he or she is buying a round of drinks for everyone there, which depending on the time of night may easily cost a couple of hundred dollars. Nonetheless, drunken seiners stagger up and ring the bell rather frequently,³ in this way demonstrating their otherwise invisible fishing prowess and laying claim to diffuse bragging rights.

Like seining, logging is a dangerous and physically demanding activity accomplished by people working together, and it fosters strong in-group loyalties. Unlike fishermen, however, who receive shares of their boat's catch, loggers work for wages, and different jobs receive differential pay. Most importantly, loggers live in rather remote camps close to the stands of timber being cut. This physical isolation is one of the biggest drawbacks from most people's viewpoint, because the camps offer little variety to work, work, and more work. Nonetheless, those who manage to stay in the camps and keep working day after day can accumulate considerable amounts of money with virtually no expenses.

Some loggers take their families out to the camps, but many leave their wives and children in Ketchikan or even in Washington and Oregon. In any event, logging camps have little to offer single men in the way of female companionship. Similarly, drinking in the camps, although permitted, is somewhat frowned upon because hang-overs only increase the risk of accidents on the job. As the claustrophobia of logging camps becomes increasingly oppressive, loggers look forward to a trip to town where they can gratify pent up desires.

Unlike their counterparts, who spend about as much time in port as out on the fishing grounds, loggers come to town infrequently, spending maybe one or two days a month in Ketchikan. Also, whereas the seine fleet tends to be either

out fishing or in port together, loggers arrive in town individually or with a couple of buddies. Often, they have to charter a seaplane to come and get them, and their time away from the camps is counted as personal vacation days.

Fishermen and loggers, normally isolated from one another through their exploitation of complementary niches, encounter one another in Ketchikan's many bars, i.e., in public settings where it is the custom of both groups to make status claims by loud, overbearing, macho behavior. Some establishments cater to loggers, some to fishermen, and others provide more neutral turf. Wherever the encounters occur, however, the rivalry is thinly veiled. Each group threatens the other's masculine pride, and the competition for female attention is direct and open.

Townpeople, if they take sides at all, tend to favor loggers over seiners. The pulp and spruce mills employ about 1,000 of Ketchikan's 7,000-8,000 permanent residents, and many seiners are clearly migrant workers. This usually subtle prejudice sometimes becomes blatant, for example, when young women refuse to drink with seiners, then turn around and warmly greet stray loggers who wander into the same bar.

The balance of power in the town shifts on an annual cycle. In the summer months and especially once the seine season has started, fishermen outnumber loggers. In the fall, when the migrant seiners leave, loggers reclaim Ketchikan's night life from the more sedate and year-round trollers and gillnetters, and relatively peaceful co-existence sets in. During the summer, however, at least when the seine fleet is in town, the newspaper's Police Report mentions one to three bar fights per night, many of which seem to involve conflicts between fishermen and loggers.

Bar fights in Ketchikan almost always take the form of fist fights and are limited in the extent of physical damage inflicted on the loser. Although virtually everyone carries knives, an unspoken John Wayne etiquette governs the situation. Fists, chairs, bottles, walls are all acceptable implements, but knives and guns seldom come into play. Rock bands keep playing when a fight breaks out, and the audience seldom gets involved other than perhaps to clap and cheer.

Loggers, in particular, seem to regard bar fighting as a desirable recreational activity. As one young logger told me, his goals in coming to town were, in temporal order, "to get drunk, have a fight, and get laid." Toward these ends, he began drinking in one of the logger bars, then strolled into a fisherman's bar and began insulting those present. I was unable to ascertain whether his third wish was also fulfilled.

The scale of barroom extravagance is hard for sober people to appreciate. The most extreme case I witnessed was by a logger. He had been out in the camps three months, and he was taking a whole week off for his big blow out. When I first saw the fellow, he was struggling up from the floor to ring the bell and buy the house another round. After ringing the bell and yelling at the top of his lungs how great loggers are, he collapsed again, not stirring for an hour or so. When he regained consciousness, he spoke to the bartender, and she opened a wall safe and handed him two \$100 bills from a two to three inch stack. He

rang the bell once more, drank his shot of 100-proof Yukon Jack, and staggered off into the night, falling over our table as he went out the door. The bartender hurried over to us, saying not to take offense, and explained that he was just celebrating. When he first got to town, he had given her \$6,000 in \$100 bills and asked her to monitor his spending. She was to let him have no more than \$500 per night and to tell him when he was down to his last \$1,000.

The competition between fishermen and loggers is ultimately over cultural images, over who belongs in the public limelight. Each group represents a different aspect of Southeast Alaska's history and its hopes for the future. At the same time, they are very similar with respect to leisure time lifestyles; hence, their mutual 'after hours' context is where the rivalry is played out. Fishermen and loggers are locked into a symmetrical schismogenesis, in Bateson's (1936) sense, where reciprocal barroom potlatching is the communicative medium. Each public act by members of one group motivates a similar but escalated response by the other. Their exaggerated generosity in a public setting demonstrates which group is the more successful, the more rugged, the more manly, the best symbolic embodiment of regional culture.

There is one time during the summer months, however, when the 'everyday' town behavior of fishermen and loggers, described above, is held in check. This special time is Ketchikan's annual Fourth of July celebrations, which may be regarded as the principal social drama of the year.

Ketchikan's Fourth of July Celebrations

Unlike Christmas, Easter, or even Thanksgiving, Independence Day (July 4th) is a thoroughly secular, community-oriented holiday, and Ketchikan turns out in force to celebrate the nation's birthday. Shops and businesses lock up, the pulp and spruce mills work skeleton shifts, logging camps shut down, and the fishing grounds are closed to seining and gillnetting. The town's population swells to its maximum, and the streets swarm with eager, frivolous crowds. The day-long celebration contains three principal acts.

The parade is usually a mid-morning affair. The high school band, Scouting Troops, veterans organizations, Coast Guard, and social clubs march through the streets surrounded by camera-clicking tourists, townspeople, fishermen, and loggers. The highlight is a professional parade band, bought up from Vancouver or Seattle by the Chamber of Commerce. By noon, the first communal activity comes to its end, and the crowds disperse to lunch at home or in the restaurants and bars.

The second act begins in mid-afternoon, lasting until early evening. Ketchikan stages an annual "Southeast Logging Carnival" as part of its Independence Day festivities. Each year since 1971, when the carnival idea started, the Alaska Loggers Association gets some civic group to sponsor the event, and the Chamber of Commerce endorses and advertises it.

The carnival consists of a series of events in which loggers compete with one another for cash and material prizes in a variety of occupational skills, such as



Vertical poles used for the 'speed climbing' event in Ketchikan's Independence Day logging carnival. Note the American flag hung in between.

ax throwing, speed climbing, tree topping, choker setting, and so forth. Some of these are anachronistic reminders of logging's past, others are made-up competitions,⁴ but to the large audience such subtleties are inconsequential.

Several thousand people gather around Ketchikan's central recreational park and softball field to watch the spectacle. Two or three tall poles, 80-100 feet high, are placed upright in the center of the field, and several other logs lie scattered about in various positions. Beer stands dispense libations to adults, and children scamper under the bleachers and around lawn chairs. Many bring small barbecue grills, and the smell of hot dogs, sausages, and hamburgers fills the air as the public announcer describes the events, names contestants, and awards the prizes.

The activities are leisurely paced, and small groups mill around visiting, shar-

ing beverages, and watching the loggers perform. Clumps of fishermen and loggers are distinguishable in the crowd by their rather distinctive dress styles, but no hostilities break out. Everyone participates in the jovial, festive atmosphere. The day and especially the afternoon clearly belong to the loggers, and everyone enjoys their public display of strength and skill, finding in it a source of regional pride.

When the carnival ends, the crowds disperse to homes, to the bars, or to private parties on fishing boats and prepare for the final, third act.

Around 10:00-11:00 p.m., when the sun goes down, semi-sober crowds line the docks and main street area to watch the evening's display. A sea-going barge is towed into Tongass Narrows a few hundred yards from the main cruise ship dock, and fireworks light up the sky from this floating platform. By midnight, the show is over, and the loggers, pulp mill workers, and fishermen settle down to serious drinking and revelry.

An anthropologist looking at the whole day's celebration would classify it as a rite of solidarity. Parades and public fireworks are part of Independence Day all across the United States. Their function is to build community pride as well as strengthen national identity. Logging contests, however, have a very limited geographical distribution, and their inclusion in Ketchikan's Fourth of July festivities focuses attention on and celebrates the region's distinctive cultural heritage. As a result, visitors and residents alike feel they have witnessed something special, something peculiarly Alaskan.



Captains and crews take considerable pride in how fast they can retrieve their seine. This is one of several fisherman's skills that could be turned into a spectator event, but no one has done so.

Yet, this account does not really explain why logging contests are part of the day's events. For example, if the idea were simply to make Independence Day a celebration of regional culture, one might suppose there would also be a series of competitions among fishermen, such as mending nets, splicing rope, assembling sections of a purse seine, or races between crews to set their nets in the water and retrieve them. But, references to fishing and its role in the regional culture are conspicuous by their absence. While loggers occupy center stage all afternoon, there is no comparable public display of fishing skills.

This asymmetrical representation in the public limelight suggests that there is more to the Fourth of July logging carnival than just promotion of regional solidarity. Presumably, it would foster the same sense of regional pride if it were held separately, for example, in April, June, or September. Does logging, then, have some special connection with Independence Day that fishing does not?

A first point to note in addressing these issues is that logging and its related processing industries dominate the economic life of the region from October to July. Once the summer salmon seine season begins, fishing takes over as the principal industry. The timing of the logging carnival, thus, coincides with a shift in the balance of power between the region's two major occupational groups. In a symbolic sense, it marks the end of the 'logging year' and the beginning of the 'fishing year,' and loggers put on their major show of strength just before relinquishing the mantle of leadership to the influx of summer fishermen.

The contests bring loggers to town en masse, reversing their normal pattern of isolated trips, and during the festivities, loggers outnumber fishermen in Ketchikan. This, plus their active role in the civic holiday, back up claims to social preeminence. Whereas fishermen routinely move back and forth between town and sea, spending about equal time in each context, loggers are virtually invisible most of the time, especially so during the summer when seine crews take charge of the night life. Once each year, however, the tables are turned, and balance is restored. Instead of isolated loggers buying drinks for the house, hundreds of them put on a show for an audience numbering in the thousands. When the loggers come to town for the Fourth of July, Ketchikan welcomes them with center stage.

Thus, the annual logging festival not only contributes to regional solidarity, it is also a rite of transition and a rite of reversal. It marks a key point in the economic seasonality of Southeast Alaskan life, when loggers dramatically remind everyone of their otherwise invisible presence then yield the summer months to fishermen. And, by reversing the two groups' normal presence in town, the carnival restores balance between them.

Of course, these transitional and restorative functions could be achieved were the festival held in October, i.e., at the end of the fishing year and the beginning of the logging year. So, the question remains: Why is the logging festival incorporated into the Independence Day celebrations?

There are several practical reasons why July 4th is a good day for the carnival. For example, the logging camps only shut down on national holidays, and there are no holidays in October. What I want to highlight, however, are the symbolic

dimensions of logging, those intangibles that make its conjunction with Independence Day meaningful. Insofar as these contrast with fishing, they will also help us understand why fishing is *not* a featured part of the spectacle.

As mentioned previously, few Native peoples work as loggers, but many participate in commercial fisheries. Logging, thus, is viewed as White Man's work and contrasts with fishing in this respect. It follows that loggers represent the 'all-American' segment of the population (or, as the Native peoples would say, the 'haole'⁵ culture). Equally ironic is the symbolic opposition between loggers as year round residents and fishermen as outsider transients, for the Native fishermen are much more committed to long-term residence in the area than the White loggers. In each case, however, the ethnic and geographical heterogeneity of fishermen contrasts with the relative homogeneity of loggers, making loggers the more appropriate group to participate in the 100% American, Fourth of July celebration.

There are other, more peripheral contrasts that also favor loggers over fishermen as patriotic symbols. Firstly, fishing maintains continuity with the pre-United States, Native history in the region, whereas logging is a recently transplanted industry with close ties to the contiguous 48 states. Secondly, fishermen exploit a watery resource, which has no clear boundaries and property lines, instead of making a living on solid ground like most Americans. Thirdly, logging is inextricably involved in the nation's cash economy, but many of the Native fishermen also engage in subsistence fishing. Thus, although the dollar value produced from fishing exceeds that from logging, the fact that some people subsist from fishing colors it as an isolationist, slightly anti-social way to make a living. Fourthly, whereas loggers ply their skills as rugged individualists, fishermen (especially seiners) work in groups, and even worse they are paid shares of a communal catch instead of earning wages or salaries individually. Finally, whereas loggers forcefully extract a living from the environment - by exertion of will dominating nature - fishermen lack the same degree of control over their affairs.

In each symbolic opposition, loggers side with clearly American values, while fishermen reflect ethnically tainted, marginal, outdated, or aberrant patterns

Table 6. *Symbolic Contrasts between Fishermen and Loggers*

Fishermen	Loggers
Mixed Ethnicity	'Pure' American
Outsider	Local
Mixed Origins/Outdated	American Origins/Modern
Water Resource/Marginal	Land Resource/Central
(Potentially) Subsistence Economy	Strictly Commercial Industry
Suspect Method of Payment	Honest Work for Honest Wages
Lack of Control	Forceful Domination

(see Table 6). Thus, it is entirely appropriate for a logging carnival to be sandwiched in between the parade and the fireworks in Ketchikan's Fourth of July agenda, while fishermen's participation is limited to that of passive spectator.

At least in the richly symbolic context of Independence Day, loggers represent a thoroughly American way of life, and their featured role in the celebration adds regional color without challenging or undermining national ideals. In this sense, the logging carnival is one last 'Hurrah for the good guys' before the slightly un-American and uppity fishermen take their turn as the dominant group in Ketchikan's night life.

Conclusions

The tension between fisherman and logger in Southeast Alaska is rooted in occupational pride and amplified by cross-cutting issues of ethnicity and residency status. Economically, both groups are necessary to sustain the region's urban centers, and development of one is good for all. Socially, however, the two groups are competing for the same limited prize – the prestige associated with being the most authentic representative of Southeast Alaskan culture.

Although the competition occasionally erupts into physical conflict, outbursts of violence remain personal in scale, involving individuals as such. More often, representatives of the two groups engage in symbolic conflict. Just as indigenous societies of the Northwest Coast converted property into social status by giving it away in potlatches, so do modern fishermen and loggers vie with one another in barroom generosity. Beer and booze have replaced blankets and coppers, but fighting with property is still an alternative to physical confrontations.

Overall, the rivalry is beneficial to the region's economy. Not only does the extravagant spending support local trade and service businesses, but when handled creatively, as in the annual logging carnival, the rivalry feeds a growing tourist industry. In this last respect, Southeast Alaska provides an unusual twist to the comparative study of tourist-local interaction patterns: fishermen and loggers are primary producers whose occupational cultures are also marketable. Fish, timber, and the 'authentic' cultures that produce them are Southeast Alaska's major commodities.

Acknowledgements

An earlier version of this paper was presented at the 46th Annual Meeting of the Society for Applied Anthropology in Oaxaca, Mexico, April 8-11, 1987. The author thanks Steven L. McNabb, Catherine M. Cameron, and M. Estelle Smith for critical comments.

Notes

1. In the southeast region, a partial listing of ethnic categories would include Tlingit, Haida, Tsimshian, Inupiat (Eskimo), Norwegian, Slavic, Russian, Japanese, Chinese, and Filipino as well as the

more general labels White, Indian, Asian, and Black.

2. Klukwan, Inc. (a native corporation near Haines, Alaska) has been hiring its Tlingit youths to work as loggers. This direct involvement of Natives in logging is the exception rather than the rule, as evidenced by the feature story in *Alaska Native Magazine*, April 1987, 5(4):16-18.

3. Fishermen's barroom behavior is contingent to a large extent on the strength of the salmon runs in a given season. When the season has been good or even average, bell-ringing in the bars is a common occurrence. If, however, the season has been dreadful, barroom drinking as a whole seems to slack off.

4. Ax throwing, ax chopping, and speed climbing are virtually irrelevant to modern logging operations, but they make good spectator events and hearken back to logging's past. On the other hand, 'obstacle pole bucking' requires contemporary logging skills, but is a contrived event. Its description, taken from a flier distributed to the audience, is as follows: "Contestant stands behind starting line. On sound of gun, carrying chain saw, runs past the pole to line marked on pole. Contestant then can step up onto pole and runs back towards elevated end. Contestant cannot start power saw until crossing white line. Then contestant cuts approximately one-half way through from one side of log, removes saw and completes cut from other side, stops saw and returns to starting line. Saws provided."

5. Whereas Native Americans in other parts of the United States and Canada often refer to Whites as 'honkies' (borrowed from the rhetoric of Black Power), Native Alaskans generally prefer 'haole' as their pejorative ethnic label for Whites. This reflects the affinity Indians of Southeast Alaska feel for Hawaiians, whom they regard as not-so-distant relatives.

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Japanese Whaling Culture

Continuities and Diversities

Junichi Takahashi

School of International Studies, Obirin University, Tokyo

Arne Kalland

Nordic Institute of Asian Studies, Copenhagen

Brian Moeran

School of Oriental and African Studies, University of London

Theodore C. Bestor

Department of Anthropology, Columbia University

ABSTRACT This paper outlines the historical background of pre-modern and modern whaling in Japan and describes the three main types of whaling practiced in Japan in recent decades – large type coastal, pelagic and small type coastal whaling. By comparing these types, we are able to show that there are two distinct sets of activities concerned with production which show remarkable continuity within the catching and processing spheres respectively. At the same time, the differences between these spheres are also bridged by a number of social and cultural institutions (which are particularly apparent in STCW where whaling is closely integrated with local community life). These continuities and similarities, and the several bridging mechanisms, enable us to argue for existence of an integrated whaling culture in Japan.

Introduction

In this paper we examine the practices involved in whaling in Japan from pre-modern times to the 1980s. We rely upon a concept of culture as an integrated and coherent system of specific tools, techniques, skills, and the attendant bodies of knowledge and forms of social organization that are necessary to locate, identify, harvest, process, distribute, and consume particular resources that are found in specific ecological niches. As such, our definition of the culture of whaling, which centers on catching, processing and consuming whales, necessarily includes the social structure of communities that sustain and are sustained by whaling, and the knowledge, beliefs, and values that are present in those communities.¹

Within the Japanese whaling culture, it is important to note that various forms of whaling have been practiced – net whaling in the pre-modern period, and

more recently, pelagic whaling, large-type coastal whaling (LTCW), and small-type coastal whaling (STCW). We will argue that, for each of these forms, there are two sets of activities – one related to hunting and the other to processing – and that there is a remarkable pattern of similarities in these activities in all forms of Japanese whaling. Moreover, on the production side of the whaling culture, the fundamental cognitive, technological, and organizational dissimilarities between catching whales and processing whale carcasses are sufficiently significant to enable us to distinguish hunting and processing as separable subcultures.

This, of course, begs a question: how can we explain the existence of an integrated whaling culture which in itself comprises two sub-cultures? Our argument will be that in fact the spheres of knowledge belonging to each sub-culture are not isolated, but are bridged by a number of important linkages such as the structure of the whaling companies, the ways in which such companies have cooperated, career patterns, and the dissemination of knowledge itself.

It is partly the nature of these linkages which in fact sets the Japanese whaling culture apart from the whaling cultures of various Western nations. At the same time, there are other important factors that serve to sustain the distinctiveness of Japan's whaling culture – in particular, the extremely variegated use of whale meat (including blubber and entrails) as food, the elaborated forms of reciprocity in which whale meat is used in gift exchanges, and the development of an extensive set of rituals and beliefs related to whaling activities (Akimichi et al. 1988; Hardacre and Manderson n.d.; Iwasaki 1988; Kalland 1989a). Given the extensive treatment of these aspects of Japanese whaling, we will here focus on the social organization of production which, in our opinion, is sustained by the Japanese pattern of whalemeat consumption.

Unlike Norway, the Soviet Union, and other whaling nations, which used most of the whale for oil extraction only, in Japan there were markets for other products that were more valuable than oil, and which thus made it financially rewarding for whaling enterprises to diversify their output. The complex nature of Japanese cuisine has given rise to an equally complex price structure which affects the way in which the whale is processed.²

It is the nature of food consumption which has allowed for continuities between forms of whaling over time. Hence, for example, the work organization on a Japanese pelagic whaling mother vessel is in some respects more similar to the organization of a pre-modern land station than it is to, say, the work organization of Norwegian or Russian mother vessels.

Historical Background

Pre-modern Times

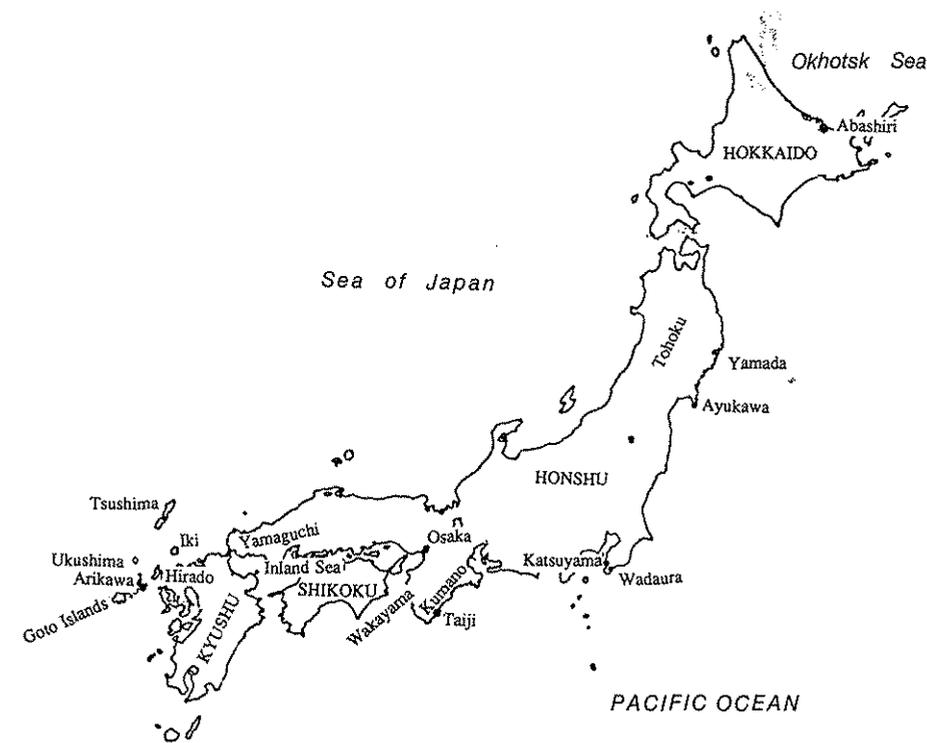
Whaling has been carried out in Japan for many hundred years, during which time there have been many changes in technology, in species caught, in hunting grounds, and in the location of whaling communities. It is the purpose of this

section to outline the historical processes leading up to the days of modern whaling. In particular, we will describe the social organization of pre-modern whaling in order to provide background material for an understanding of the continuities which, we will argue, exist in the ways whaling activities are still carried on.

Fukumoto (1960) has divided the development of whaling in Japan into five stages. In the first, lasting well into the sixteenth century, whaling was not yet established as a business. Whales occasionally were hunted with bows and ordinary fishing nets, but most whales taken were either dead or wounded whales that were caught as they drifted in the seas nearby. This kind of whaling has been labelled 'passive whaling', in contrast to 'active whaling' in which hunters pursued healthy animals (Hidemura and Fujimoto 1978).

Active whaling is thought to have started in the sixteenth century, but it was only towards the end of that century that whaling developed into large-scale enterprises, thereby marking Fukumoto's second stage. Here whalers rode in several boats and made use of harpoons in the hunt, a technique that has come to be known as the harpoon method (*tukitori-hō*). Killed whales were brought back to specially established processing facilities on shore. This technique was practiced in Wakayama, Shikoku, Northern Kyushu, and on the coast of Yamaguchi facing the Sea of Japan (see map).

Some communities such as Taiji (Wakayama Prefecture) and Katsuyama



(Chiba Prefecture) continued until recent times to specialize in using harpoons to catch small cetaceans such as dolphins, pilot whales (*Globicephala macro-rhynchus*) and Baird's beaked whales (*Berardius bairdii*), a tradition which has had, as we will shortly see, an important bearing on the development of modern small-type coastal whaling. But toward the end of the seventeenth century, Japanese whaling entered its third stage through the invention of the net method (*amitorihō*) in 1675 by Wada Kakuemon in Taiji. In this method, large whaling groups were organized to drive whales (mainly slow moving species like right (*Balaena glacialis*) and humpback (*Megaptera novaeangliae*) whales) into large nets set around processing facilities on shore. This method spread rapidly throughout most of southwestern Japan and continued to dominate Japanese whaling until the end of the nineteenth century. Net whaling of this form involved substantial capital (including investment by Osaka merchants) and the proprietors themselves frequently moved their operations from one whaling ground to another, bringing skilled workers with them. Rights to exploit particular whaling grounds were granted by feudal fiefs (*han*) in exchange for fees to the authorities and compensation to local communities for the inconveniences whaling operations caused them.³ Moreover, regulations often extended to the distribution of meat in the form of payment to the whalers and compensation to the villages affected by whaling operations (Fujimoto et al. 1984).

Given that the organization of these net groups was in many ways similar to the organization of modern whaling, we will briefly outline here the main features of the net method. The operations fell into three separate stages – preparations for a new season, hunting and processing the whale – with each of these stages requiring special skills and modes of organization.

The preparations for a new season (*maesaku*) usually started in September and included a range of activities centered on the land station (*nayaba*). Large quantities of hemp were brought in, often from a considerable distance, as raw material for ropes made by women living in the host and neighbouring villages. Male experts (*ami-daiku*) used the ropes to make new nets since many of the old nets had to be replaced every year. These experts were usually recruited from villages that specialized in this trade, often from distant provinces. Every year some of the oldest boats had to be replaced by new ones built by specially employed boat builders (*funa-daiku*), while harpoons, knives, containers and so on were made by smiths and coopers. The working sheds had to be repaired or rebuilt, new furnaces made and firewood collected.⁴

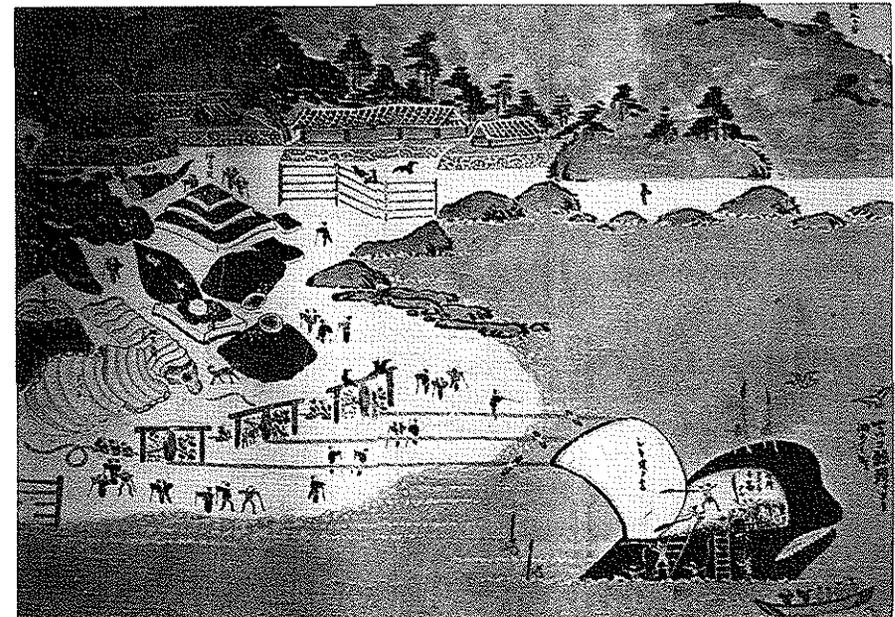
Next, several activities were involved in the hunting of whales. First, once the weather was regarded as suitable for the whaling season to begin, the search was initiated. Lookout posts on hilltops, commonly manned by five persons, sent smoke or flag signals to convey information to the land station about whales that they had spotted. In areas where there were no suitable lookout points, search boats were used to look for whales and the land station was informed of sightings by means of flag signals.

Once a whale had been spotted and the land station was informed, between ten and twenty swift hunting boats (*seko-bune* or *oi-bune*), each carrying a crew

of about twelve persons under the command of an expert harpooner (*hazashi*), set out in pursuit of the whale. The boats split into three groups each led by a chief harpooner (*oyaji*). By surrounding the whale on three sides and by beating the sides of the boats, they managed to frighten the whale in the desired direction. Meanwhile the net-boats (*sōkaisen*) and their assistant boats (*amitsuke-bune*) had arrived at the scene and the nets were lowered under the direction of a commander-in-chief (*mito-oyaji*) through signals to the net-boats which worked in pairs – one pair for each of the nets.⁵

As soon as the whale was entangled in the nets and its speed had been slowed down, the hunting boats approached the animal and the harpooner threw harpoons secured with ropes toward the whale. The first harpooner who managed to spear the whale was financially rewarded. The most daring task was accomplished by one harpooner who had to climb onto the whale's back, cut a hole near the whale's nose, and thread a rope through this hole to secure the whale. Another daring operation was to dive under the whale with ropes and tie the whale to two beams laid between two boats that served as floats (*mossō-bune*). Only after this had been done was the animal killed by a sword and the whale towed to the land station by the *mossō-bune*, leaving the hunting boats to chase other whales that might have been spotted in the area.

Whale processing was carried out at land stations containing a number of working sheds (known as *naya*), living quarters, offices, and winches – all centred around the beach up which the whale was dragged. The land stations



A sperm whale is flensed, Tokugawa period (1600-1868).

varied somewhat in their physical lay-outs, but the different stages in the processing of the whales were mostly the same. These involved, firstly, bringing the whale from the sea onto shore by means of a handpowered winch (*rokuro*) which was then used to strip the blubber from the whale as the main flensing (*uo-kiri*) began. This *uo-kiri* (lit., 'fish cutting') consisted of rough hewing of the whale's carcass and simultaneous separation of the blubber from the meat. This was followed by 'middle cutting' (*naka-kiri*), in which the meat and blubber were cut into smaller pieces capable of being carried by two men with a pole. Because of the special requirements of Japanese cuisine, both *uo-kiri* and *naka-kiri* were carried out by highly skilled flensers.

All of these activities were conducted outdoors, before the meat and blubber were carried indoors into separate sheds. Although there were some variations in the organization of these sheds between land stations, we find that there was a frequent separation of sheds where meat, blubber or entrails were further cut into smaller pieces and processed independently. The major part of the meat was used fresh or salted as food. The blubber was mainly boiled and used to extract oil which was in great demand as insecticide. The entrails, for their part, were used both as food and for oil production. The whale's bones were taken to a separate shed where they were crushed and processed into oil or fertilizer. In many *nayaba*, sinews were also processed in a separate shed, as were sperm whale teeth and baleen. Processed sinew was used in a wide range of products such as musical instruments and bow strings; sperm whale teeth and baleen were also utilized in a variety of crafts, including the making of *bunraku* puppets; *shamisen* plectrums were produced from whale jaw bones. There was thus virtually total use of the whale.

Modern Whaling

Early in the nineteenth century whaling boats from the United States and other western powers began to appear in Japanese waters to exploit the rich whaling grounds off her coasts. Their activities coincided with – and are widely believed to have caused – a drastic reduction in the number of whales caught by the Japanese in their nets, so whalers found themselves having to cope with the situation in several ways. Some tried to open up new catching grounds using their established net methods, while others tried to introduce the American-type whaling, using handheld guns and bomb lances. Neither had much success and Japan entered a new age in whaling only with the introduction of the Norwegian method, characterized by a bow-mounted harpoon gun on a steam-powered, ordinarily steel-hulled ship.

The Norwegian method was first used in Arikawa (Gotō Islands) in 1897, but ended in failure. Two years later, however, Oka Jūrō who had been on a study trip to Norway, established a company that was to become known as Tōyō Hogeï. Using catcher boats bought or chartered from Norway and manned by Norwegian gunners, this company managed to survive the troubled years as it learned the new technologies. By acquiring new Russian catcher boats captured

during the Russo-Japanese War, in 1906 the company was able to start catching whales in the waters off Ayukawa in Miyagi Prefecture. This successful attempt marked a turning point in Japanese whaling, and many new whaling companies and land stations were established in the following years along the Pacific Coast of Japan. This ushered in the start of modern Japanese large-type coastal whaling, discussed in more detail below.

Japanese whalers were soon active throughout Japan, the Kurile islands, Korea, Taiwan, and Ogasawara, catching large whales and bringing them to processing stations on land. In 1934, however, a mother ship was bought from Norway and Norwegian supervisors were employed, to allow the first Japanese fleet to be sent to the Antarctic. Within a few years, fleets had also been sent to the North Pacific and pelagic whaling had surpassed large-type coastal whaling (LTCW) in economic importance (Tatou 1985).

During this same period other pre-modern forms of whaling also influenced the development of modern whaling, particularly of small-type coastal whaling. In pre-modern times, the net whaling operators along the Kumano coast (including Taiji) often allowed their whalers to catch small cetaceans such as pilot whales and dolphins outside the net whaling season. This hunting of small cetaceans was different from net whaling operations in that it involved individuals, rather than organized groups, who worked independently as and when they felt like it, and who used hand harpoons from individually owned boats crewed by small groups (generally no more than seven men, a considerably smaller crew than that of the net whaling boats). After the collapse of net whaling in Taiji following a disaster in 1878 when 111 whalers lost their lives (cf. Taiji 1982), this traditional form of pilot whaling became of greater importance in Taiji. Attempts were made at driving pilot whales into nets, but without much success. After the introduction of the semi-diesel engine and the invention of the Maeda five-barreled harpoon gun in 1904 (probably stimulated by the development of LTCW harpoon guns), traditional vessels (in Taiji called *tentosen*) were outfitted with these innovations and pilot whaling became a viable form of whaling which continued into the 1970s.

In the early 1930s a seven ton pilot whaling vessel was brought to Ayukawa from Taiji, and by outfitting this boat with a newly introduced 26 mm Norwegian harpoon gun it became possible for the first time to hunt minke using a small vessel. The Norwegian gun was mounted behind the Maeda gun which was used to fire the first harpoon; the 26 mm gun was used to fire the second, and fatal, shot. Experimentation in Ayukawa led to modifications of boat design, and eventually the Maeda and 26 mm guns were replaced with a more powerful 50 mm harpoon gun of Norwegian design. The new designs thus developed proved their worth and led to the general adoption of small-scale whaling boats (generally 15 to 20 tons) used for catching minke (Ōmori n.d.).

By about 1935, therefore, three distinct types of whaling had emerged: large-type coastal whaling (LTCW), pelagic whaling, and small-type coastal whaling (STCW). In scale and mode of operation, these three forms were quite distinct. Until 1976, when they were merged into a single company (Nihon Kyōdō Hogeï),

there were three main companies involved in pelagic whaling: Taiyō Gyogyō, Nihon Suisan (usually abbreviated to Nissui), and Kyokuyō Hogeï. These companies operated whaling fleets, each consisting of a mother ship, several catcher boats, refrigerator ships, and various supply vessels. They were large industries for whom whaling was just one of many activities, and for historical reasons they tended to recruit personnel from specific areas (Kalland 1989b).

Besides these three major companies, there were a number of smaller companies – some of them subsidiaries of the 'Big Three' – which participated in LTCW. These operated several catcher boats which landed their catches of large baleen and sperm whales at their own landing stations for processing. With the contraction of coastal whaling in the 1970s, an agreement was reached whereby the 'Big Three' concentrated on pelagic whaling, leaving LTCW to be conducted by Nihon Hogeï, Nittō Hogeï, and Sanyō Hogeï. Each of these companies developed reasonably close relations with the communities in which they operated their landing stations (e.g. Nittō Hogeï in Yamada and Wadoura, and Nihon Hogeï in Taiji and Ayukawa). Some of the STCW boats were at one stage owned by the LTCW and pelagic whaling companies, but nowadays all the nine STCW boats are operated by locally based, small, independent companies (Akimichi et al. 1988:18-20).

In the following section we will be taking a closer look at each of the forms of whaling practiced by these companies. We intend to show that, in spite of certain differences between them, there are striking similarities in the three forms (LTCW, pelagic and STCW) and that they complement each other in such a way that we feel justified in talking about the concept of an 'integrated whaling culture'.

The Organization of Production

With few exceptions (such as, for example, STCW until 1947), Japanese whaling operations have been strictly regulated by government bodies. These regulations have applied to licences, quotas, seasonal limitations, catching grounds, species of whale, the size of whale, use of technologies, and the size of boats. The government has also defined the various categories of whaling conducted by Japanese whalers.

Any form of whaling can be broken down into a series of distinct components which represent stages of production. In this section we will attempt to outline the main features of each of the three modern types of whaling defined above, in order to bring out structural similarities and historical continuities among different forms of whaling that have existed in the past and still exist today. In particular we will show that there is a sharp division between activities involved in hunting and processing in all types of whaling – a division which transcends differences among the three types of whaling under discussion.

Large Type Coastal Whaling (LTCW)

Large type coastal whaling is characterized by the species it pursues – sperm whales (*Physeter macrocephalus*) and the larger baleen whales (excluding minke (*Balaenoptera acutorostrata*)) – by the scale of the boats (which were often the same as those catcher boats used in pelagic whaling), by its reliance on landbased processing, and by the absence of mother ships.

In LTCW, each catcher boat (varying from 100 to just over 600 tons in size, with crews of roughly 20) was a separate unit able and expected to make all decisions connected with hunting whales, including decisions about where and when to initiate a hunt. Within seasonal and geographical limitations imposed by the authorities, the gunner on the catcher boat decided the whaling grounds to be worked for each trip, basing his decision on his extensive knowledge of seasonal migration patterns, as well as on information obtained from such natural phenomena as tides, currents and wind. He would also observe the activities of fishing boats.

Once the boat reached the hunting ground, the actual search could begin. In general four men headed by the bosun (boatswain) gathered at the masthead to keep a look out for whales. Constantly monitoring the water temperature, as well as changes in water colour and wave patterns, the crew searched for where different currents met, knowing that that was where whales satisfied their appetites on fish, krill, squid, and other creatures. Sighting of sea birds was of great importance (as could be the presence of dolphins) since these signified the presence of whales in the area.

The next step was to look for the spout of a whale. An experienced whaler could tell from the spouts what species had been sighted, the direction in which the whales were moving, and, in some cases, how many were present. If the whale could be hunted, the catcher boat would then embark upon the chase. Here traditionally there was very close cooperation between the bosun at the masthead and the gunner who stationed himself initially on the bridge of the catcher boat. The bosun sent instructions verbally (via the voice pipe or by microphone) to the ship's engineer relaying orders about the speed and direction of the boat. However, it is important to point out that it was in fact the *gunner* who was in charge of the catcher boat throughout the hunt, even though he might delegate authority to the bosun in the early phase of the chase. As the catcher boat closed in the gunner moved forward to the harpoon platform and took over firm control of the final approach to the whale.

In the past, both the gunner and bosun needed to have as near perfect as possible a knowledge of whale behaviour for the pursuit to be successful. Their roles were, however, modified by the invention of an echo sounder known as the *geitanki* (lit. 'whale searching device'), introduced on all types of catcher boats from about 1960. The *geitanki* is both a sonar-like device that can be used to actively locate whales through returned echoes and an apparatus that can also simply passively receive the sounds of whales. The device was of use only after a whale had already been visually spotted and the boat had approached to within

catching distance. If turned on too early, the signals emitted by the *geitanki* would scare the whale away. Once the whale was in range, catcher boats equipped with a *geitanki* could pinpoint precisely the presence of a whale, together with its direction and distance from the vessel. It was particularly useful when the whale dived and became invisible to the bosun, since – by tracing the path of the whale under water – it permitted the gunner to position his vessel perfectly for the final approach to the whale. The innovation also allowed catcher boats to follow whales throughout the night and hence enable them to take up the final stages of the hunt the moment daylight returned.

More importantly, however, the invention of the *geitanki* affected the role of the gunner aboard the catcher boat during the chase, in that his detailed knowledge of whale behaviour and the likely movements of the type of whale being pursued were no longer as important as they used to be. This made the difference between good and bad gunners less obvious than it had previously been. Moreover, whereas in the old days it was the relation between gunner and bosun that was vital for a successful pursuit, a new line of communication was now set up between the gunner, bosun and the sonar apparatus operator (*geitanshi* or *tsuigeishi*), who was himself a new addition to the composition of the catcher boat's crew.

Indeed, the decline of the authority of the gunner on the catcher boats mentioned by informants appears to have coincided with the introduction and adoption of the *geitanki*. The fact that considerable care was taken to ensure that the sonar operator did not infringe upon the sphere of influence hitherto wielded by both gunner and bosun indicates that this technological innovation brought about a potential source of conflict in crew organization aboard the catcher boats. For example, *geitanshi* were careful not to make any statements that might suggest they were issuing orders about the vessel's course, and instead restricted themselves to reporting simply the location of the whale. Moreover, the fact that the operator now gave information about the whale's movements over the boat's loudspeaker system meant that what was once secret knowledge and one of the main sources of power supporting the gunner's authority now became shared knowledge, allowing other crew members to assess the performance of the gunner and of the bosun.

In order to shoot a whale, the catcher boat had to pursue it to within a range of 40 to 60 metres, after a chase of perhaps several hours before this close an approach became possible. In the final stages the gunner manoeuvred his vessel so that it approached the whale at an ideal angle of about thirty degrees. Depending on the species, the gunner may have had as little as two to three seconds in which to take aim and fire, but he also had to take into account such factors as the distance between the catcher boat and the whale, the absolute and relative speeds of the two, wind and wave conditions (preferred timing being when the bow of the boat is rising), and acquired knowledge of the behaviour of the whale itself (for a gunner's account of shooting techniques, see Tanaka 1987). Before the invention of the exploding harpoon, the whale was not killed instantly, and a second harpoon (*niban mori*) – sometimes aimed by the apprentice gunner

– had to be fired. The introduction of the explosive harpoon made a second harpoon unnecessary in most cases, and in this respect modified the on-board training of new gunners to some degree.

The next stage was marking and securing the dead whale. Large baleen whales such as blue (*Balenoptera musculus*), fin (*B. physalus*) and sei (*B. borealis*), were in general pumped full of air to keep them from sinking – , something which was not necessary for whales rich in oil content such as right and sperm whales. The carcass was secured to a buoy and marked by a flag and, in later years, a radio transmitter.

Finally, the whale was brought back to land. It was the gunner's task to decide when to collect the whales and bring them back to the land station, marking the end of a hunt that may have lasted several days or may have been concluded in a single day if the hunting was successful. Here again the species of whale had an important influence on his decision. Baleen whales, for example, had to be brought back to the land station promptly since they were primarily consumed as fresh meat, and prices fell sharply with deteriorating quality; sperm whales, on the other hand, which were prized mainly for their oil, or used for preserved meat – either salted or canned – did not need to be towed to land so quickly. Moreover, in some places like the East China Sea, where the water temperature is comparatively high and the carcass thus decomposes quickly, baleen whales were first bled by an incision in the neck and then in addition had their entrails removed. In deciding to convey the whales back to land, other considerations included sea conditions, speeds of currents, the distance of the whales from the land, and of course the number of whales caught.

On being secured to the side of the catcher boat, whales of all species had the corners of their flukes cut both to make their handling easier and to ensure that the carcass was not lost should wave action snap the tail of the carcass. All species of whales were also bled at this stage if this had not already been done.

In LTCW the whale had to be processed on specially designated land stations, and the station operators had to pay compensation to the local fishing associations for the inconvenience caused to fisheries by whaling operations. They also made frequent donations to the local community institutions as a good will gesture. In this respect there was continuity between LTCW and pre-modern net whaling practices.

Seven main processing activities were carried out at these land stations, although some of the tasks were sometimes subcontracted elsewhere: flensing, oil extraction, salting, icing of fresh meat, crushing of bones for fertilizer production, drying of sinews, and boiling of entrails for food. Subsidiary tasks occasionally undertaken by employees at land stations included the cleaning of sperm whale teeth and baleen, for use in craft production, and maintenance and repairing of the tools and facilities.

When the catcher boat reached the harbour, it was met by a small tow-boat that came out to take the whale in tow as far as the slipway. There it was winched up on shore, tail first, the winches being operated by experienced workers who were not, however, exclusively specialists in this task alone. Flensers (*kaibōin*)

would often start their work while the whale was being dragged up by the winches onto the slipway, since they could thereby exploit the movement of the carcass in making the first cuts lengthways in it. Otherwise, they would wait until the carcass had been winched right up the slipway before making long cuts along its sides and, as soon as the carcass came to a rest, along the whole of the topside of the whale before cutting its tail off. (The fluke was put aside to be sliced up later, and then salted or transported to salting facilities if these were not available at the same station.) The winches were also used to peel off the blubber while the flensers carefully separated the blubber from the meat. The blubber was put to one side, while the winch operators proceeded to peel the meat from the carcass and the flensers carefully trimmed the meat from the bone.⁶ The meat was then cut into blocks 30 centimetres across, before it was further cut up into smaller chunks (sometimes by less skilled workers locally hired on a daily basis during especially busy periods) and placed in an ice tank for cooling. For meat scraps, tendons and other tough parts were carefully removed, and the meat was cooled with crushed ice.

Next, the blubber was then cut up in a similar manner into 30 centimetre wide strips. Since blubber had different uses, depending on the species of whale from which it was taken, some was used for salting and some for oil extraction. In the latter case, the large blocks were taken to the boiler section of the land station, where they were further cut up and placed in the boilers and prepared for oil.

Other portions, including the ventral grooves, dorsal fin, flukes, flippers (in the case of the humpback whale) skin of the whale, and – in the days before refrigeration enabled large quantities of red meat to be consumed as fresh meat – red meat in general, were all sliced and salted.

The remaining skeleton was sawn into pieces, before being taken from the land station to nearby fertilizer plants, which were often operated by local people, where it was crushed, dried and made into fertilizer. The sinews were also removed by a subcontractor who washed, stretched and dried them in preparation for musical instruments, tennis rackets, etc.

Fresh intestines and other organs such as the heart, liver, esophagus, and kidney were boiled, either on the land station, or elsewhere by a subcontractor. If these entrails were not fresh, or those employed on the land station had no time to treat them, they were sent with the bones to be made into fertilizer.

Pelagic Whaling

In pelagic whaling, a similar procedure to that described for LTCW was followed, but there were certain important differences in the search and carcass collecting phases, on the one hand, and in processing, on the other. These differences were reflected in the composition of the pelagic whaling fleets, which varied somewhat from fleet to fleet, between catching grounds and over time. During the 1951-52 Antarctic season, for example, the (Taiyō operated) Nisshinmaru fleet consisted of a total of 23 vessels: the mother ship (*bosen*), two salting freezing ships, two freezing ships, four transport carriers, one tanker carrying

diesel oil for the fleet, ten catcher boats, two towing boats, and one search vessel (Maeda and Teraoka 1952). In 1976, on the other hand, the Nihon Kyōdō Hogei fleet operating in the North Pacific, consisted of a mother ship and 9 catchers only. Both freezing and salting were done on the mother ship, and no other support vessels were needed because the hunting grounds were relatively close to Japan.

A major difference between LTCW and pelagic whaling, so far as hunting is concerned, was that the hunting phase of whaling was closely coordinated and directed by a commander-in-chief (*sendanchō*) from the mother ship. Basing his decisions on international whaling regulations and information on whale behaviour and sea conditions accumulated from previous years' whaling trips, the commander-in-chief first decided on the general area in which his fleet would pursue their whaling activities, and then sent out his search vessel to move ahead of the mother ship (*bosen*), reporting back by radio when sightings of whales were made. Another search strategy, especially before the official hunting season for the economically more important baleen whales opened, was to hunt for sperm whales, using the hunting as an opportunity to carry out general reconnaissance. On the basis of these various kinds of information, the commander-in-chief deployed his catcher boats, ordering them to maintain a certain distance between themselves and to proceed towards the area in which whales were sighted. From this point, the catcher boats took over the hunt and the search, pursuit and killing of the whales proceeded in exactly the same way as that described above for LTCW.

The manner of securing and retrieving the carcass, once a whale had been killed, was another major difference between LTCW and pelagic whaling. This concerned the bringing of the carcass back to the processing facilities. As in LTCW, the dead whale had to be secured with floats or pumped with air in order to prevent it from sinking, while the catcher boats proceeded with the hunting of other whales in the area, leaving the carcass to be collected and taken back to the mother ship by special towing boats. Before a catcher boat left the whale however, its gunner made sure to attach a long bamboo pole to the carcass with a flag on top to identify ownership and which catcher boat was responsible for the successful killing. A radio transmitter attached to the carcass enabled the collecting vessel to identify the whereabouts of the whale and tow it back to the mother ship for processing.⁷

A pelagic fleet operated on the open ocean for months at a time. This influenced the range of products into which the whales were processed, as well as the work organization of the processing fleet, which included the mother ship for flensing and oil processing, and other ships where fine cutting, salting, and freezing were carried out. And such things as bones, which on land would have been processed into fertilizer or other products, were as much as possible, on shipboard, processed into oil. And, of course, at sea sub-contracting and employment of extra workers during busy seasons were impossible. The work on the fleet nevertheless resembled that of the LTCW land station.

The persons working on mother vessels were organized into two main groups:

the crew (*ōgata sen'in*) of roughly 90 operating the ship, and a additional 250 managers and processing workers (*jigyōin*), who were further subdivided between flensing section and factory (mainly oil extraction) section (Nihon Suisan 1966). There were two flensing decks on a mother ship, one at the stern where rough flensing was done and one in the center of the ship where secondary cuts (*saikatsu*) were made.

As processing of a whale began, the carcass was winched tail first up the slipway at the stern of the boat by workers who were specially employed for this task. Then the flensers (*kaibōin*) cut off the tail which was winched to the second flensing deck where it was cut up later by the butchers (*saikatsuin*) into smaller pieces for salting. The flensers, at least one on top and one on each side of the whale, cut the blubber along the length of the whale, before it was stripped off the meat by the winch operators.

The blubber was hauled by the winch to the front of the flensing deck where butchers cut it up in blocks 30 centimetres wide with the help of *kagihiki* ('pullers') who used hooks to spread the blubber as it was cut open by the butchers. Sometimes, the latter then separated the skin from the blubber so that the skin could be further cut up into 3 by 30 centimetre pieces for salting by other specialists (*enzo kakari*), either on the mother ship or on special salting ships. Most of the blubber was sent down through the deck for processing in a Hartmann-type boiler by those employed in the boiling section (*saiyubu*).

The next step in processing involved the flensing of whale meat. Since the *ono-mi* is particularly important in Japanese dietary tastes, the flensers were particularly careful when cutting this kind of meat, found near the whale's tail. They then separated the meat from the bones, an extremely skilled operation, after which the butchers proceeded to cut the meat up with the help of the pullers, who would ensure that the membrane covering the meat was always turned upside so that cutting was easier (again using hooks to help with the cutting). Until the late 1940s, the meat was then shipped by dories from the mother vessel to a separate boat (*fuzokusen*) where it was further cut up into smaller pieces before being salted by about 180 workers employed there. From the late 1940s, efficient freezing ships were gradually introduced, but freezing did not entirely replace salting. As whaling operations contracted in the late 1970s, mother ships were refitted so that, in addition to their previous functions, they were also able to freeze, salt and store meat, blubber, ventral grooves and entrails until these were taken back to Japan by the transport ships that came to meet the Antarctic fleets.

As a final stage in the flensing operation, the remaining meat scraps were scraped off the skeleton by specialists, before the bones themselves were handed over to another set of workers who cut them into small pieces with chain saws. They were then crushed and, unlike in LTCW land stations, put into a Kvaerner type boiler operated by people from the boiler section. The remaining entrails were also processed into oil.

It should be emphasized that the relative importance of the various products prepared by a pelagic fleet changed over the years as a consequence of changes in the market for whale products. In the 1960s the demand for whale oil

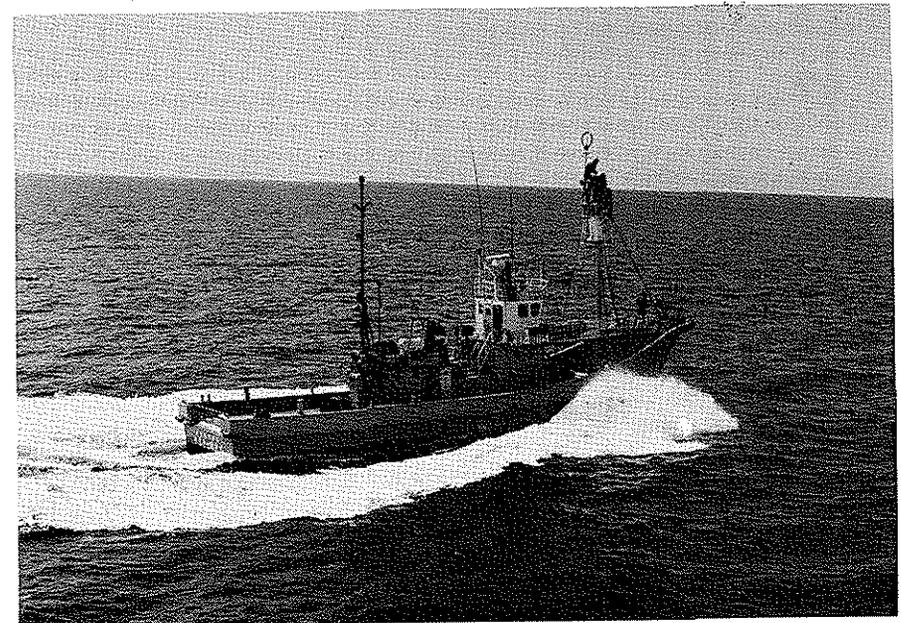
decreased. At the same time the number of captured whales also declined, which caused a higher price for whale products processed for human consumption. This led to a marked shift in the use of the blubber from oil extraction to freezing and salting for food.

Small-Type Coastal Whaling (STCW)

As we have seen above, hunting of small type cetaceans has been practised in Japan in some form or another for many centuries, but the origins of what is now commonly referred to as Small Type Coastal Whaling (STCW) can be found in the beginning of minke whaling off the Japan coasts in the 1930s. This type of whaling is characterized, firstly, by the species of whale caught (minke, Baird's beaked and pilot whales), and secondly, by the small size of the whaling vessel (between 15 and 50 tons) (see Akimichi et al. 1988).

Although the hunting season is now fixed by Japanese government regulations, STCW has in fact been carried out when whales are close to the coast. This means that the administratively regulated season has also been an ecological season. At the same time, the fact that the boats are small means that STCW has been essentially a single day hunting operation, for the boat leaves its harbour in the morning on a clear day when the sea is calm and returns in the evening after dark. Only very rarely, when the sea is very calm, does it stay out overnight.

The crew of each whaling vessel is small compared with other types of whaling



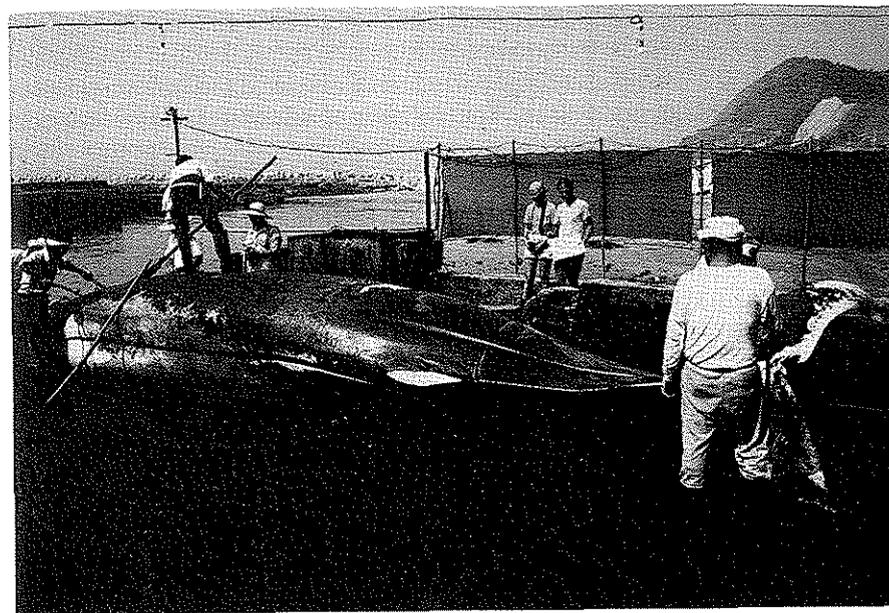
A STCW catcher boat during the search phase. Photo Sasaki Tsuneo.

catcher boats, consisting of between five and eight persons (compared with between 16 and 23 crew on a pelagic fleet catcher boat). Here the gunner has had greater influence than was the case in the LTCW and pelagic operations, and may often be gunner, captain and owner of the boat all at once. Other crew members consist of an engineer and deckhands only, there being no specialized communications officer employed, even though there is, of course, advanced radio communications equipment on board of the whaling vessel. It will be appreciated that this lack of specialization among other members of the crew contributes greatly to the overall authority of the gunner who takes over complete control of the vessel once it leaves port.

As in LTCW, the gunner first decides the general area in which he will conduct his daily search. This will be based on past experience, seasonal variations of currents, whale migrations and general availability of food for the whale, together with information supplied daily by local fishermen. As in LTCW and pelagic whaling, he pursues his search carefully monitoring the temperature of the water and the flow of the currents, while looking for other clues which also indicate the possible presence of whales – like the activities of birds, dolphins, and large fish. At the same time, he has to have a more specialized knowledge of the topography of the seabed than is the case in LTCW or pelagic whaling, since the STCW boats operate closer to shore and in shallower waters, the depth of which also affects the behaviour of the whales sought, especially the Baird's beaked whales. A whale will either be sighted directly or be tracked on the basis of information received from fishing vessels at sea which will relay news of sightings directly by radio to the whaling vessel with the expectation of reward of whale meat should the information lead to a kill.

In STCW, both the structure of the whaling vessels and the type of whales hunted affect the way in which the chase is carried out. For example, a slow boat in search of minke whale may launch a small power boat which it sends out to slow down the whale and drive it eventually towards the whaling vessel.⁸ A fast boat, on the other hand, obliges the whale to swim very fast and so prevents it from diving – in which case it is overtaken by the whaling vessel on its own. Unlike minke whales, Baird's beaked whales dive as deep as 1200 metres and for up to 45 minutes at a time. This means that the gunner had to try to work out where the whale would resurface and position his vessel accordingly. It is important to note that the echo sounder used in LTCW and pelagic whaling was not used in STCW as a tracking device, in part because the beaked whale is extremely sensitive to its signals, and hence easily scared by it.⁹ Therefore, the gunner's traditional – and secret – knowledge remained extremely important to success in the pursuit of the whale. Moreover, his skills are tested much more fully when it comes to shooting the whale, since the target is smaller and the whaling vessel itself is much less stable (because of its small size) than were LTCW and pelagic catcher boats.

Once the whale has been caught, and provided there are no other whales in the vicinity, the whaling vessel will usually secure the carcass by tying its tail to the side of the boat, bleed it, and then tow it back to the landing station. There



The master flensers make the first cuts in the whale, Wadaura. Photo J. Takahashi.

are two exceptions to this rule. Firstly, if there are other whales nearby which the whaling vessel wishes to pursue, it will attach a radio buoy to the carcass, before continuing its hunting activities. Secondly, in Hokkaido waters, rough flensing of minke whale is permitted on board the whaling vessel, in part because there has been in recent years only one authorized land station in Hokkaido (at Abashiri). Since minke whale meat requires prompt flensing to preserve its freshness, on board flensing is essential to meet demand, though whalers point out that there is some trade-off in terms of shrinkage of the meat after on-board flensing occurs. The crew first winches the whale up onto the flensing deck situated in the stern of the boat, before the expert flenser (a land-based specialist from Honshu, who is added to the normal crew when boats operate in Hokkaido waters) flenses the whale with the help of other members of the crew. The flensing operation usually goes as far as the second stage only, in which the 30 centimetre chunks of meat and blubber are prepared prior to finer cutting up into smaller blocks, which will be undertaken on land.

With the exception of minke taken in Hokkaido waters, however, all whales taken in STCW must – according to law – be taken back to designated land stations for flensing. The STCW flensing stations are generally smaller and simpler in layout than those used in LTCW. Since nowadays whale blubber is used for food and not for extraction of oil, there are no boilers operating.¹⁰ Though some whaling operators, like those in Abashiri, may process some whale meat and blubber themselves in small workshops, most processing such as the salting

and drying of meat, as well as the preparation of fertilizers and so on mentioned for LTCW, are carried out by other processors who specialize in such activities and who purchase their necessary raw materials either directly from whaling operators or through middlemen. The methods of sale vary from port to port and among different species.

The smallness of scale of the STCW landing stations thus gives rise to a structure of organization in which very few full-time specialists are employed. The only experts are the chief flensers who separate the meat from the blubber, and cut the meat from the skeleton of the carcass. Other tasks may be carried out by women and old people, who from the bulk of the work-force and are employed on a casual part-time basis, coming from the locality in which the station is found. Middlemen and distributors may lend a hand with flensing, and when necessary catcher boat crews may work on flensing as well. Not surprisingly, perhaps, the speed with which the work is conducted is slower than on pelagic whaling mother ships or on LTCW land stations.

Similarities and Contrasts

It can be seen from the above description of net, large type coastal, pelagic, and small type coastal whaling that there are invariably two main *sets of activities* common to all types of whaling. One set relates to *catching* the whale; the other to *processing* it. Within each of these sets of activities there are certain similarities, as well as dissimilarities, among the four types of whaling described above. Let us start with the main dissimilarities in activities connected with catching.

First of all, there is an obvious disparity between pre-modern net whaling and modern methods of whaling in the selection of hunting area, which was subject to local feudal government permission in the case of net whaling, but not in that of coastal whaling today: in the generally static nature of the search phase in net whaling, whereby whalers had to wait for the whales to pass by rather than actively go out and look for them; and in the use of several boats to drive the whale towards the net, as opposed to modern methods of using fast, powered equipped with harpoon guns.¹¹

Secondly, there are disparities between the various types of modern whaling methods. For example, in pelagic whaling a special vessel searched the area for whales and relayed information back to the mother ship, whereas in coastal whaling (both large and small) catcher boats worked totally independently. Moreover, whereas, in STCW, the echo sounder is used as a device to bring the minke whale to the surface, in LTCW and pelagic whaling it is used to help the catcher boat keep track of all types of whales (ASDIC). Finally, in pelagic whaling, specialized boats were used to collect whales and take them to the processing unit, whereas in coastal whaling, the catcher boat itself performed this task. However, it should be noted that the use of specialized craft to tow the dead whale to be processed was also found in net whaling in pre-modern times.

This point brings us to a discussion of the similarities to be found in the catching set of activities. Many of these will have been apparent from our description

of the four types of whaling outlined above, but it should be stressed that in all types we can break down the set of catching activities into five distinct phases: deciding on hunting grounds, search, chase, killing, and securement.

In deciding on hunting grounds, the gunner in the case of LTCW and STCW, or the commander of the fleet in pelagic whaling, relies on his knowledge of whale behaviour accumulated through long experience, and on information obtained from recent hunts or supplied by other vessels in the same waters. Considerations of fuel consumption and time factors enter into his decision.

Similarities in the search phase include use of look-outs and signals (which may be secret, as in pelagic whaling), the monitoring of natural environmental phenomena, and the identification of the species of whale sighted. The same set of abilities, which includes good vision, concentration and keen senses, is considered to be essential to be a good whaler in all types of whaling.

In the chase phase, we find close cooperation between the harpooner/gunner and his crew, the supreme authority of the harpooner/gunner on board his vessel and the prestige accruing to his position. In addition, the harpooner/gunner necessarily requires a good knowledge of the whale's behaviour in order to anticipate its movements and reactions.

We find that in the killing phase, the skill of the harpooner/gunner in bringing his vessel to within range of the whale, his accuracy in shooting it, and the timing of the shot itself are all essential. All types of whaling make use of harpoons equipped with ropes. The fact that one harpoon was usually insufficient to kill a whale (before the introduction of the exploding harpoon) has meant that new harpoonists/gunners could be trained by allowing them to fire subsequent shots.

Finally, in the securement phase, the whale has to be prevented from sinking, either by being pumped with air, or by having floats attached to it, before it can be towed away to the processing unit. Great care was taken in order to prevent the damage or loss in quality to the meat of the whale caused by the waves and high water temperature while it was towed back to the port.

In the processing set of activities, there are more similarities than dissimilarities among types of whaling, and the disparities are fairly minor. On a land station, for example, bones tend to have been used for fertilizer and entrails for food, whereas on a mother ship they have both been boiled to extract oil. Some land stations, too, may subcontract part of the processing (bones, sinews, and intestines) rather than carry out all aspects as on the mother ship.¹² In other technological respects, however, the processing that takes place in the mother ship and the other non-hunting ships of the pelagic fleet is for all practical purposes identical to the land station, so that the processing fleet can be conceptualized as a floating land station.

The use of the whale as such has changed very little over time. With very few exceptions, the Japanese - unlike whalers in many other nations - have sought to make *total* and variegated use of the whale. In addition to the full utilization of red meat for food and blubber for oil and food, the fact that various usages were found for the skin and flukes (as salted food), the bones (fertilizer or oil), entrails (fertilizer, oil or food) and for baleen, teeth and sinews (for craft produc-

tion) has affected the processing of the whale to such an extent that this set of activities is very distinct from those found among other whaling countries. This is true, moreover, for all the four types of whaling described. That the Japanese are very conscious of this difference can be seen in the way in which Oka Jūrō, the founder of one of the whaling companies (Tōyō Hogeī), as far back as the beginning of the century stressed that, when it came to Norwegian technology, Japan should adopt new technologies in the *catching*, not the processing of the whale (Tōyō Hogeī Co. 1910).

The point to be made here is that, because each part of the whale is put to different uses and because various types of red meat are differently valued on the market, the various flensing activities have to be done with great care. This means that the early stages of flensing require great skill and that local casual day labour can only be employed, if at all, for the later stages of processing. We should note that all those employed in the hunting and processing of whales in whatever form of whaling, received payment partly in kind. This led to the development of a unique system of gift exchange and to a rich local food culture based on whale meat (Akimichi et al. 1988).

Another remarkably persistent feature of whaling in Japan from pre-modern times to the present day is to be found in the recruitment of personnel. There are three aspects of this. Firstly, those who man the whaling vessels have been recruited from specific, occupationally specialized villages that have been widely dispersed geographically. Just as, in pre-modern net whaling more than a dozen villages in Kyushu would provide crews for the hunting boats¹³, so in recent times have crews on mother ships and catcher boats, and workers on mother and refrigerator ships, tended to come from different but specific areas of Japan (Kalland 1989b:5). Secondly, just as the pre-modern whaling harpoonist (*hazashi*) recruited his own crew, mostly from his own village (Hidemura and Fujimoto 1978:167; Hidemura 1952:88; Kalland 1986:37-39), so in modern times have personal connections with the gunner (or his wife) been a vital means of recruitment – particularly in STCW. Finally, in both pre-modern and modern whaling, the village in which the landing station was located has not necessarily contributed many of the personnel employed in hunting, but has been more concerned with the processing stage of whaling¹⁴.

In fact, in processing, we generally find different types of recruitment patterns. In net whaling, for example, specialists (particularly flensers) were often employed from a wide geographical area, whereas unskilled labourers tended to be casually employed on a day to day basis from local communities. With the opening up of land stations for LTCW in the early part of this century, the story was repeated as expert flensers were brought in from villages in the south of Japan that had traditionally specialized in processing, while unskilled labour was locally recruited¹⁵. In the same fashion as was true for catching activities, particular villages tended to have specialised knowledge of processing skills.

Linkages

What we find in both pre-modern and modern Japanese whaling, then, are two sets of activities centering on catching and processing, which are accompanied by two sets of knowledge. Not surprisingly, the career patterns of those employed in each set of activities are different. There is career mobility between LTCW, pelagic whaling, and STCW types, but not generally between activities relating to catching and processing. This might seem to imply that there are two isolated spheres of knowledge, but in fact this is not the case because there are a number of important linkages that serve to bridge the gap between them, and which thus justify the concept of an integrated *whaling culture*.

One of the main links, especially in pelagic whaling and LTCW, is that of the whaling company which acts to enclose its own employees in an identifiable group (cf. Clark 1979; Nakane 1970; Rohlen 1974, and others). Each company makes use of certain strategies such as rituals, songs, company newspapers, and former employees' associations (*OB kai*), to create the kind of in-group feeling that is so often a feature of Japanese society.¹⁶ In Arikawa, for example, whalers employed in the same company would go on a pilgrimage to one or more shrines before leaving for, and after returning from, a whaling trip (Kalland 1989a). While the whalers were away, their wives would form informal groups based on company affiliation and make a monthly pilgrimage to the same shrines to pray for their husbands' safety and good catches.

At the same time as creating and 'in group' atmosphere that separates one company's employees from another's, there are certain linkages between companies that should not be ignored. There are, for example, industrial associations like the Japan Whaling Association and Small Type Whaling Association which link companies, as well as a trade union (the All Japan Seamen's Association) that has, since 1976, encompassed all those employed in pelagic whaling. We have also mentioned the way in which companies in LTCW and STCW have been related by capital linkages, but the system of licensing developed by the Japanese Government after the Second World War also obliged different companies to cooperate in the operation of the North Pacific whaling fleets. Thus, we find that, between – for example – 1954 and 1961, the mother vessel of one fleet was operated by Kyokuyō Hogeī, while the other was operated by Taiyō Gyogyō and Nissui in alternate years. The catcher boats of each fleet were provided by five companies: Taiyō, Nissui, Kyokuyō, Nittō Hogeī and Nihon Kinkai (later renamed Nihon Hogeī) (Grande et al. n.d.)

Another way in which the whaling companies acted as a linking institution can be seen in the methods of informal recruitment practiced by the whalers. As mentioned above, there is clear evidence that personal connections were vital in the recruitment of labour and that such connections allowed members of a whaler's family to enter into the same company, without necessarily being employed in the same set of activities (of hunting or processing) as the relative already employed there. This meant that there could be intergenerational differences in specialized knowledge within the same family, so that, whereas a father

would be working on a catcher boat, a son might become a flenser (or vice versa); where an uncle worked as a boiler man, a nephew could be employed as a mechanic on a catcher boat; or brothers might be employed in a wide variety of occupations within the same company. The existence of different specializations within a family group, however, enabled the free communication of specialized knowledge adhering to each of the two sets of activities emphasized above.

A persistent characteristic of Japanese whaling from pre-modern times has been the great mobility found among most types of whalers. This mobility has involved not only personnel, but skills and capital, as whaling groups moved from one locality to another, giving rise to widespread communication among whalers. Even as early as the 17th century, whalers made trips to other regions specifically to learn new technologies, and were invited by whaling and non-whaling settlements to teach those techniques. These conscious efforts to diffuse technology throughout pre-modern times, encouraged further mobility which in this century contributed to the building of whaling stations in various parts of Japan. Ayukawa is a prime example of this pattern. Thus, we find that there was, and still is, a shared knowledge and common background of whaling, transcending the locality in which any particular operation may be taking place, and based on the technology required to catch and process whales. A recent example of such mobility, entrepreneurship, and communication of technology is to be found in the way in which one whaling company, based in the north of Japan, has decided to establish a land station in the south west of the country, bringing in skilled workers from various parts of Japan for both catching and processing.

Another linkage which concerns knowledge in a broader sense is that of rituals and beliefs. The role of ritual in Japanese communities in general is, of course, important since the local shrine in many respects defines both geographical and social perimeters of the local community (Yamamoto 1978; Bestor 1989a). In whaling communities, there are many rituals involving shrines. Before the STCW season starts, for example, whaling crews in Ayukawa visit Kinkazan to pray for a good catch and safety at sea, and during the whaling season itself there may well be daily visits to the local shrine by female members of the whalers' families. Other festivals involve thanksgiving ceremonies and the dramatization of whaling techniques (cf. Akimichi et al. 1988:63). Similar practices existed among pelagic and LTCW whalers in Arikawa and Ukushima.

Apart from these Shinto ceremonies, there are also Buddhist rites in local whaling communities. There are two main rites. The first involves a 'memorial service' (*kuyō*) designed to appease the soul of the dead whales and to permit them to rest in peace and not torment whalers in future as 'hungry ghosts' (*gaki*). The second is for the soul of the whalers, to forgive them and compensate them for their karmic demerit acquired by taking life. This *kuyō* is particularly important for gunners, of course, but the whole community may be involved in the memorial rites.

Special Features of STCW

Although we have argued strongly for the unity of a single whaling culture on the basis of the continuities and shared elements that may be found among the several forms of Japanese whaling discussed above. It is important to note as well that STCW has certain characteristics that set it apart as a distinctive form within the larger Japanese whaling culture today. For a start, STCW is more egalitarian and more flexible in its organization and activities than LTCW, in part because it originates historically from pilot whaling rather than from net whaling of large cetaceans, and in part as a result of its small scale.

Thus, the bridges both within and across the two sets of activities, catching and processing, mentioned earlier are particularly apparent in STCW. In the first place, the crews on board vessels and processing teams are much smaller in STCW than in LTCW or pelagic whaling. This means that they are not confined to carrying out single tasks within each set of activities, but perform a number of different tasks therein. For example, the STCW gunner can be both captain and owner of his vessel. Moreover, anyone can go up the masthead on a STCW vessel, whereas this is forbidden in pelagic whaling. On the land station, there is no specified winch operator, which means that this task may be performed by a flenser or even a sales manager, and the latter may act as unskilled labour in the final stages of cutting up the whale meat and blubber. A particularly good example of this kind of bridging across otherwise distinct sets of activities can be seen in the way in which crew members of the minke STCW vessels will help in on-board flensing of whales taken in Hokkaido waters. Again, in pelagic fleets, we find that there were separate sleeping and eating quarters for gunner and the catcher boat officers, on the one hand, and for crew members on the other. On some STCW vessels, however, officers and crew share the same quarters and on one boat they all sleep in the same cabin. Thus the rigid social hierarchy found in pelagic fleets and LTCW catcher boats does not exist in STCW.

A second distinctive feature of STCW is the close ties between those working aboard the whaling boats and those on the land stations. Since whaling vessels are continually making day trips to and from a particular land station during the whaling season, members of both processing teams and whaling vessel crews are always in contact with one another. When a whale is taken, of course, they find themselves working in proximity to one another. But when the weather is too bad for vessels to put to sea, crew and flensers may often socialize together during the day, as they may commonly do in the evenings. The social distance between the two groups brought about by their specializations – which is most obvious in pelagic whaling where members of catcher boats will not visit the mother ship for weeks on end – is less pronounced in STCW.

Such close working and social relations are naturally transformed into ties between whalers and the local community in which the land station is situated. Informants frequently spoke of the way in which local villagers, including retired whalers and women, would gather down by the waterfront when whales were brought in to carry out miscellaneous tasks in return for gifts of whale meat.

Indeed, the non-commercial distribution of whale meat among relatives and neighbours of those involved in whaling is remarkable. Not only was meat distributed widely every time a whale was taken, but on special occasions – such as the launching of a new whaling vessel, or the completion of the first catch of the season, for example – there was an extensive chain of gift giving involving whale meat and *sake*. Indeed, throughout the year, gift giving was a major activity in whaling communities like Ayukawa, and frequently involved exchanges between local residents and shrines and temples (cf. Akimichi et al. 1988:41-51).

The commercial distribution of whale meat from STCW has, until recently, been very different from that practised in LTCW and pelagic whaling. In pelagic whaling, frozen whale meat used to arrive at various major ports before being nationally distributed via the central wholesale markets. In LTCW, too, although whale meat was processed in various local land stations, it was then generally shipped to the national central wholesale markets as and when thought fit by corporate managers in major cities. The distribution of products from STCW, on the other hand, has generally passed through *local* market institutions and thence into the hands of local brokers and middlemen who distribute the products locally and regionally. In this way, not only has the STCW distribution system satisfied *local* demand reflecting *local* tastes; it has also provided, as in Ayukawa, significant financial support for local market institutions, thereby benefitting the maritime community as a whole (Bestor 1989a).¹⁷

The merging of specializations that we have discussed in STCW is underlined by certain ritual activities (of the kind alluded to earlier) which bring together those involved in separate sets of activities – owners, whalers, and distributors. In Ayukawa, for example, female relatives of STCW whalers are accompanied to a local shrine by the wife or daughter-in-law of the company owner – thereby revealing one more way in which the patterns of hierarchy are broken down in this form of whaling. Another event – of which the ritual eating of whale meat is an essential part – involves a visit to the important shrine of Kinkazan. This is organized by the main local distributor and is attended by the community at large. Such activities serve to strengthen the sense of community, thereby making STCW somewhat different from LTCW and pelagic whaling.

Conclusion

In this paper, we have outlined the historical background of pre-modern and modern whaling in Japan, before describing the three main types of whaling practised in Japan in recent decades – large type coastal, pelagic and small type coastal whaling. By comparing these types, we were able to show that there are two distinct sets of activities concerned with production which show remarkable continuity within the catching and processing spheres respectively. At the same time, the differences between these spheres are also bridged by a number of social and cultural institutions (which are particularly apparent in STCW where whaling is closely integrated with local community life). These continuities and similarities, and the several bridging mechanisms, have enabled us to argue for

the existence of an integrated whaling culture in Japan.

In conclusion, we may ask what it is that makes Japanese whaling an integrated culture. In spite of the co-existence of three forms of whaling and two distinct sub-cultures based on hunting and processing, there are a number of features at the institutional and ideological levels which serve to link both the different forms and the separate sub-cultures. In this paper, we have focussed on the social organization of whaling production and have pinpointed certain similarities and linkages – such as technology, the utilization of the whale, recruitment of whalers, their career patterns, mobility and diffusion of knowledge, as well as the overall industrial structure – which all perform this integrating function. There are, however, other elements that need to be considered.

Firstly, there is a consistent and diversified usage of whale products which has changed little over the centuries. Different parts of the whale have been used for food, oil, fertilizer and handicrafts both in pre-modern and modern times, and meat in particular is classified into a wide variety of products. Such fine categorization is accompanied by a diversified knowledge of cooking, which means that the whale itself has to be processed very carefully and in particular ways. Consequently, Japanese whalers are confronted with a number of technical and organizational problems, common to all three types of whaling, but not found in other whaling cultures. As a consequence of this persistent tradition in the use of the whale as food, we find that there is a strong sense of continuity in the organization of activities relating to the catching and processing of whales.

The organizational continuity found in whaling is not confined, of course, to whaling alone, but is a pervasive feature in other spheres of Japanese culture as well. For example, there is the customary concept of sea rights and tenure systems, which have over the centuries regulated relations both between producers and host villages and between producers and authorities. With few exceptions, whaling has since pre-modern times been strictly regulated and taxed by government bodies (e.g., feudal fiefs, prefectural governments, and the national government). Furthermore, producers have always made payments to host villages as a form of compensation for causing local people inconvenience, and we find that whaling operators have made similar payments and (in the case of SCTW) have distributed their products through the local fish market, thereby serving the important function of subsidizing other activities in the host communities.

We have also seen that those working in the whaling industry received payments in kind, as well as in cash. Because of this, we find that there are elaborate patterns of gift exchange in whaling communities (Akimichi et al. 1988), and that these concord with customary notions of give and take and the general sense of reciprocity found in Japanese society as a whole (Befu 1968). Whale meat is widely distributed as gifts among the friends and neighbours of whalers and thus becomes a strong stabilizing force between whalers and non-whalers in whaling communities, and also gives each community a distinct identity vis-a-vis other communities in the area.

Reciprocity is also apparent in certain rituals which, as we have seen, help to integrate the whaling community as a whole. By revealing their indebtedness to

the host villages in such ritual activities, the whaling operators themselves become integrated more totally in community affairs. Although this tendency is strongest in STCW, it was also found in other types of whaling in the past.

The characteristics that we have here outlined – the consistent and diversified usage of whale products, the systems of compensation associated with tenure systems and location of land stations, reciprocity and distribution of whale meat, and rituals – are found to some extent in all forms of whaling described in this paper, and hence act as linking mechanisms between pelagic whaling, LTCW and STCW. In this respect, they supplement and reinforce the similarities and linkages on which we focussed earlier in our discussion of the organization of production. It is the existence of all these similarities and linkages between whaling forms and across whaling sub-cultures which have enabled us to argue for the existence of an integrated whaling culture in Japan.

Acknowledgments

The authors would like to acknowledge the financial support for fieldwork and writing up of this article provided by the *Zaidan Hojin Nihon Geirui Kenkyūjo* and by the School of Oriental and African Studies, University of London. In the course of research for this paper, the authors have (singly or together) interviewed informants and collected archival materials, statistics, and other data in the following places: Abashiri, Monbetsu, Kushiro and Sapporo (Hokkaido); Ayukawa, Ajishima, Onagawa, Ishinomaki and Sendai (Miyagi Prefecture); Tokyo; Wada, Chikura and Kyonan (Chiba Prefecture); Taiji and Nachi-Katsu-ura (Wakayama Prefecture); Shimonoeki (Yamaguchi Prefecture); Arikawa (including Enohama) and Ukushima (Nagasaki Prefecture).

Notes

1. The partial definition of culture presented here owes much to the work done by anthropologists interested in the relation between society, culture and environment (e.g. Barth (1956) on the concept of 'ecological niche'), and variously referred to as 'cultural ecology' (Steward 1968), 'ethnoecology' (Frake 1962), 'cultural materialism' (Harris 1968) (or 'vulgar materialism' (Friedman 1974)), 'anthropological ecology' (Anderson 1973), 'ecological anthropology' (Rappaport 1971, Orlove 1980), and so on. We have based our approach, however, on the interrelationship between production and variables affecting consumption – such as the market demand for whale products, on the one hand, and government and international regulations, on the other.

2. According to Kumano Taiji-ura Hogeishi Hensan I'inkai (1969: 465-72), there were in 1832 seventy named edible parts of the whale, including meat, blubber, organs and bones. Food preferences are closely connected with the history of whaling in particular communities. In Taiji, for example, people prefer pilot whale; in Wada-ura they have a particular liking for Baird's beaked whale; in Ayukawa and Abashiri, minke is the favourite type; in the Tōhoku region, sperm whale was preferred and in the northern part of Kyushu, fin whale is widely eaten.

3. During the feudal period (1189-1868) a system of sea tenure developed which in general gave fishing communities the exclusive right to exploit the resources within their allocated fishing territories. Any infringement of these rights – such as occurred with the establishment of a coastal whaling industry – required payments of compensation to the village affected. This system of sea tenure has survived until the present day and has been encoded in the Fishery Law of 1949. For an extensive discussion of the emergence of the Japanese sea tenure system, see Ruddle (1987) and the volume edited by Ruddle and Akimichi (1984).

4. 8.165 working days were spent during this stage by one net group consisting of 61 identified artisans plus an unspecified number of firewood cutters and female rope makers at Tsushima in 1802 (see Takeno (1979) or Kalland (1986:34) for details).

5. Usually there were three nets set outside each other, but some smaller groups had only two nets.

6. In the case of baleen whales, the *onomi* tail meat was removed first since it is considered a great delicacy in Japan (see below for further discussion of flensing techniques for different types of whale).

7. When the scale of pelagic whaling contracted, the number of catcher boats was reduced and both search and collecting vessels were eliminated. This meant that the hunting operations in pelagic whaling became very similar to that of LTCW.

8. This innovation in fact resembles in some important respects the way in which whales were driven towards nets in pre-modern whaling by special fast boats (*seko-bune*).

9. STCW vessels do make use of a transmitting device which frightens minke whales, making them surface and swim fast. This device does not, however, have a receiver of the kind employed in LTCW and pelagic whaling catcher boats.

10. The blubber of Baird's beaked whale used to be used for oil extraction in STCW, but this was stopped in the early 1980s for market and environmental reasons.

11. The technique of chasing whales in this manner is not unknown today. In STCW, for example, fast powered boats are used to bring the whale towards the whaling vessel, while in certain communities in the south west of Japan groups of small fishing boats are occasionally used to herd dolphins and pilot whales into bays, where they are trapped by nets placed at the entrance of the bay.

12. It should be noted that over time the new processing technique of freezing (introduced in the late 1940s) allowed a shift in preparation of whale meat from salting to freezing. Moreover, changes in market demand have brought about a shift in the use of blubber which is now mainly eaten rather than made into oil. These changes apply, however, to all three types of modern whaling.

13. In pre-modern net whaling, for example, it is known that the Misaki net group (in Hirado) employed crews for 33 boats from 22 villages, while the crews of the 44 boats in the Katsumoto group (Iki) were recruited from 22 villages, all in the northern Kyushu area (Kalland 1986:37-39).

14. In the two examples cited in Note 13, only one boat from the host village for the whaling group participated in the former group, and none in the latter. Most of the net groups in Kyushu employed net makers from several villages in the Inland Sea area, and these workers also crewed on the net boats. Similarly, only six out of 44 men employed as crew on Nihon Hoge's LTCW catcher boats operating from Ayukawa, came from that township in 1987.

15. It is known that, throughout the history of whaling, this casual employment was welcomed by local farmers during the slack winter season, and even in pelagic whaling most of those working on mother ships were recruited from farming households.

16. These employees' associations both separate people at the lower level, while uniting them at higher one. In most large whaling companies, the Old Boys Associations are organized according to whether former employees worked on catcher boats, as crew on mother ships and other support vessels, or as processing workers (Taiyō Gyogyō 1984). Each regional branch of the association is organized hierarchically on a national grid, however, and this allows members from different specializations – both at the national and local levels – to gather together on certain occasions. In Taiji, however, a universal *OB kai* was formed in 1982 as a reaction to the IWC's moratorium decision which was seen as an attack on the whaler's culture and identity. This *OB kai* includes the membership from all companies of all types of whaling.

17. In recent years, the reduced quota on the number of whales to be taken, together with restrictions on international trading in whale products, have created a scarcity of supply which has itself brought on a sharp increase in prices. This has led to products from STCW being distributed through regional wholesale markets and thence possibly to the national central wholesale markets, thereby bringing the system as a whole more in line with the LTCW distribution system. However, in STCW, the commercial distribution flow is still initiated locally

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Do Randomizing Devices Aid Marine Hunters? Shark Fishermen in Pacific Mexico

James R. McGoodwin
University of Colorado

ABSTRACT Do randomizing devices aid hunters in locating their prey? Several studies suggest they do, although different types of devices are efficacious for locating different types of prey in different circumstances. This article discusses how shark fishermen in Pacific Mexico employ a randomizing device in order to help them locate schools of sharks passing through their fishery. The similarities and differences between the use of this device and the utilization of other types of randomizing devices by other hunters are compared.

Hunting and fishing are often perceived as games of strategy by hunters and fishers themselves, yet the complex strategies that hunters and fishers employ is a neglected topic in most contemporary anthropological studies of such peoples. While early studies of hunting and fishing peoples did often describe actual food-getting strategies in great detail, no doubt as a complement to their parallel interest in material culture, by comparison today's studies almost seem to take it for granted that their subjects will be successful, thus relegating *how* they succeed to matters of secondary or trivial concern.

Randomizing Devices as Aids to Hunting

In an interesting study published over three decades ago, Moore (1957) proposed that certain hunters might actually increase their chance of success by performing divinatory rituals which they believed would help them to locate their prey. This was an astonishing idea, since, as Moore stated, "Magic is, by definition and reputation, a notoriously ineffective method for attaining the specific ends its practitioners hope to achieve through its use" (Ibid.:69).

Moore's observations derived from his study of an ethnographic account by Speck (1935) which described rituals involving scapulimancy performed by the Naskapi Indians living in the forests and barren ground of the interior plateau of the Labradorian Peninsula. In order to locate their prey, migratory herds of caribou, the Naskapi performed rituals in which a shaman held a carefully cleaned caribou scapula over hot coals for a short time, then withdrew it and 'read' the cracks and charred marks on the bone for clues as to where the hunters should direct their efforts next. Moreover, because the cracks and charred marks appeared on the bone more or less at random, without any attempt on the part of the shaman to influence where they would appear, the hunters were sent out to look for the caribou herds in essentially random directions.

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From Speck's account Moore noted that "... when the Naskapi do have information about the location of game, they tend to act upon it," whereas "... it is when they are uncertain and food supplies get low that they turn to their oracle for guidance" (1957:71). Of course, this behavioral pattern could have easily been interpreted as a means of helping the hunters cope with the mounting anxieties they must feel when the hunt is not going well. Moore, however, concluded differently by proposing that the divinatory rituals actually gave the hunters a slight edge they would not otherwise enjoy in the absence of performing them. He reasoned that by letting the marks which appeared on the charred bone determine the hunters' strategy it became more difficult for the prey to learn how to anticipate, and thus evade, the hunters' closure with them.

By extending an idea put forth by Tylor ([1871]:80) while also drawing upon the work of Von Neumann and Morgenstern (1947), Moore drew parallels between divinatory rituals such as those performed by the Naskapi and the efficacious utilization of randomizing devices in games of strategy. Thus he wrote:

... some classes of interactional problems can be solved optimally by means of a 'mixed' or 'statistical' strategy. In order to employ a statistical strategy it is necessary to have, adapt, or invent a suitable chance mechanism ... human beings require a functional equivalent to a table of random numbers if they are to avoid unwitting regularities in their behavior which can be utilized by adversaries (Moore 1957:73).

Note also that Moore's assertions about the advantage the Naskapi realized by performing their divinatory rituals assumed that the behavior of the hunters and that of their prey was interactionally articulated, a matter to which I will return shortly.

Moore is not the only writer who has likened hunting activities to games of strategy. Pálsson (1989:10), for instance, cites a passage from Izaak Walton's *The Complete Angler* (1653) which states that fishing was "... a game for princes and noble persons," then elsewhere states that among early Western explorers "Fishing was a game, a test of sportsmanship."

Indeed, the formal elements of games of strategy are implicit in many contemporary studies of marine fishers, particularly those which are concerned with 'information management.' Thus, it has been widely observed that competing boat skippers in their communications with one another are involved in a minimaxing game of sorts in which they strive to minimize their losses of information concerning where fish are located while striving to maximize their informational gains about the same.¹ Similarly, although in a much broader sense, Gatewood's (1983) description of the complex mosaic of social, interpersonal, environmental, and economic constraints which influence the decisions of skippers of Alaskan purse seiners concerning where to fish suggests a complicated socioeconomic game which might be called 'skipper's dilemma.'

Particularly germane to the discussion here is William Davenport's (1960) article, "Jamaican Fishing: A Game Theory Analysis," in which various fishing strategies available to Jamaican fishermen were analyzed according to formal game-theoretic principles. Certain Jamaican fishermen, he noted, had to decide

how many of their fish pots they should deploy on different fishing grounds which were associated with different probabilities of profit and loss. Thus, by formalizing the fishermen's decision problem into a game-theoretic framework, Davenport 'solved' their problem, concluding that their yields would be optimized if they randomly deployed their fish pots in certain definite overall proportions on the various fishing grounds. Moreover, he concluded, since the fishermen's actual behavior conformed quite closely with the optimum grand strategy suggested by the formal, mathematical game, it seemed reasonable to assume that they had worked out the optimum solution to their problem after years of experience, trial, and error. Note also here that quite unlike Moore's conclusions concerning the efficacy of the Naskapi divinatory rituals, Davenport's analysis made no assumption that the Jamaican fishermen's game was interactional in the sense that the fish could anticipate the fishermen's moves. Thus, the Jamaican's random-search pattern was efficacious for other reasons.

Hunting at Sea

That there are strong similarities between offshore fishing and terrestrial hunting has been commented upon by several students of fishing societies: Pálsson (1989:7), for instance, summarized various arguments which assert that fishing is "... best considered as a kind of hunting activity," while Leap (1977:252-57) examined fishing-related terminologies in 33 languages and concluded that their native speakers regard fishing as different from hunting only "... with respect to the commodity which serves as the focus of the subsistence effort" (cited in Pálsson 1989:7). Similarly, several studies of modern fishing have explicitly likened the character of offshore marine fishing to that of hunting: Orbach (1977), for instance, in his wellknown book about the tuna seinermen from San Diego entitled *Hunters, Seamen, and Entrepreneurs*.

Some of the more obvious similarities between terrestrial hunting and offshore marine fishing include the capture of wild prey, having little control over the prey's movements and activities, having a keen understanding of the natural environment in which the prey lives, predominantly male working groups, an heroic association with hunting or fishing activities in local societies, high degrees of geographic mobility, having physical strength and stamina, personality attributes emphasizing boldness of individual action combined with an ability to work cooperatively with other members of one's group, and so forth.

On the other hand, there are many important differences. Fishers and their prey live in utterly different environments, for instance, and are not as interactionally articulated; the marine environment is less differentiated, ever moving, and perceived as essentially flat from the fisher's point of view; marine prey are more hidden because they dwell beneath the ocean surface, leaving behind no tracks and seldom providing other clues concerning their whereabouts; ocean fishing is considerably more dangerous than most terrestrial hunting; and marine fishers have greater difficulty asserting rights of ownership or access to their prey because most living marine organisms are common property resources.²

Shark Hunters of Pacific Mexico

In this article I describe how commercial shark fishermen from a small town in Pacific Mexico hunt for their prey. Like the Naskapi caribou hunters these fishermen also employ a randomizing device in order to help them locate their prey. However, the device itself, the rationale underlying its use, and how it benefits these hunters of the sea is quite different from what Moore claimed for the randomizing device used by the Naskapi caribou hunters.

Teacapán, a small rural town with about 5,000 inhabitants, is home to the shark fishermen I studied. The town is situated along the Pacific coast about 80 kilometers south of Mazatlán, a large urban port and resort center (see Figure 1). I first went to live there in 1971, spending over a year in the community, and subsequently I have revisited it many times for briefer stays. I am also a foster parent to a boy from this community who lived with me in my home in the United States for several years, and I still maintain ongoing communications with several local people. Moreover, in the course of my various field studies in and around Teacapán I have accumulated approximately 5 months time accompanying the town's shark fishermen in their fishing activities.

Culturally the Teacapaneños reflect the traditions of modern rural-mestizo Mexico, while economically they would be classified as impoverished in terms of their overall standard of living. A traditional 'folk' people only two decades ago, they have by now been greatly acculturated to modern values through their exposure to radio, television, and visiting tourists (see McGoodwin 1986). Thus, while many remnants of their former folk culture remain - the survival of magico-religious beliefs regarding the causes of ill health, for example, as well as resorting to local *curanderos* (curers, or healers) in the event of illness - their local culture is now based mainly upon modern value orientations. This juxtaposition of their modern values with the fact of their poverty also makes many of them feel restless and unsatisfied with their position in the world, and truly the community is a difficult place in which to live, manifesting practically all the maladies which are associated with poverty in the developing nations. Even the town's most affluent inhabitants still have a standard of living which is considerably below the average standard in most of the developed nations.

Teacapán's Local Shark Fishing Industry

Shark fishing is a prominent activity in Teacapán which contributes to the welfare of nearly half of the town's total populace. The 19 men who own the town's shark-fishing boats are all heads of affluent local families, while some 80 regular crewmen and an equal number of ancillary workers derive incomes from the activity which far exceed those obtainable in most other jobs around the town.

While the local community has long been the site of maritime societies, it was only recently - with the outbreak of World War II - that the Teacapaneños began to fish offshore. Prior to that their fishing activities were confined to the surrounding inshore estuaries and lagoons where they harvested shrimps, oysters,

and large table fish.³ However, when global-scale war broke out in the early 1940s the Allied Powers began to offer high prices for shark-liver oil, which is rich in vitamins, minerals, and other nutrients useful in the treatment of convalescent soldiers. Thus, several Teacapaneños took up offshore shark fishing and acquired its basic skills, technology, and capital.

The local industry dwindled after the war ended, then nearly disappeared as synthetic vitamins were developed which duplicated the valuable ones in shark-liver oil. However, over the past three decades it has made a nearly complete recovery – this time based upon the marketing of diverse products obtained from the sharks: fins, for example, which are exported to the Orient and are the most valuable product by weight, as well as domestically consumed products such as hides, salted meat, liver oil, and meal made from the scrap.

Because the local shark fishing industry provides its participants with healthy incomes and is also associated with danger and individual daring, it has an heroic mystique in Teacapán. The shark-boat crewmen are locally esteemed as the town's *hombres del mar* (men of the sea), a unique local identity which they alone can claim. Moreover, local children often doodle pictures of the shark boats in their school notebooks and nearly all townspeople have at one time or another enjoyed a ride in a shark boat around Teacapán's harbor, particularly during the annual *Fiesta Marino* (Maritime Fiesta), which takes place in June at the close of the fishing season.



Photo 1. The shark boat owners gaily decorate their boats and give the townspeople free rides around Teacapán's harbor during the annual *Fiesta Marino* which takes place in June at the end of the fishing season. (Photo by the author.)



Photo 2. Wooden-hulled launches such as these resting at anchor in Teacapán's harbor are the preferred fishing crafts among Teacapán's shark fishermen. (Photo by the author.)

Over the past several years around 30 fishing boats have been involved in the local shark-fishing industry. Most of these are sturdy, wooden-hulled, diesel powered launches, although there are also a few simpler crafts such as motorized dugout canoes, fiberglass shell boats with outboard motors, and steel-hulled craft fitted with diesel engines. Local fishermen jokingly refer to the steel-hulled craft as "floating funerals" because they lack flotation and will sink very rapidly if they broach or otherwise take a large wave abeam.

The larger, wooden-hulled launches are the preferred crafts for offshore shark fishing and comprise most of the shark-fishing vessels used by the Teacapaneños. Typically, these are around 30 feet long by 10 feet through the beam and are equipped with a powerful diesel engine which drives a single screw. They represent a considerable investment within the context of Teacapán's depressed economy and low income levels (costing around 75,000 pesos, or \$6,000 U.S. in 1973).

Other than simple compasses, none of the shark-fishing boats are equipped with any other navigational gear, not even fishing charts, nor do any of them carry any electronic equipment such as radio transceivers or fish-locating devices. A few vessels are equipped with rubber inner tubes which the crewmen can utilize in the event that their vessel sinks, but otherwise none of the crafts are equipped with any other lifesaving gear such as life jackets or inflatable lifeboats – a sobering thought considering they sometimes voyage as far as 80 miles from the mainland shore in this very productive shark fishery.

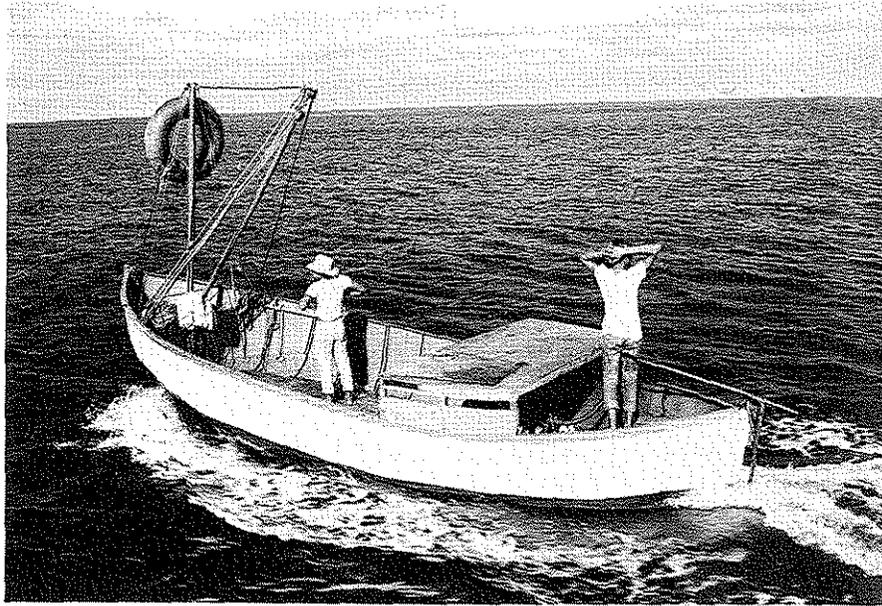


Photo 3. Two brothers in a steel-hulled craft going out in the morning to deploy their longline. The Teacapaneños refer to these vessels as "floating funerals" because they lack flotation and will sink very quickly if they broach or otherwise take a large wave abeam. The rubber inner tube atop the mast is the only lifesaving equipment on board. (Photo by the author.)

Shark-fishing activities mainly take place around *Isla Maria Isabelita*, a small island approximately 20 miles off the mainland coast and 50 miles by sea south of Teacapán (see Figure 1). A primitive work camp on this island is the fishermen's home throughout most of the long shark-fishing season (December through early June). A few women also come to the island during the season to cook for the men, for which they are paid wages.

Nearly all the shark fishermen state that they greatly enjoy shark fishing and would not consider doing any other type of work which is available in and around Teacapán. Shark fishing pays well, they stress, while life around their island camp is superior in many ways to life in the town – more peaceful, more comfortable, better food, and so forth.

Fishermen state that the length of a voyage is "as long as the salt," meaning that once the bags of salt they carry to the island to preserve the catch are all used up they will return to Teacapán to sell their catch. However, once home they are rarely in town for long because the boat owners are interested in maximizing their boat's production during the fishing season. Thus, the fishermen spend very little time in Teacapán during the nearly seven-month long shark-fishing season. Indeed, the resulting long separations from one's families, lovers, and friends are the most deplored aspect of the profession among shark fishermen themselves, and undoubtedly this in conjunction with the occupation's

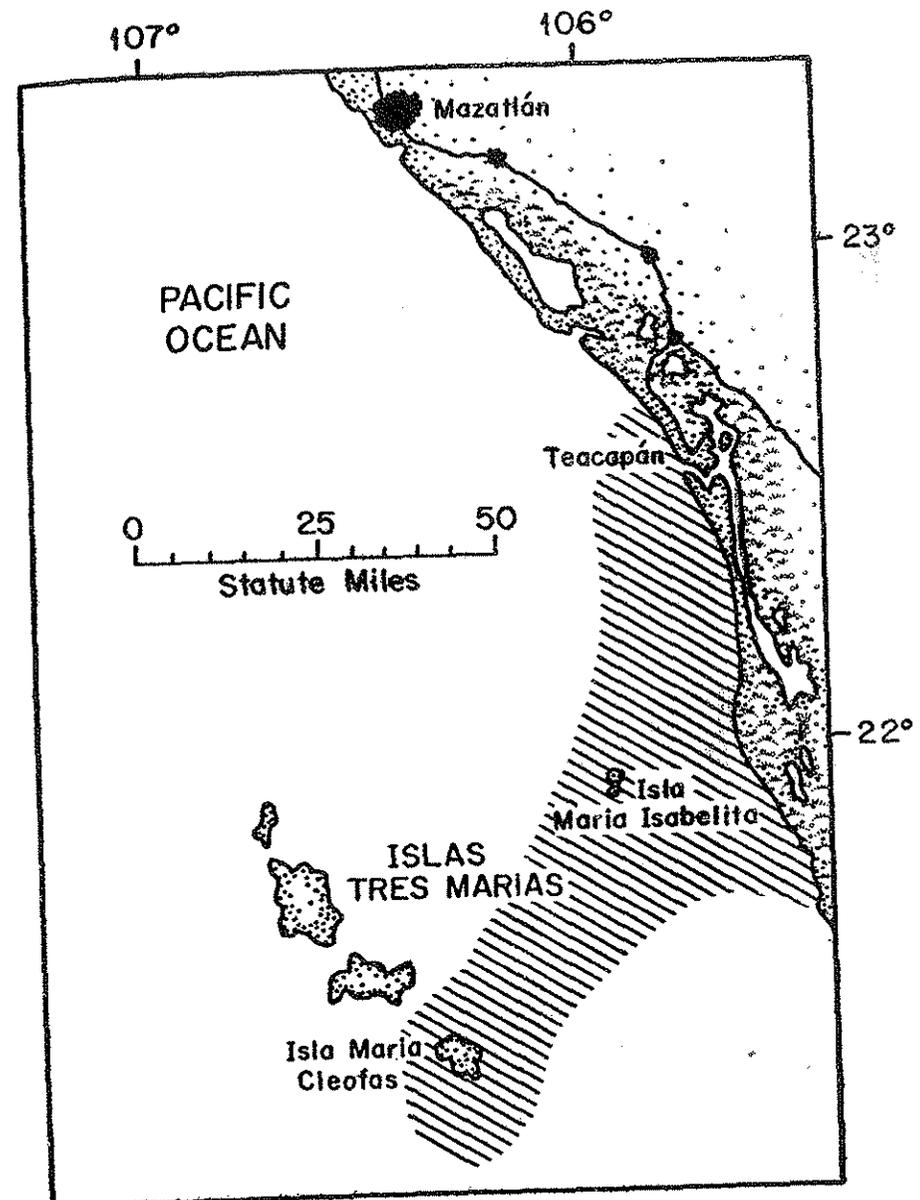


Figure 1. The Customary Range of Teacapán's Shark Fishermen. Shark fishing occurs in the shaded area.

hard work and great hazards helps to explain the high incomes the fishermen earn.

Most shark boats require three crewmen and crew organization is explicitly

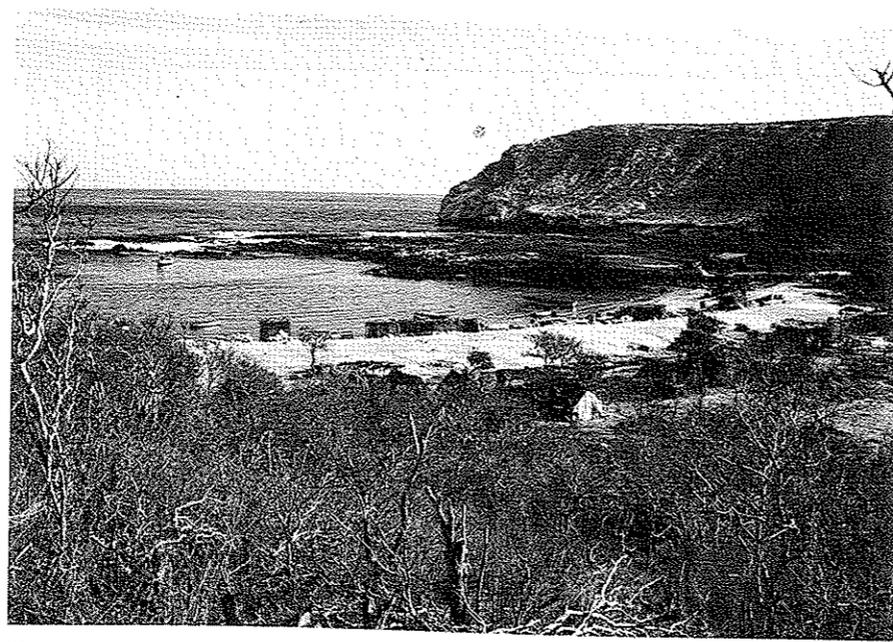


Photo 4. The Teacapaneño's shark fishing camp is situated along a cove on the Isla Isabelita's leeward shore. Salting tables and curing sheds stand at the water's edge, shark meat and fins dry in the sun along the beach, while the men's cooking shacks and sleeping tents are located still further back from the shore. (Photo by the author.)

hierarchical, consisting of a *jefe* (boss, captain or skipper), a *marinero* (sailor, seaman, or mariner), and a *pavo* (an apprentice). The *jefe* and *marinero* spend more time on the water than does the *pavo*, who instead spends most of his time engaged in processing work at the island camp. Moreover, one of the crewmen, usually the *pavo*, is always present in the island camp to safeguard the boat's gear, the crew's sleeping shack, and the processed catch.

Experienced shark-boat crewmen constitute skilled labor and command good compensation, which is paid upon the basis of shares from the proceeds of the catch which are agreed to prior to making a trip to the island. Thus, it is a fortunate boat owner who has several sons or other working-age males who share his household, since by asserting his dominant position as patriarch of his family he can usually secure their labor at a fraction of the cost he would incur by hiring able crewmen from outside his household (see McGoodwin 1976).

When a boat returns to Teacapán its catch is unloaded, weighed, and sold to a buyer who pays the boat owner for the catch. Next the boat owner reimburses himself for his fuel and gear expenses from out of these gross proceeds. The remaining proceeds are then divided according to whatever predetermined shares were designated for the boat owner, *jefe* and *marinero*. The *pavo* usually does not share in these proceeds, but instead is permitted to sell whatever shark-liver

oil he was able to render while at the island camp – a job experienced crewmen consider too distasteful, tedious, and malodorous to be worth the effort. Nevertheless, because the *pavo*'s share constitutes a part of the overall shark catch the other crew members often refer to the *pavos* as “spongers” or “parasites.”

The main method utilized for catching sharks is to deploy longlines in deep water several miles away from the island camp. These lines are placed along the sea floor where the fishermen feel their prey is most likely to be caught. With only minor changes the longlines could just as easily be made up so that their baited hooks ran along near the surface. However, a few fishermen tried this in the past and always got very poor results.

A typical longline consists of approximately 200 meters of oil impregnated line with approximately 100 chain leaders running off it at regular intervals. Large hooks baited with chunks of pelagic fish are attached at the end of each leader. Anchors are also fastened at each end of the line in order to hold it securely along the sea floor, yet these are light enough that a shark can easily tow them across the sea floor sands, which prevents the line from being broken by even the largest sharks. Attached near each end of the longline are also two other lines which run up to the surface. One of these is tied to a large glass float while



Photo 5. One of the Teacapán's shark boat owners holds a drum of fresh drinking water which has just been brought aboard prior to departing on a voyage to the island camp. Immediately to his right are his three sons who work with him, while to their right two other boat crewmen watch a mechanic who is working on the boat's engine. (Photo by the author.)



Photo 6. A shark fishing boat which has just returned to Teacapán with its catch. The boat owner (standing in the stern) looks on as the crew shows him the catch in the hold. A fish buyer from Mazatlán (wearing a hat at the extreme right) will buy the catch once it is unloaded and weighed. (Photo by the author.)

the other is attached to a block of polystyrene foam with a cane pole inserted through it. A small flag is also affixed to the top of the cane pole to facilitate spotting the longline's location from long distances away. Moreover, except for the polystyrene block with its cane pole and flag, the Teacapaneños obtain most of the remaining gear that makes up the longline by taking Japanese longlines they sometimes find in the waters which have also been set out to catch sharks.⁴

The work routine around the island is rather monotonous. Every day the crewmen arise before dawn, voyage out to the lines, haul in the sharks, and rebait and reset the lines, sometimes also relocating them. Then they return to the island with their catches, bring these ashore, butcher them, and salt the various products. The salted products are then put in curing sheds for a short while before they are placed in the sun to dry.

Hauling and re-setting the line requires precise teamwork, while undoubtedly hauling in the sharks is the most dangerous activity associated with this type of fishing. As the sharks are brought aboard the deck becomes slippery with blood and slime, while at the same time a number of unhooked sharks are often seen swimming in tight circles around the boat, attracted by the blood in the water as well as that running off the boat. Sometimes these free-swimming sharks become so frenzied that they bite into the boat's wooden hull or its metal rudder or screw, and particularly when they bite into the metal parts one can

sometimes hear their teeth breaking - a very disquieting sound. Certainly this is no time for a crewman to fall overboard!

Working as a team the crewmen methodically haul in the line, remove the sharks from it, and coil the line and stack the hooks and chain leaders out of the way. Most often the sharks are already dead by the time they are brought aboard, having exhausted themselves and drowned following their struggle on the line. Sometimes, however, as the fishermen haul in the line, there may be a large shark caught on it which is only groggy and still very much alive. Should such a shark abruptly kick its tail and run a crewman on deck may be caught by surprise as coils of line, chain leaders, and hooks suddenly fly through the air. The flying hooks may snag one of the crew members, dragging him overboard and pulling him down into the clear blue water. When this happens he must quickly rip the barbed hook out of his body so he can get back to the surface before he drowns.

Many of the Teacapán's shark fishermen have ugly scars on their bodies resulting from getting snagged by flying hooks and being dragged overboard. A few fishermen have even drowned when they were unable to extricate the hook from their bodies as their comrades on deck struggled to pull them back to the surface, unable to haul in the line against the resistance of a large shark which was too strong for them. Nevertheless, when asked how they feel about the

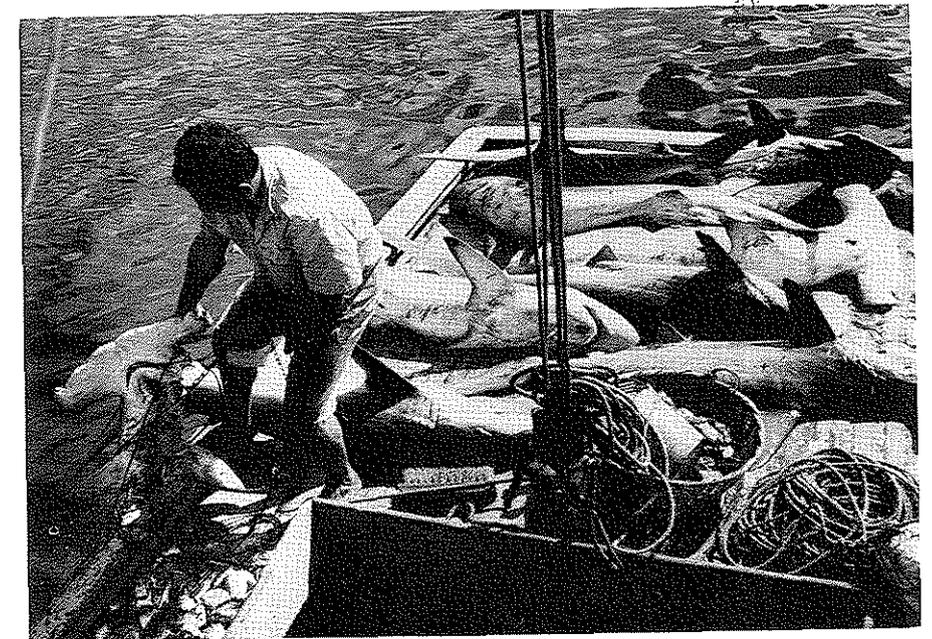


Photo 7. Fisherman hauling aboard a shark while carefully feeling the line to see if there are any live sharks on it in the water below. This is the most dangerous phase of the Teacapaneño's shark fishing activities. (Photo by the author.)

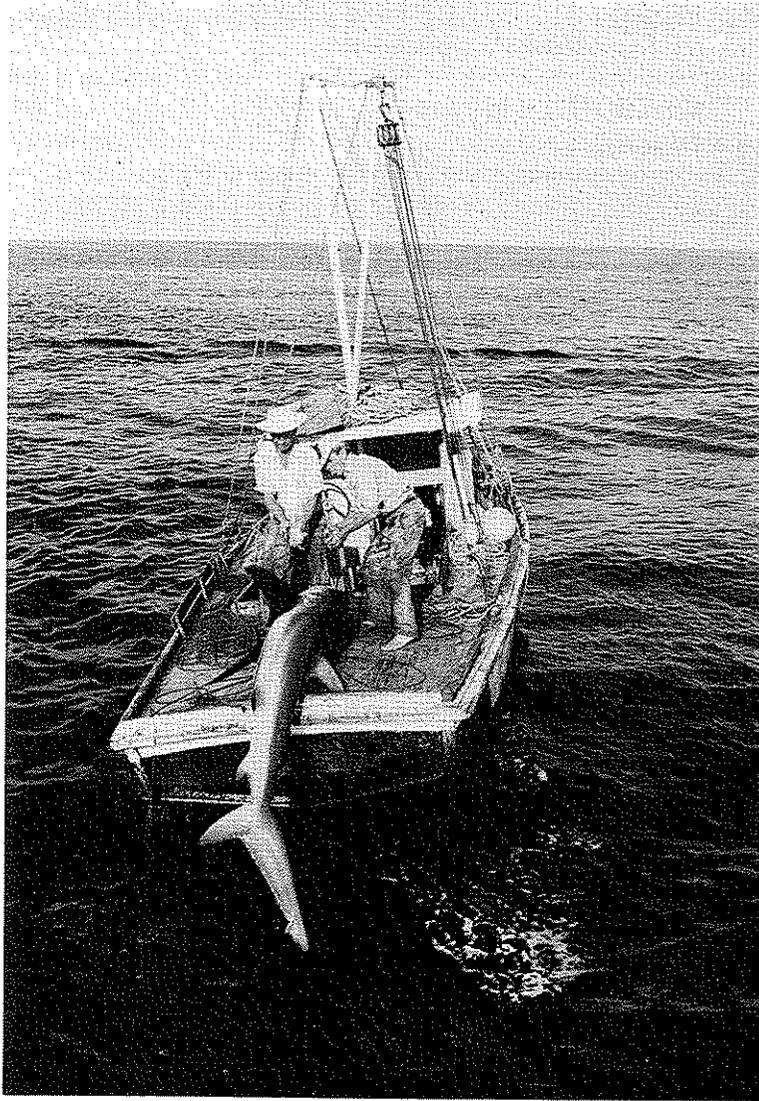


Photo 8. Two fishermen with a large shark they have just hauled in over the stern. On a particularly good day these boats may catch as many as 50 such sharks, in which event they may return to the island camp with their decks nearly awash. (Photo by the author.)

dangers associated with their work most crewmen merely shrug it off. "Me, afraid of sharks?" a fisherman once said to me. "No way. We're eating *them*, not vice versa."

During a few weeks in the Spring some of the boats utilize a different method for catching sharks: gillnetting. The method is quite productive, although only



Photo 9. Fishermen re-deploying their longline after hauling in sharks, one paying out the line while the other baits the hooks with chunks of fish. Note the glass float in the water which is of Japanese origin and was taken by these fishermen when they found a Japanese longline in their fishing grounds. (Photo by the author.)

a few boats are equipped with gillnets because of their great expense and the relatively short season during which they can be used. Moreover, while gillnetting is not as dangerous for the crewmen as longlining, it is still very risky for the boat because the gillnets are deployed in shallow water – in the surf zone near the mainland shore.

For a few weeks each Spring schools of spawning sardines concentrate in the surf zone near the mainland shore, bringing with them great numbers of feeding fish and sharks. During this spawn sharks of all sizes swim up and down the coastline – in the shallow troughs paralleling the beach – often in water no more than a meter deep, their mouths agape, scooping up the sardines as well as other fish which have also come to feed on them.

Little decision making is involved concerning where to deploy the gillnets. Once spawning sardines are observed in the waters around Teacapán those boats having gillnets merely return to certain customary sites along the mainland coast near San Blas, a small port town which is situated nearly 80 miles down the mainland coast south of Teacapán. These sites have always yielded dependable catches during the Spring sardine spawn.

As I discussed in a previous article about these fishermen (McGoodwin 1979), the risks and uncertainties associated with this type of fishing engender many cooperative activities among these men who are otherwise economic competitors. However, one of the most interesting is the cooperative strategy they utilize to locate sharks when their daily catches begin to dwindle.



Photo 10. Butchering sharks at the water's edge of the island fishing camp. Note the salting tables and curing sheds in the rear ground. Left of center a fisherman has just withdrawn an unborn shark from its mother's uterus, which is practically the only shark product that the Teacapaneños themselves consume. (Photo by the author.)



Photo 11. Shark fishermen repairing gillnets which will be set at customary sites along the mainland coast. (Photo by the author.)

The Teacapaneño's Random-Search Strategy

Unlike most terrestrial prey animals, sharks seldom manifest clues concerning their whereabouts which are visible from above the sea surface. While television and motion pictures have fostered an impression among the general public that sharks customarily cruise just below the water's surface with their dorsal fins jutting into the air, sharks actually spend most of their time well beneath the surface. Thus, sharks remain mostly invisible to fishermen seeking them, providing few clues as to their whereabouts.

Moreover, while sharks are ubiquitous in nearly all the oceans and seas around the planet and exist in good numbers off the Pacific Mexican coast, for the Teacapaneños to be economically successful they must locate dense aggregations of sharks which will make possible obtaining consistently large catches on an almost daily basis.

Fortunately, aggregations of sharks are commonplace along this coastline during most of the Teacapaneño's long fishing season as various migratory species, particularly the hammerheads, pass through these waters in dense schools. Thus, for Teacapán's shark fishermen the main problem concerns how to find these migratory schools as they pass through their fishery.

Unlike the interactional relationship which Moore assumed existed between

the Naskapi caribou hunters and their prey, there is little reason to believe that the sharks the Teacapaneños hunt would eventually learn to anticipate the fishermen's moves, not even if the same strategy were redundantly employed. In essence these fishermen and their prey are not interactionally articulated until the moment a shark becomes caught on a longline. Thus, when the Teacapaneños employ a randomizing device in order to help them decide where to deploy their longlines it is not because they hope to decrease the sharks' abilities to anticipate their strategy and evade capture.

Seeking good places to deploy their longlines along the sea floor sometimes takes these fishermen far from their island camp and into the vicinity of the *Islas Tres Marias*, particularly southward of *Isla Maria Cleofas*, near the northern rim of the deep Middle American Trench (see Figure 1). From the fishermen's perspective this is a large ocean expanse indeed and one over which the schools of migratory sharks are not evenly distributed. Thus, deciding where to deploy the longlines can be problematic indeed.

When catches around the camp on *Isabelita* are running high there is little discussion concerning where the lines might best be deployed. During such times the boats merely return each day to whatever fishing locations are currently producing well for them, which are often places they have relied upon in past seasons. On the other hand, when catches begin to dwindle the fishermen increasingly consult one another concerning where aggregations of sharks might be found. Mostly these discussions take place in the evening after the work day has ended, as a group of fishermen sit around a campfire and informally exchange information concerning where sharks were caught that day, how many were caught, and in which directions they seem to have been moving. By sharing such information the various boat crews reduce their chances of losing contact with the schools of sharks.

However, when severe lulls in fishing activity occur and practically none of the boats are making good catches these fishermen will jointly formulate a strategy which relies upon a randomizing device in order to help them locate schools of migratory sharks. Thus, they agree to deploy their longlines the next morning by proceeding away from the island in essentially random directions along certain specified compass headings for specified amounts of time. In essence, implementation of this joint strategy causes the fishing boats to proceed away from the island in a 'sunburst' pattern.

Having deployed their lines in this manner and then once they have returned to the island with their catches, the various boat crews compare their results and a new joint strategy is formulated. If no aggregations of sharks were found then they will repeat the sunburst pattern the next morning. However, if any of the boats brought in good catches then the next day all the boats will focus their effort in those areas where the most sharks were caught, deploying this time in what might be called a 'concentration' pattern - while being careful, of course, to give each other adequate room to properly set their lines.

Not all the boat crews participate in this joint strategizing activity, however. A few ruggedly independent *jefes* do not play the game, remaining partial to

certain locations or preferring to play their own hunches. Nevertheless, within a short time - usually no more than one or two days - the implementation of this coordinated hunting strategy nearly always results in the cooperating fishermen's locating large schools of sharks.

Once these large schools have been located the boat crews will continue to concentrate their efforts upon them as long as they remain within their reach and their catches continue to run high. However, should catches begin to dwindle and contact with the schools is eventually lost, then the men will again jointly formulate and implement a random (sunburst) search pattern.

Summary and Conclusions

Do randomizing devices aid marine hunters in their search for mostly hidden and elusive prey? At least in the case of Teacapán's shark fishermen, as well as the Jamaican fishermen studied by Davenport, the answer seems to be yes. Just why such devices are efficacious seems mainly to derive from the unique character of the marine hunting 'problem' itself, which entails having to locate prey which is essentially hidden and provides few clues as to its whereabouts, as well as having to find prey at specific locations in an environment which - at least from the hunter's perspective - appears undifferentiated, unbounded, and vast.

By deploying their lines in a sunburst pattern when their catches are down Teacapán's shark fishermen utilize a randomizing device in order to help them find aggregations of sharks.⁵ In essence, this joint strategy helps them to maximize their catches while minimizing the risks and uncertainties surrounding not catching sharks - the primary goal to which they are committed. Moreover, their ongoing revision of this strategy once it is implemented is analogous to iterative processes associated with certain games of strategy which insure that the players realize their optimum solution through successive approximation.

Like practically all hunters of wild prey, Teacapán's shark fishermen initially search for their prey at sites that have been productive in the past; then, should that initial strategy prove unsuccessful, they extensify their efforts until the prey is located.

Although the Teacapaneño's strategy for finding aggregations of sharks might be appraised as rather straight forward and commonsensical from a modern point of view, it is still nevertheless quite effective. Moreover, their resort to a random-search pattern when their catches are down is not part of a divinatory process such as that employed by the Naskapi caribou hunters, nor does it stem from their consulting any of their community's magico-religious practitioners - several of whom are shark fishermen. Rather, their method of hunting for sharks reflects purely modern, logico-deductive Cartesian thinking in both its concept and execution, revealing that however poor and rural the Teacapaneños may be they nevertheless live in the modern world.

Along this coast where nearly all commercial fishing is government owned and controlled, Teacapán's shark fishing industry endures as a rare instance of locally-developed free enterprise. Now, however, noting the success of these

fishermen, the national government is considering integrating this local industry within its system of fishing organizations. Should this happen Teacapán's shark-fishing industry will lose its unique local character as its fishermen become part of a government controlled industry which will be organized along the entire Pacific coastline. If that happens these free roaming hunters of the sea will no longer fish solely with their own kinsmen and neighbors, and it will be anybody's guess what strategies they will then employ for finding their elusive prey.

Notes

1. See, for example, Andersen (1972, 1980), and Orbach (1977:104-31).
2. Many of the foregoing similarities versus differences between hunting and marine fishing can be inferred from Acheson (1981), Pálsson (1989), and Pollnac (1976).
3. McGoodwin (1987) describes in great detail the rise and then demise of the inshore fisheries in this region.
4. Japanese longlines became scarce in these waters in the late 1970s as Mexico began to actively defend its 200-mile Exclusive Economic Zone.
5. The Teacapaneño's sunburst pattern does not constitute a random search in the strict sense of randomness as defined by mathematicians and statisticians. A truly random search pattern would entail these fishermen assigning numbers to all possible headings leading away from the island and then selecting specific headings by consulting a table of random numbers, or by drawing numbers from a jar or a hat. Nevertheless, I still feel the shark fishermen's deployment in the sunburst pattern basically constitutes a random search.

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The Anlo-Ewe and Full-Time Maritime Fishing

Another View

G.K. Nukunya

University of Ghana, Legon

ABSTRACT In an article on the Anlo-Ewe and Xwla of West Africa which appeared in *MAST* Vol. 1(2), 1988, Paul Jorion puts forward what he calls a universal sociological law. In effect the law states that full-time maritime fishing is so dangerous and economically risky that only people who are forced by socio-economic factors engage in it and they do so under duress. Among the Anlo such a determining factor is land shortage. Our view is that among the Anlo the law does not apply because those who take to full-time maritime fishing do so not under duress but because of the lucrative monetary returns and their love for the profession. While we do not deny the risks and dangers involved in the profession, we feel that these are more than compensated for by the monetary returns. There are, moreover, many alternatives to fishing in the area such as shallot farming, salt-making and *kente* weaving, among others.

Introduction

The area generally referred to as Anlo country¹ extends from the Volta estuary in the west to the Togo border in the east (see Fig. 1). From the estuary the coastline runs roughly in a northeasterly direction for about forty miles. Inland, the most northerly town is just over twenty miles from the coast. The area therefore surrounds the entire length and breadth of the Keta lagoon, a brackish water of nearly 200 sq. miles. It is the land separating the lagoon and the sea that forms the home of the Anlo-Ewe fishermen whom Polly Hill (1963-64) has dubbed The Pan African Fishermen.

Anlo-Ewe fishermen and their activities have been so well documented that there is now very little information about them which cannot be found in the literature. In this regard thanks must go to such authorities as Hill (1963-64, 1970, 1986), Wyllie (1969), Jorion (1988) and the Ghana Department of Fisheries, among others. Despite this vast literature and considerable interest, many of the interpretations and factors responsible for the development of the industry in the area have remained only tentative and at best generalized. The present paper is prompted by the recent study of Jorion (1988) in which he proffered what he called a universal sociological law based on Anlo and Xwla data. In his view,

no one ever becomes a full-time maritime fisherman other than under duress; necessity and necessity alone can force any one to exercise such a tough, dangerous and economically risky activity. It is not the continuous dangerous nature of the occupation which makes full-time fishing so unattractive, it is too risky in economic terms. It is risky because it amounts to

putting all one's eggs in the same basket: in economic and cultural environments such as those current in coastal West Africa, diversification remains the best guarantee at household level that day in day out subsistence will be assured (Jorion 1988:152-53).

Taken to its logical conclusion the law implies that people engaged in full-time fishing do not have a genuine interest in, or desire for, the occupation and that they are forced into it because of socioeconomic, environmental and demographic factors. In the case of the Anlo-Ewe, it was the economic circumstances resulting from the scarcity of land that led to the adoption of the profession. It will mean also that those in possession of sufficient farm lands would not take to full-time fishing. There is the additional implication that people turn to fishing because it is the only viable alternative to farming. It is further asserted that in financial terms full-time fishing is a precarious and risky occupation which does not ensure any guaranteed income and comfortable living.

A universal law of this nature can only be sustained if all the available facts have been examined and found to generally conform to all that is implied in it. One wonders whether this procedure has been followed here. In the case of the Anlo at least, there is little doubt that Jorion has been rather selective in the aspects of the profession he has chosen to prove his case. In this paper we intend

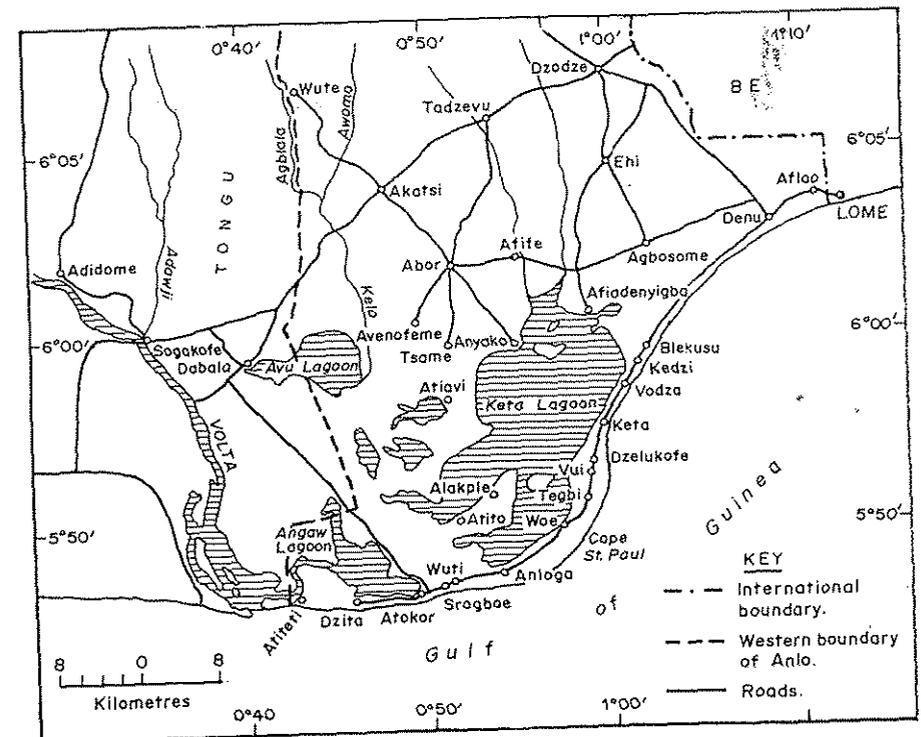


Figure 1. The Anlo Area

to show that the Anlo material does not support the tenets of the law. Specifically, data and evidence will be adduced to show that among the Anlo, full-time fishing is a lucrative occupation followed by people who go into it because of the financial results it promises and they do so because it falls within their competence. Many Anlo families and individuals turn to fishing despite their own self-sufficiency in land, knowing very well that financial rewards from it are much better than anything else. Nor are the Anlo incapable of pursuing occupations other than fishing: the flourishing *kente* weaving industry in the vicinity is a case in point. Also not to be forgotten is the agricultural intensification associated with the shallot cultivation along the coast which still leaves room for expansion and further development. Before amplifying these points, however, there is need for putting the genesis of the full-time coastal fishing and the subsequent migratory practices into a proper geopolitical, historical and demographic perspective.

The Seine Industry in Historical Perspective

It is generally known in the Keta area that the first *yevudor* (European net) or seine net was purchased by a Woe women named Afedima, a wealthy daughter of a prominent local man called Anatsi. Afedima was born around the first quarter of the 19th century and died towards the end of the century. Genealogies and other calculations put the genesis of the seine at between 1850-60. The number of net owners increased gradually and by the beginning of this century no less than fifteen owners, each with his company of operators, were recorded at Woe alone. Comparable numbers were mentioned for other towns. It is instructive to note that activities of these companies were for the most part localized until after the First World War. In fact, the mass exodus of fishermen for Badagri took place in the 1920s with the peak years put at 1925-26 (Nukunya 1987:20). This was also the time that the shallot industry started to assume a more commercialized character, especially around Anloga but also at Dzita, Whuti and Woe. Migrations to Abidjan started several years later.

The timing of the introduction of the seine or European net and the beginning of effective migration of fishing companies to Badagri is quite instructive. Although effective colonial administration in the area did not start until 1883 with the passage in the Gold Coast of the Native Jurisdiction Ordinance, there had been considerable European presence. Fort Prindsenstein was built at Keta in 1790 which assured the Danes, the first European power to operate there, a foothold. The Danes remained in the area until the British took over the Fort in 1950 and with it some measure of political control.

It is quite certain that British presence increased commercial activities between the Anlo and the Europeans (particularly the British), culminating in the introduction of the seine. By the turn of the century, with the partition of the continent in 1884-85, the establishment of effective colonial administration across the West Coast reduced the traditional hazards of interethnic travels, making it possible for the settlement of members of one ethnic group in another's terri-

tory. Conditions, however, did not seem to have settled sufficiently before the First World War started. After the War conditions improved considerably, resulting in the migration on a fairly large scale of those who could afford it. The need to migrate was no doubt caused by population pressure, which was so grave that all available land "including cemeteries [was] put under cultivation" (Benneh 1971:74).² The intensification of cultivation in the shallot industry was only a partial solution; nor was the poultry for which the area has been traditionally noted (Winnett 1850) of much help. Again, though other occupations (especially those associated with copra which was dependent on the then ubiquitous coconut trees, salt making, *kente* weaving and trading) were available, they were not satisfactory enough to resist the appeal of the rich coastal areas of Benin (Dahomey) and Nigeria. Other factors concerned the favourable conditions created throughout the region following the cessation of the wars and the increasing use of European money. For instance, the transfer of Togo from German to French hands meant that only one colonial administration separated Ghana (Gold Coast) and Nigeria which were both under British rule.

Local Full-Timers and Migrant Companies

For a proper and thorough appraisal of the reasons behind people's decisions to move towards full-time fishing there is the need to consider the backgrounds of those who turned to fishing, their individual socioeconomic circumstances and their attitudes towards the profession, that is, the extent to which they considered it dangerous, risky and hazardous both physically and financially.

Since Jorion purports to make his law applicable to full-time fishermen of all kinds throughout the world, he does not find it necessary to distinguish between the various types of Anlo fishermen beyond categorizing them into full-timers and part-timers. For our purposes, in addition to this broad division, there is the need to separate local sedentary full-time fishermen from the migrant full-time ones since their modes of operation and socioeconomic circumstances are sometimes quite different.

Jorion also seems to have lumped together both the plights and opportunities of company owners and those of ordinary company members. In view of the differences in the risks taken by the two groups, it would be ill-advised not to consider them separately, at least among the Anlo. It is also necessary to emphasize the point that the activities of the Xwla and the Anlo-Ewe groups do not always tally. In particular, what he calls seasonal movements appear to be more prevalent among the former than the latter who rarely practise it, if at all. Again among the Anlo the migrants who return home for periods of up to three or four months do so in order to attend to family problems, to rest and to participate in local social and community affairs. Only occasionally are they found engaging in any serious or sustained economic activities. Those who remain at home for longer periods (but still temporarily) invariably simply join local companies or take to lagoon fishing. Company owners can leave the business in the hands of others while they take this time off.

Several considerations may necessitate a fisherman's permanent return home. What he does on his return will be determined to a large extent by the factors responsible for his decision as well as his status, that is, whether he is a company owner or ordinary member. If it is just homesickness, it will be difficult to predict his activities at home. A company owner in this category may take any of the following steps: He may (1) put the business in the hands of a son or younger brother while he lives at home, (2) bring his fishing gear and equipment home to start local fishing, (3) sell off his business and go into a venture other than fishing, (4) bring his gear and equipment home and with his increased wealth combine fishing with additional ventures such as farming or trading or (5) just retire from active economic activities after selling off his business or handing it over to a son, brother or other relative. An ordinary member's options are equally open. If he is dexterous and ambitious he might have saved enough to set up a company by himself or in cooperation with one or two others. He may join a local company, take up lagoon fishing, farming or other occupation. Here it will be useful to mention that some ordinary fishermen save enough money when on migration to set up their own companies. While some of these remain in their residence or move to foreign shores, others return home to operate locally in order to enjoy the prestige and power which go with company ownership. The options mentioned are based on concrete examples, some of which will be substantiated as the article unfolds.

The Risk Element

Jorion's law is predicted on the assertion that full-time fishing is so risky and hazardous that only those who are economically hard-pressed will be forced to take it up. There is no doubt at all that risks of all kinds beset the fishing industry, both physically and financially. Physically the hazards associated with it are particularly serious and often fatal: drowning, encounters with sharks and other predators, injuries from handling the boats and such like present grave dangers to fishermen. The normal schedules of work are equally demanding, especially during the high season when extreme weather conditions serve as no excuse and sleepless nights may be routine. These physical hardships directly involve the ordinary fisherman, however, not the company owner and other leaders of the group, though the latter naturally share the concerns of their subordinates.

It must be pointed out that fishing is by no means the only high-risk occupation. Moreover, to use the level of risk to formulate a law as Jorion has done ignores personal interest and the liking people have for specific occupations. Fatalities and serious injuries are much higher in car and motor cycle racing, in boxing, flying, driving and some other occupations; but many, if not most, who take these up, do so not because they are forced by economic hardships but rather because of their liking for them and their financial rewards. Sometimes even the financial aspect becomes either secondary or irrelevant. Their occupations have become part and parcel of their lives. One has to remember that many of those who become fishermen along the Anlo coast virtually grow up with the sea. By

about age ten, they have already mastered the art of swimming and acquired the skills to join the fishing expeditions. Those who come from inland areas and are not initially conversant with the sea take to maritime fishing because of its financial rewards and their admiration for the industry and its practitioners. Due to their background, they have to learn seafaring on the job. For these and those who grow up by the sea (so to speak) there is no element of compulsion or of being forced into it under duress or necessity. One simply has to listen to these fishermen recalling some of their famous exploits at sea, the challenges they faced and the heroism required to meet them, their big catches, the big monies they earned, etc. etc. Again during the off season, when they appear idle, they look forward to the onset of the next season, no doubt with some financial motive, but also for the joy the activities bring, because fishing is their life.

If fishermen were always forced into the occupation under duress, it would be reflected in their everyday discussions, their folklore and their music. If the hazards of their profession were foremost in their minds, they would not keep silent about it. Yet no one considers it worth thinking about or mentioning. The Anlo saying that death is everywhere applies to the fisherman as it does to everyone else. But when it happens in the course of active service, through accident of one kind or another, it is treated in the same way as any other death or mishap. The attitude towards it is never different, nor do people tend to panic as a result.

In terms of the financial risks one may well start by noting that but for the sea and the lagoon, the Anlo physical environment (especially its coastal strip) may be counted among the harshest. Poor soils, unpredictable rains, flooding alternating with drought and sea erosion, all add up to a rather unpleasant habitat. But any visitor to the Anlo coast can only be impressed by the achievements of the people. The quality of their housing alone is sufficient to tell him he is in an area which is, at least, less poor than most parts of Ghana and Togo. The Accra road touches the littoral between Atorkor and Srogbe and from that point to Kedzi and beyond all the houses are built of concrete blocks with roofs of corrugated iron, aluminium or asbestos sheets. The traditional mud and thatch houses have been completely replaced, all within the last forty years or so, and today nobody goes in for the traditional type. In terms of education the Anlo coast has more than its fair share of facilities, with five secondary schools and a technical institute along the coast alone and an equal number north of the lagoon. In Ghana today this is a great achievement for a District when it is noted that most of these schools have been built through local rather than government initiative. Furthermore, the area is very well represented in government, commerce and the professions.

We mentioned only two aspects of contemporary developments in Anlo to show how the harsh environment has never prevented progress and modernization in the area. Two factors can be identified as the principal reasons for this. The first is the highly successful and extensively studied shallot industry centred mainly around the traditional Anlo capital of Anloga and extending across the western littoral from Atiteti right up to the vicinity of Dzelukope (see especially Grove 1966; Benneh 1971; Hill 1986; Nukunya 1975, 1978). The other is the fish-

ing industry. The fact that the latter has at least partly helped in changing the Anlo landscape and enriching its human resources is an indication that the risk element mentioned by Jorion is exaggerated. The financial rewards of fishing may come in fits and starts and assembling the financial outlay may be quite demanding, but the cumulative effect, the end result, is usually worth the trouble. One has to be careful here. We are by no means belittling the risk element. Neither are we extolling the financial returns associated with the industry. As we have mentioned earlier, any economic venture carries an element of financial risk. It is a question of degree. On the evidence, however, the financial returns of the industry are satisfactory.

It is quite appropriate that in discussing this particular issue the circumstances of the company owners should be distinguished from those of the members just as we did in the case of physical risks. Here it is the owners who carry the greatest, if not the sole burden. Concentrate for the moment on the seine, the most popular of the methods in the area: in order to form a company, one needs a boat, a net and other accessories to start with. For local operations, the items just mentioned should be sufficient. In monetary terms it comes to something like the following: boat including transportation from the forest zone: £1,000,000, net and ropes £1,500,000. In addition one needs initial mending instruments and threads which may also cost up to £100,000. Altogether, therefore, one needs an initial outlay of something close to £3,000,000 which according to the present exchange rate of £360 to one dollar will amount to just below \$8,500.

For migratory expeditions more items of expenditure are required including transportation of both the fishing gear and the men as well as their dependants and their families. The company owner, in addition, has to provide advances for his men to the current tune of between £10,000 to £50,000 each, that is, for about thirty men.³ For international expeditions, customs duties, cross-border bribes and extortions should also be considered. Clearly transportation costs vary according to distance and whether or not international boundaries have to be crossed. For trips to Mumford, Elmina and Half-Assini, the current popular spots in Ghana, distance alone matters. But for the more daring expeditions to Ivory Coast, Liberia and Sierra Leone and still further afield, much more than transportation costs is involved. Thus, apart from the initial expenses on equipment of up to £3,000,000 or \$8,500, an expedition to Freetown or Congo or Gabon will require an extra capital of about £2,500,000 or about \$7,000, making a total outlay on the equipment and the trip of about \$15,500. Equivalent figures for the Ghanaian centres may range between \$10,000 and \$12,000.

To get the kind of monetary value we are talking about in local (Ghanaian) terms we just have to remember that this is a country in which the gross annual salaries and allowances of top civil servants and university professors average about \$1,000. The question then arises as to how these rural, mostly illiterate entrepreneurs, manage to get their capital and what kind of risks they run or face. A study of selected company owners from Woe, Cape St. Paul, reveals a variety of sources. A town of about 5,200 inhabitants (cf. Population 1984), it has twenty-two local companies and at least twenty others operating elsewhere.

Of the number outside, only those maintaining regular contacts with their hometown are included. The fact is that many emigrants from the town have made a permanent home in their places of domicile and are very difficult to study. These permanent homes are mainly in western Nigeria (between Badagry and Lagos) and in Abidjan, in the Ivory Coast.

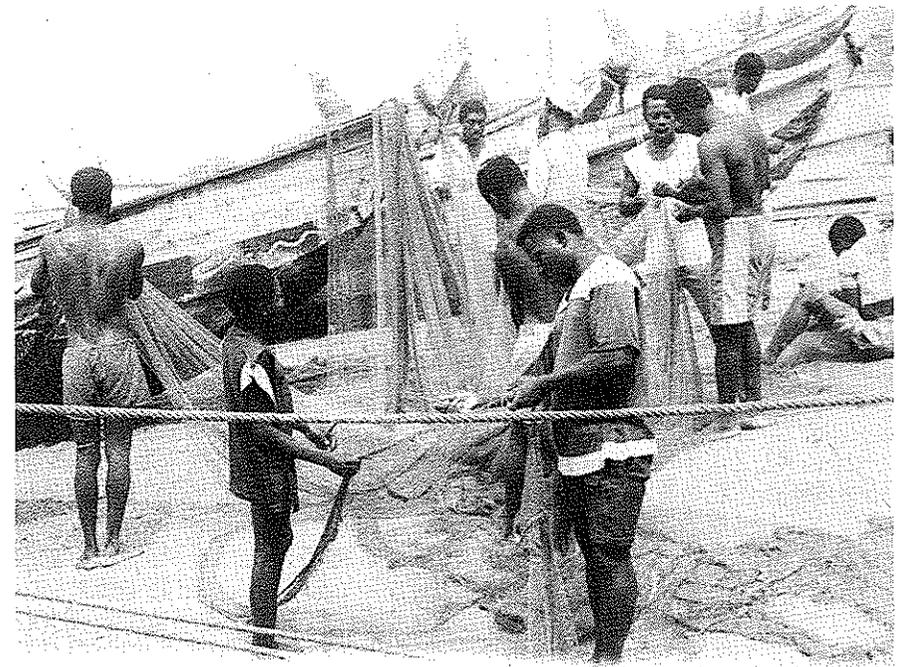
Biographical sketches of two local company owners and six emigrant ones give us some idea about the sources of funding. Mr. E.K. Gbedemah, 48, made his money as a policeman and (on leaving the service after the overthrow of the Nkrumah regime) in 1967 established a commercial transport business. In the 1970s he sold his vehicles and set up a fishing company which was locally based. He now runs three large passenger buses together with his fishing business. Fugo, the second man, is about the same age as Gbedemah. He belongs to a prominent family of fishermen, his grandfather having formed his first company as early as 1928. In 1959 the company moved to Half-Assini, in the Western Region of Ghana, with Fugo, then a young man, a member. Through Fugo's initiative and drive a second company was formed which he brought home in 1975.

One of the prominent emigrant companies from Woe is one operated by Dogbevi, 55, a grandchild of one of the earliest net owners. In the 1950s the company migrated to Half-Assini where it is still based and has grown into two, with Dogbevi the owner of one and his paternal cousin Kofi the owner of the other. Both are actually run by Dogbevi because Kofi is in charge of the family shallot farm at home. Another well-known company is that of Nani, a man of outstanding personality and forceful character. His father was a farmer of modest means and he himself started life as a farmer. In the late 1940s he formed a local company which he eventually took to Half-Assini in 1950. He now lives at Woe while the company at Half-Assini is run by one of his sons. The example of Hanyabui (Hale Baya), 60, is also quite instructive. As a young man he was a driver's mate and from his savings he acquired his own second-hand passenger lorry in 1957. In 1968 he sold the lorry and purchased a large long distance motor trawler based at Tema Port. When he found this somewhat unmanageable, he sold it to his younger brother and formed a seine company which he is now running at Elmina in the Central Region of Ghana. Of the companies operating in Abidjan, one of the most successful is that of Butsome, a lady of about 75. The company was originally formed by her husband and taken there in the 1930s. Her trading activities helped to sustain the company when things started to go bad in the 1960s. On the husband's return home in 1960 and eventual death in 1968, she became the effective owner of the company which is now run by her son. Equally of interest is the case of Agbodogli, 59, also a son of a company owner. His father and his twin brother took their separate companies to Abidjan in 1936. While his father was still alive, he set up his own company in 1965. On his father's death in 1968 he took over the company which he runs together with his own. But perhaps the most spectacular example and the most recent is the case of Kudo, 55, originally a mason (bricklayer) by profession. In 1975 he left for Abidjan with virtually no capital to practise his trade among the migrant fishing community there. After only three years he abandoned his original profession to set up a fishing company.

The eight examples just given of Woe company owners (though by no means exhaustive) are quite representative of the area. From this we can see that these entrepreneurs come from varied backgrounds, though they can be roughly divided into two main groups. There are those who hail from longstanding fishing families and have grown to take over, or build upon, what their forbears had started or left. The other group, whose backgrounds are also varied, can be described as hardworking, self-made and ambitious people who want to make a successful living from the fishing business. They see in the business an opportunity to make more money and leave behind not only enough wealth but also a prosperous business for their children and relations. This second group comprises people who made money in other occupations and professions and used it to start the fishing business, while the first is made up of those who inherited the business from their forebears. Even in the case of the latter, the original fund for the fishing industry came from other occupations, especially trading. Where the need arises to borrow, this is only to supplement capital already obtained from a previous enterprise. No one starts maritime fishing only with borrowed money. In any case, no money lender will lend money to anyone without a strong financial standing. All this adds up to the fact that company owners are people who are men and women of substance, people who are already well-to-do and want to improve their financial standing by investing in the fishing business. In fact, the histories and experiences of these people are so fascinating and diverse that they raise many interesting issues into which we cannot go in this paper.

As for the question of financial risks, it is perhaps sufficient to say that the fact that the business has continued to flourish from generation to generation in many families, and new entrepreneurs are continuously entering it must be a pointer to the low priority this factor occupies in the minds of these enterprising people. Naturally there are failures and the level of success differs considerably. But success or profitability of business owes to many considerations of which the nature of the profession is only one. Thrift, management, hard work, organizational ability, good human relations and leadership qualities, among others, are always necessary. There is also the need to have a successor (son, brother or other relative) to carry on the operation after the death of the original owner. These are required in any business enterprise; that is why there are always failures as well as successes because not everyone has the required qualities in the correct proportions. But the profession continues and new people are joining it, with many more contemplating to do so, not under duress, but because it offers good income to those who follow it with the right approach and ability.

The financial guarantees of the business can be seen in the fact that company owners are easily among the richest men, not only at Woe but also in all the settlements along the littoral, with the exception of Anloga, where the seine fishing tradition has never really caught on, as we have discussed elsewhere (Nukunya 1975) and will return to later in this paper. Their names always remind one of the industry and what it stands for, that is, wealth. In the immediate vicinity of Keta, for instance, the names which readily come to mind include Binah, Dovo, Gavor, Zagbede and Zaglago and around Woe, Avawayi, Nani, Dekpe,



Anlɔ-Ewe fishermen mending their nets before going on to the next trip, Borliānor beach, Accra.

Gadah, Gafatsi, Zagada and Anthonio II may be mentioned. It is worthy of note that Anthonio II was the chief of Woe and a prominent leader in the Anlɔ traditional area. It is also a fact that beyond the lagoon and elsewhere in Anlɔ country few approach these company owners in wealth and influence, and all except the chief are full-time fishermen.

As noted earlier, Jorion never mentions whether he is concerned with the financial risks of company owners only or included the ordinary members as well. What constitutes a risk of this nature for the owner is not difficult to identify. The financial outlay is considerable and inadequate returns could land one in deep trouble from which one may never recover. For the ordinary member, however, the position is quite different since he does not directly invest in the business. But he also runs some risk. If a migrant, he normally takes an advance to prepare him for the trip. On reaching the company's destination and place of operation he begins receiving monthly pocket money which together with the advance has to be repaid at the end of the tour. Here the understanding is that the payments will be made from the proceeds of the expedition and nothing else and therefore the risk weighs heavier on the owner than on the recipient member of the company. Of course the latter as a responsible person who takes along his family on such a trip must expect something to show for his work at the end of the period which may run from eighteen months to three years.

It will be unrealistic and even naive to suggest or imagine that every expedition is successful or profitable. In 1987, for instance, on the return of one company from Abidjan, the members waited for over six months before their leader managed to render accounts to them. This would definitely entail considerable suffering by the members during the interim period. Such people would have to depend on their relatives and friends or money lenders while awaiting their share of the proceeds. Sometimes even when the proceeds are shared promptly, the deductions leave some with very little take-home income. Though they and their families have been fed during the period of the expeditions, a low net income could be a serious disappointment. But these setbacks are exceptions rather than the rule. The end result of most expeditions is a joyous and triumphal return home with new clothing provided by the company for both men and women as well as children. Moreover, competition among companies over the size of their shares and the threat of possible desertion or boycott of a company due to cheating, cruelty or something unbecoming, are important reminders and sanctions that ensure equity, fair play and pleasant ending to many trips. Also to be noted is the fact that marketing and curing of the fish, done by the wives, relations and friends make up substantial supplementary incomes to many families and may serve as veritable insurance against any unforeseen financial mishap. There are also certain associate members of the companies who go on their



A typical scene on the beach near Keta.

own to carry on non-fishing activities to provide some essential services to the companies. These include masons, tailors, carpenters, diviners, et al. Though their fortunes are linked with those of their companies, the importance of their professions may insulate them against any seasonal failures, putting them in a position to help their relatives. Whatever its importance, however, their position is not germane to our thesis and a passing reference is enough. The point of our argument is that the migratory expedition has enough self-reinforcing mechanisms to make it an attractive and lucrative venture.

If the migratory expeditions are generally rewarding, how do they compare with the local operations, at least for the ordinary company member? To answer this question it is important to remember that the main reason given for the tendency of the Anlo fisherman to migrate is the belief that the home shores are being overfished. This will suggest that there are too many nets chasing the limited supply of stock. Nonetheless, considerable fishing still goes on and the area may be regarded as one of the busiest fishing communities in the world. In 1958-59 there were about 900 canoes between Anloga and Aflao, a distance of 30 miles, of which 839 were used with seine nets (Grove 1966:405). Thus the figure of 466 canoes counted in 1986 between Blekusu and Atiteti, a shoreline of roughly the same distance in the same vicinity, is by no means inflated as Jorion seems to suggest (Jorion 1988:135). If anything, it rather shows the depletion of the fishing fleet due to increased emigration and the recent tendency to develop bigger nets and companies. Even at the level of 466, however, the number of canoes for the area is considerable, emphasizing the continued importance of fishing as the dominant occupation of the Anlo coast.

The Nature and Amount of the Catch

Some earlier accounts of maritime fishing along the Anlo coast give the impression that it was solely dominated by the catch of *afafa* (*Caranx hippos*) or horse mackerel (Halcrow 1956; Lawson 1958; Hilton 1962). However, the importance of other aspects of the industry has been recognized in the more recent studies especially in the works of Hill (1963-64, 1970, 1986), Grove (1966) and Wyllie (1969). Though *afafa* still occupies an essential place in the area's fishing, it is by no means the only important feature. Three major seasons are recognized, namely *afafa* which lasts between September and December, *amuba* which follows this (December to May) characterized by a mixture of fish including cassava fish (*cynoscion* spp.), silver eel, mackerel, barracuda, *vomer gibbiceps* of which the local name is *ngogba*, and sole, among others, and thirdly the herring and anchovy season which lasts from July to August (Nukunya 1978:45, 64). The seasons do not allow daily or even continuous weekly activities. They are seasons in the sense that within these periods the activities centre around catches of these various types of fish. Sometimes the minor seasons within these major seasons may last for a day or two or even ten days or two weeks interspersed with days or weeks of no activity at all. Nor do the minor seasons always occur simultaneously throughout the region. They stagger and overlap and the composition of

the catches may also differ from place to place. Even during the *afafa* season other types of fish may be fished for.

An indication of the amount and value of the catches is that at the height of the *afafa* season a good daily catch by a single company can reach eight thousand, and sometimes catches of fifteen thousand have been reported, though the latter figure is quite rare. One procedure about the *afafa* operation is that the fish are shared on the day of the catch, therefore allowing no manipulation of accounts of any kind. The division is usually two to one after expenses have been accounted for, with the company owner taking one part and the crew two. Members of the company then share their portion equally with only additional numbers for special officeholders and smaller portions for children. A catch of 4,500 may mean between 25 and 30 fish for the ordinary company member on a single day. Some successful companies could make catches of up to 40,000 in a season. It should be added that the horse mackerel is a fairly big fish, the adults weighing between 10 to 20 pounds. In 1988 it cost £5,000 or about \$15, enough to buy at least three bags of cement or one bag of maize. But the seasons are not always good and for the past twenty-five years the amount of catches has gone down considerably, a fact which has been blamed on the Akosombo Dam whose construction has been said to have adversely affected the spawning habits of the fish. Today with even bigger nylon nets good catches could exceed the former maximum of 15,000, but they are rather few and far between with more modest catches of between 500 and 2,000 a time more common. But at £5,000 even these modest catches can sometimes earn the ordinary man an income comparable to that of most government employees and other salaried people in the area. When supplemented by earnings from other seasons, annual earnings of over £150,000 are not uncommon. Occasionally also many companies earn some windfall giving them a vintage season which can be the envy of even the most prosperous migrant company owner or the *afafa* operator in a good tour. That was the fortune of Mr. Gbedemah, mentioned earlier, who in 1987 and twice the following year netted hauls of the adult giant species of the cassave fish (*cynoscion* spp.) in excess of 15,000 on each occasion. At the 1988 generous price of £2,000 for a fish weighing over twenty pounds one catch fetched about £30,000,000! Such a windfall is, however, rare and not evenly distributed. It may come once in a long while, but it does happen, and for some lucky ones like Mr. Gbedemah Lady Luck may be a regular visitor! The long and short of what we are saying is this: Fishing is an unpredictable occupation especially for the local full-time ordinary company members. But their lot is not hopeless. Their incomes compare favourably with those of their counterparts in farming and other occupations. The large fish content of their diet means also that they eat better than their counterparts.⁴ The changes in the Anlo landscape we mentioned earlier have not been brought about by company owners and shallot farmers alone but also by these ordinary hardworking company members.

The conclusion to be drawn from the preceding pages and paragraphs is that full-time fishing involves risks to both the company owner and the ordinary company member. For the former the risks are mainly financial, while for the latter

they are largely physical. But in a sense each shares part of the risk of the other as well. However, it has been noted that the risks involved are not peculiar to fishing and for all the categories of fishermen involved the monetary returns more than compensate for the risk element. Moreover, it has been shown that despite the risks people don't enter the occupation under duress but either for the love of it or for its financial rewards.

Alternatives to Full-Time Fishing

The second part of Jorion's law asserts that people turn to full-time fishing only because they have nothing else to do, so dangerous and precarious is the profession. Having dealt with the risk element we wish now to tackle this second aspect. Here it would have been seen from what we have been saying about the backgrounds of some of the company owners that factors other than necessity have motivated their entry into the professions. Some were born into it, some left other jobs to follow it, while others make it a goal of their lives.

In order to fully address this issue it is necessary to know a little bit more about the habitat and some of the other economic activities the environment offers. For this purpose the littoral has to be divided into two, namely the side to the northeast of Keta and the side to the southwest. In the former, the land area between the lagoon and the sea is so narrow, mostly less than half a mile, that very little cultivation is possible. The only areas wider than this are Denu and Aflao, especially the latter where cultivation is quite important. Despite its narrowness this northeastern part in the past supported a flourishing copra industry before the trees were destroyed in the 1940s and 1950s by the Cape St. Paul wilt.⁵ The southwestern portion, with its wider land area, supports a variety of crops of which shallots have become the principal sort, as well as coconuts before the outbreak of the disease which indeed originated from this section. On both sides of Keta, lagoon fishing (which preceded maritime fishing) is an important preoccupation of many and in the pre-seine days occupied the majority of the people. Other precolonial occupations throughout the littoral included the weaving of the local *kete* or Keta (*Kente*) cloth,⁶ wicker-basket weaving and spinning with locally grown cotton (Grove and Johansen 1968:1388). The coastal fringes of the lagoon also yield considerable amounts of salt in the dry season which has for long formed an important article of trade and income for the locals (ibid.:1386).

Before the emergence of shallots, copra and the seine, however, it was for poultry that the area was noted. Monrad for instance, giving an account of observations he made during the period 1805 to 1809, had this to say:

Near (Fort) Prindsenstein (Keta) poultry abounds, which is for the greater part sold to the fort, the commander of which profits considerably from selling it on to ships that come in to the fort in order to provision . . . Hardly anywhere do we want poultry, but there are turkish ducks everywhere, several kinds of chicken and even turkeys and guinea fowl. I have sometimes seen the ships so well provisioned with them that they looked like large floating poultry houses (quoted in Grove and Johansen 1968:1407).

Again in 1850, Winnett, the British Governor of the Gold Coast who took over the Danish Fort (Prindsenstein) at Keta, reported the importance of the industry in his Journal thus:

Bounteous nature supplies the natives with an ample share of the necessities of life: turkeys, ducks, fowls, bullocks, sheep, goats, etc., abound along this part of the coast ... Indeed it was from this part of the country that nearly all the livestock consumed by the Europeans and respectable natives

throughout the Gold Coast was supplied (Winnett 1950, 30 March). Forty years later, in 1891, Keta was still "the poultry market of the Gold Coast" according to the Government Census Report of the year (Census Report 1891:11). Today, although Keta does not occupy such a prominent position in this regard, poultry is still important in the area's economy. "Almost every Anlo settlement is a poultry farm, where fowls, goats, sheep and pigs are reared, but the cattle population is now quite small" (Nukunya 1978:11; see also Nukunya 1969:6-8).

The brief sketch of the economy of the Anlo coast is meant partly to list the range of economic opportunities and potentials in the area and partly to show that fishing as a full-time occupation does not have to be followed by so many people under duress. We wish to pursue the point further by examining the economic performances of the three largest settlements southwest of Keta since the introduction of the seine and the commercialization of shallot cultivation. The settlements are Anloga, Woe and Tegbi which occupy a continuous stretch of shoreline about seven miles long with the town boundaries dividing the land area almost equally among them. As their portions of the sandbar represent the widest sector, the distance between the lagoon and the sea exceeds two miles in certain areas, it is in these towns that horticulture offers a good alternative to maritime fishing. Indeed, as has been mentioned earlier, Anloga, which also happens to be the traditional capital of Anlo, is the centre of the shallot industry.

One interesting feature about these three towns is that though they lie on a continuous stretch of land which has the same physical characteristics, the economic activities of Anloga are quite different from those of Tegbi and Woe. The former's population of 19,000 (1984) is also much bigger than those of the latter two put together namely 7,900 and 5,200 respectively. The entire indigenous population of Anloga is engaged in shallot cultivation, the only exceptions being the few hundred artisans, tradesmen, and those engaged in salaried employment in government, commercial and educational institutions. For reasons which we shall give later, the seine fishing tradition has never really caught on at Anloga. As a result, there has been a more intensive and judicious utilization of the available land for cultivation. Hardly a space in Anloga remains fallow for even a shallot season of three months. At Tegbi and Woe, however, this is not the case. Though they are equally important as shallot growing areas, seine fishing is also important. Consequently, many tracts of potential cultivable land have remained untapped. The owners have either left for fishing expeditions elsewhere or taken up local fishing. It is also interesting to note that due to this development

some farms at Woe and Tegbi are actually worked by Anloga farmers under various kinds of arrangements including sharecropping and the *woba* system of pledging shallot growing lands (see especially Nukunya 1973:76-78; 1975:62-63; 1978:32-36). In the opposite direction we have companies from neighbouring towns operating at Anloga.

Since seine fishing often leads to emigration on fishing expeditions enquiries have shown that Tegbi and Woe have less stable populations than Anloga. This in turn explains the differences in the population densities of Anloga, on the one hand, and those of Tegbi and Woe, on the other. But the position is not as simple as that. Anloga as the traditional capital has always been bigger than its neighbours. The earliest records we have of the population of the area do not give specific figures. In 1784, for instance, Woe was described as a large town yet "slightly smaller than Anloga" yet bigger than Keta. It had an army of 400 men, compared with 1,000 for Anloga, 70 for Tegbi and 100 for Alakple (Grove and Johansen 1968; Nukunya 1987:10). By the earliest time for which accurate figures are available (1948), Tegbi had grown to the same size as Anloga while Woe had shrunk to less than half of both. The population developments for the three towns since then are presented in Table 1.

Woe's comparatively small population in 1948 can be explained by the fact that the exodus of fishermen started much earlier there.

At the beginning of 1926 many people from the town left for Badagri in Nigeria on fishing expeditions. This migration affected both the church and the school as many parents went along with their children including school pupils. This virtually destroyed the school as the number of pupils fell dramatically, forcing the ... Director of Education to close down the Junior school (Nukunya 1987:20).

The emigration at Tegbi occurred much later and appeared much more gradual although it is now virtually on the same scale. But at Anloga where no seine fishing is done on any appreciable scale, the migration for fishing purposes has been virtually unknown. In this connection it is instructive to note that while in 1948 Anloga and Tegbi had about the same number of inhabitants, only twelve

Table 1. *Populations of Anloga, Woe and Tegbi, 1948-1984**

Year	Anloga	Woe	Tegbi
1948	6,358	2,977	6,773
1960	11,038	3,450	5,924
1970	14,032	4,060	6,628
1984	19,100	5,200	7,900

* The 1984 figures are available only to the nearest hundred. Source: Population (1984:92), and Report (1962, Vol. 1) which also contains the 1948 figures.

years later in 1960 Anloga's had increased by 5,000 while that of Tegbi actually dropped by over 800. The difference between the two population figures had increased to over 7,000 by 1970 and 12,000 in 1984. Though the population of Woe has been increasing steadily, it is clear that of the three places it has suffered most from the emigration process.

The lessons to draw from this population differences are of vital significance for our purposes. The first is that population pressure, poverty of the soil and harsh environment need not lead to embracing full-time fishing as a profession. Secondly, the evidence suggests that the relative absence of emigration at Anloga, which in turn has led to a rapid growth of its population, has been caused by a more extensive and effective use of their land area for cultivation than has been the case at both Tegbi and Woe. Thirdly, the fact that these differences developed despite uniformity of habitat and ecological factors shows that alternative occupations do exist for the people of the Anlo coast other than an ineluctable recourse to full-time fishing. Finally, we suggest that the inhabitants of Woe and Tegbi together with their brothers northeast of Keta chose to take up fishing and to remigrate partly because of their inability or unwillingness to stay at home and engage in intensive agriculture and partly because they find fishing more congenial and more lucrative.

No definite point can be made about the relative profitability of shallot farming and full-time maritime fishing. Without a doubt successful company owners are much richer than most, if not all, shallot farmers. As for the ordinary fishermen the least that can be said about them is that in terms of achievement, measured in buildings, clothes and food habits they can hold their own against the average farmer. One point which should not be forgotten, however, is that financial risks are not unknown in shallot cultivation. Unreliable rains, drought, flooding and pests can result in complete crop failures some of which can render a farmer without any funds for many years. These hazards do occur quite frequently (Nukunya 1978:7-8, 45-48). Thus neither shallot cultivation nor full-time fishing is a safe escape route from the harsh environment. They are both problematic. *But is there any profession without risks?*

Before concluding, however, we wish to enlarge a bit on the different approaches adopted to the environment by Anloga and its neighbours not only Tegbi and Woe but also those further to the east as far as Kedzi and Blekusu. In earlier comments on the enterprise of Anlo fishermen we observed that by the time the seine was introduced in the area, the coastal Anlo had already gained considerable entrepreneurial experience by several decades of trade with Europeans (Nukunya 1978:198-202). They had also, we might add, learnt the art and the skill to deal with the sea. If this is accepted, then the inability of Anloga to take up the challenge posed by the seine may be explained by its inability to participate in this early European trade. The main reason is that up to about 1900, Europeans were practically banned from Anloga only by virtue of the fact that they used to ride on horseback or by horse carriage. This is because the horse is sacred to Nyigbla, the Anlo War God whose main shrine is at Anloga. Therefore, it has always been taboo for horses to enter Anloga and its immediate en-

vironments. Since Keta was the first port of call for the Europeans, and the location of their fort, the nearest they could get to Anloga was Woe, which was also a very important European centre. Indeed, apart from Keta, Dzelukofe and Woe were the important victualling centres. As we have already seen, the seine was introduced into the area by a woman from Woe, Afedima. Thus following the developments of the wake of the First World War, which made the seine an important investment and emigration a lucrative undertaking, the people of Anloga found themselves unprepared to take any advantage of it. They therefore did the only obvious thing, namely to make the best of a bad situation by concentrating on agriculture for which they are now very famous.

Conclusion

Jorion is correct in designating full-time maritime fishing as a risky profession. But as we have tried to show the risk element is never a factor seriously considered by the fishermen themselves. Moreover, risk is an aspect of business and there is hardly any profession which is completely devoid of it. It is a matter of degree. Full-time fishing may be a high risk occupation, but people pursue it not because they cannot find anything else to do. They do so because they like it and know that the financial returns are good. Also, as the Anloga case has shown, a harsh environment such as the one we find along the Anlo coast, offers many alternatives, of which fishing is only one and shallot cultivation another.

A universal law ceases to be one when a significant exception is found to it. In the case of Jorion's, the exception is particularly relevant since the law derives directly from the data we have used to disprove it. As far as we are concerned, people turn to full-time fishing not under duress but voluntarily. We therefore opt for the traditional sociological or anthropological position he tries to debunk, that maritime fishing is "one particular type of economic activity among a number of others to which a population may have decided to turn in all freedom of decision at some point of its history" (Jorion 1988:133). This is exactly what has happened among the Anlo-Ewe.

Notes

1. Anlo country represents the extreme southwestern portion of the larger group known as the Ewe who occupy southeastern Ghana, southern Togo and the southwestern coastal strip of Benin Republic. The writer is an Anlo who spent the first fifteen years of his life seven miles southwest of Keta, the administrative capital. The data presented here have come from his childhood experiences as well as from a major ethnographic survey in 1962-63 leading to his Ph.D. (London) in 1964 and many field trips since.
2. I have never seen any cemetery being used in this way, but the statement emphasizes the scarcity of land in the area, especially the portion northeast of Keta.
3. An additional risk is the possibility of a prosperous migrant getting advances from more than one company owner. Such a man may just disappear. If he is found one of the company owners may lose his money if the culprit has spent it. In some cases it may mean the eventual company

he would join paying for the money the other has lost. This double advance taking is not common but it does happen at times. (See also Hill 1970:46-47).

4. The diet of the coastal Anlo like that of their inland counterparts is dominated by corn flour and cassava dough with relish prepared with fish. Rarely is meat a regular component of the meal except on festive occasions. In this respect the littoral is better placed than the inland area mainly because the former is served by both the sea and the lagoon. On the coast the professional (full-time) fishermen definitely eat more fish than others.

5. The Cape St. Paul wilt is named after the place of its first attack. Its root cause is not officially known but it is generally believed to be an insect pest whose stings cause the death of the trees. It has wiped out considerable parts northeastward of this spot as far as the Togo border, and towards the south its effects have reached the Volta estuary.

6. *Kente* is the indigenous Ghanaian cloth traditionally woven with cotton yarn but recently also with silk. The Anlo version locally called *kete* differs from the more popular Akan (Ashanti) one mainly in its more subdued colours and design and the continued emphasis on cotton.

7. *Woba* among the Anlo-Ewe refers to the pledging of shallot beds for an indefinite period, that is, until the pledger has the funds to redeem them or the pledgee wants them redeemed. When the pledgee wants his money back at a time the pledger is not ready, the latter can repledge them to another man to get the money for the first pledgee.

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Invisible Nets

Women and Children in Kerala's Fishing

Olga Nieuwenhuys

University of Amsterdam

ABSTRACT Women's and children's roles in fishing have to this day remained 'invisible'. Making these roles visible may, however, turn out to be crucial for understanding the relation between artisanal fishermen and the marine environment. Using a combination of anthropological data collected in a Kerala village and secondary source material this article contributes to filling the gap in our knowledge of women's and children's fishing. In addition, it explores the interaction between what they do and the marine environment. It shows that marine depletion not only has a negative impact on the livelihood of adult fishermen, but on that of women and children as well. As the fishing yield tends to diminish, it is up to women and children to derive a living outside fisheries. This offsets the loss of income of the men, who can therefore intensify the fishing effort. In the short term, Kerala fisheries have thrived on the resilience shown by the households of artisanal fishermen. But this very resilience has also exacerbated the process of depletion, thereby jeopardizing the conditions for the existence of these very households in the long term.

Introduction

There has been a growing concern for the interface between fishing technology and marine resources. Studies of the impact of marine depletion on labour have been fewer, and overwhelmingly concerned with fishermen at sea, thus largely neglecting gender and age specific effects. This neglect can be traced to the widely held belief among development experts, economists and not in the least anthropologists, that women's and children's roles in fishing are only marginal. Experts and researchers apparently find the work of women and children too mundane to warrant serious concern. This assumption is related to the fact that the fishing activities of women and children are held in low esteem because they rely on very simple equipment and yield mostly fish for domestic use. Yet, it disregards the significance of their contribution to the livelihood of the fisherman's household. The object of this article is to show that the rationality of artisanal fishing and the serious environmental problems it faces, cannot be fully understood unless women's and children's roles are brought into focus. I will advance the view that the future of artisanal fishermen depends very much on the way in which women and children face the diminishing returns from fishing. Insofar that it supports the intensification of the fishing effort, their very resilience may well lead to an unforeseen type of marine depletion.

The preoccupation with the material and technical constraints on fishing that characterized much early work on maritime communities has been an important reason for the emphasis on the 'manly' aspects of fishing. An added reason for

dismissing the fishing activities of women and children as insignificant has been that anthropologists were usually males (Pálsson 1989:11). However, it cannot be denied that in most coastal societies women and children play an important role in gathering molluscs and in subsistence fishing (Chapman 1987). Nor can it be denied that in fishermen's households, women and children support the men by performing activities such as net and basket making, fish marketing, salting and drying. The act of male fishing is indeed embedded in, and supported by social relations of which the division of tasks and responsibilities within the family is no doubt the most crucial (Dewes 1982; Nieuwenhuys 1983; Ram n.d.; Chapman 1987; Pomeroy 1987; Yater 1982).

The main focus of the research on women's and children's work in developing countries has been on peasants. This type of research has extensively documented how development programmes have sidetracked the importance of the activities of women and children because they tended to equate work with cash earning activities and also how they have contributed to the marginalization of women and children from production. Research has shown that even when women's and children's activities take place in the realm of subsistence and yield only marginal returns in cash, they may still be of crucial importance for the livelihood of the household. While failing to open up new opportunities for paid work, development programmes, and the technological innovation and environmental degradation that came in their wake, have on the whole adversely affected women's and children's access to natural resources (See for a discussion on India Aggarwal 1986; Lieten et al. 1989).

In fishing, as in agriculture, gender and age roles are clear-cut. It is men who fish at sea and who control and use sophisticated equipment. But the success of their expeditions very much depends on operations that have to be performed onshore. Many of these tasks are the responsibility of women and children. As in agriculture, the type of work, the value attributed to it and the way it is rewarded are very much influenced by the ideology of gender and seniority. The relation of women and children to fishing differs therefore considerably from that of men.

Yet fishing also requires a fair degree of interdependence and complementarity in the intra-household allocation of tasks, and this makes women and children more independent of the earnings of men than in peasant communities (Davis and Nadel 1988; Chapman 1987; Ram n.d.). Focussing on the situation in the rich prawn fisheries of the state of Kerala in Southwest India, I will argue that the technological modernization of fishing did not render children's and women's work altogether redundant. The introduction of more sophisticated methods of fishing could not drive out methods that rely heavily on low-cost human energy. The abundance of low-cost labour discouraged the large scale adoption of new methods of fishing, and in particular the use of motorboats. In the context of Kerala, the increase in the productivity of labour did not appear to be the most important consideration. For the big owners-cum-merchants large profits could be realized more easily by acquiring a strategic position in long-distance trade than by investing directly in the productivity of fishermen. Tech-

nological modernization therefore only moderately marginalized women's and children's productive roles. However, as international commercial networks developed, the first signs of marine depletion began to appear. For the men to be able to cling to fishing, the women and children had to seek additional sources of income outside the ambit of the fishing economy. But this was not a viable solution. In the long run fishermen and their families got even more firmly entangled, as I will show, in a vicious circle, created by an indiscriminate commercial exploitation of marine resources.

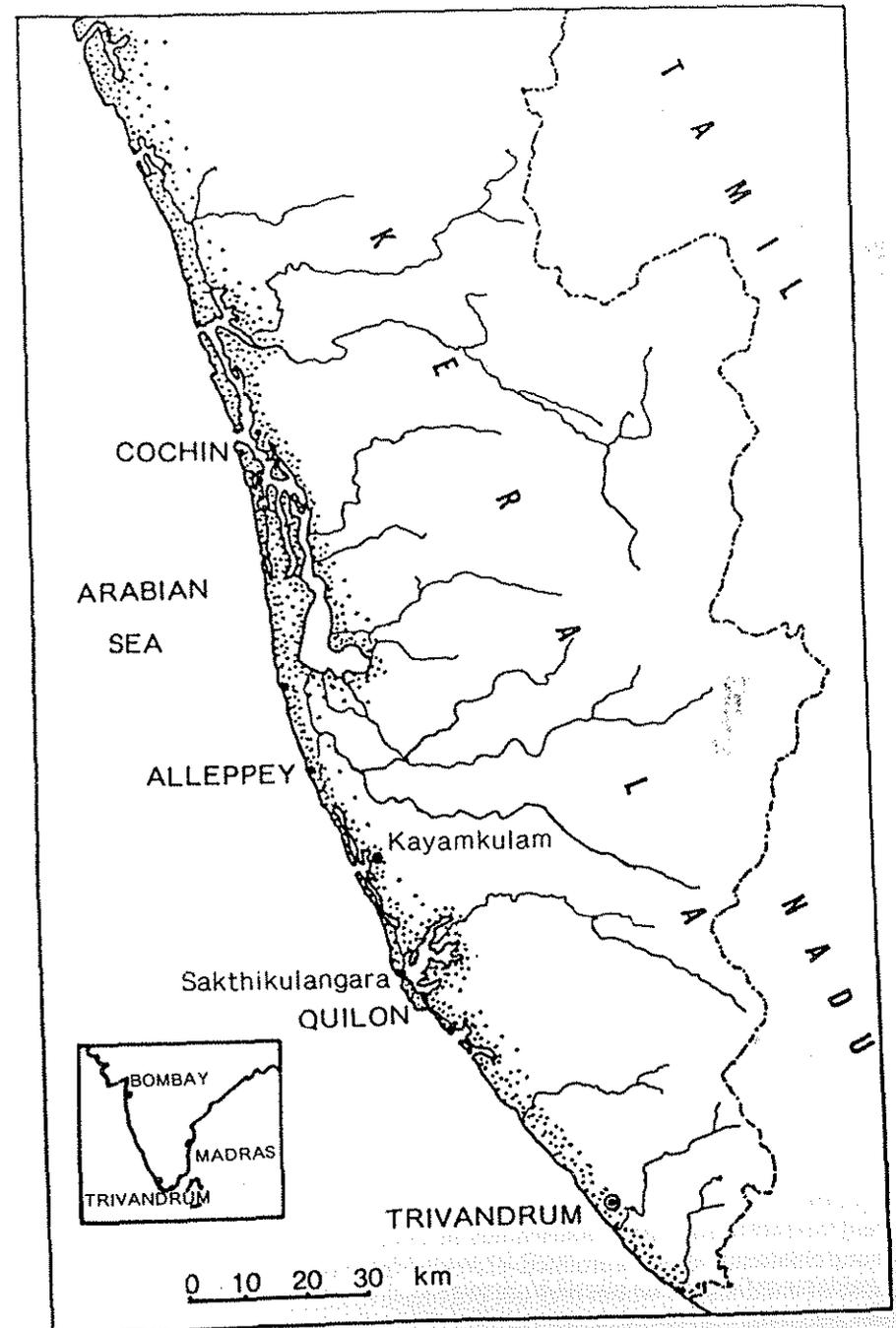
This article draws on extensive anthropological-sociological fieldwork¹ in a Muslim fishing community on the coast of the Indian state of Kerala, which I will call Poomkara. The first part portrays women's and children's roles in fishing, comparing the insights gained from my fieldwork with the scattered material available on women and children in the state fisheries. In the second part I discuss women's and children's roles against the background of the technological innovations that have been introduced in Kerala's fisheries. Thirdly, I show how these roles relate to the intensification of fishing operations in a depleted environment. Fourthly, I conclude by discussing the vicious circle into which Kerala's fisheries seem to be trapped.

Women and Children in the Fisheries

Making generalizations on the organization of Kerala's fisheries is no easy matter. The dissimilarities among the various fishing communities are manifold. A difference that would strike even a superficial observer is the one between the modern and the artisanal sector. The centre of modern fishing is Sakthikulangara, near Quilon, that has by far the largest fishing harbour. During the prawn season (from June to September) up to 60% of the 3,000 odd modern boats that fish in the state's waters unload their catches on its jetties. Some 40% of the fishing is for prawns, that have become of growing commercial importance during the last twenty years. The rest of the catches consist either of smaller quantities of exportable fish or of sardines and anchovies, which are sold to local consumers.

The modern fishery sector is, however, small when compared to the artisanal one. An estimated two thirds of Kerala's marine production is landed by artisanal craft launched from the open beach, as in Poomkara (Kurien and Thankappan Achari 1988:18). In terms of people, artisanal fishery is even more important, employing as it does 86% of the 131,000 active sea fishermen and the vast majority of the 680,000 people who depend upon them for their living (Thankappan Achari 1987).

Artisanal fishery is but a general term for fishing techniques that are far from homogeneous. The design of the craft used along the coastline varies, being closely adapted to the physical geography of the coast and the habits of the fish. It ranges from the large and costly dug-out or plank-built canoe found in the north to the rudimentary catamaran of the south that consists of just five logs of wood tied together. The size, shape and material of nets used by these boats



Map of South Kerala

show an even greater range of variation. Broadly speaking, in the south a fisherman often owns his catamaran. By contrast, in the centre and north a fisherman is more likely to be recruited by one of the few men of substance who possess a large canoe. Also, their distinct cultural identities set the hundreds of fishing communities apart from each other. They have different religions: 37% are Catholic, 30% Muslim and 27% Hindu. Within these religions, they form endogamous subdivisions: Arayans, Mukkuvans, Latins and Mappilas are only generic terms for kin-centred communities that have little social intercourse.

I conducted my fieldwork in a tiny settlement of artisanal Muslim fishermen in Central Kerala who were using a combination of large canoes and beach-seines. Poomkara,² as I have called the locality near Kayamkulam where these fishermen live, is a subdivision of a populous village (*panchayat*), with more than 30,000 inhabitants, situated on the densely populated coast between Alleppey and Quilon. The economic life of the locality centers around the processing of coconut products on the one hand, and fishing and fish trade on the other. The coir yarn ('Aratory') spun in Poomkara, is excellent for weaving carpets, matting and other floor coverings. It is spun by women and children, and marketed to the trade centre at Alleppey, where it is either processed locally or exported. Agriculture only plays a minor role, and few men are engaged as full-time agricultural labourers to till the land and tend the coconut trees. Only a few hundred men are permanently employed and stick to their work throughout the year. Most of the others are casual workers and find employment on an irregular basis receiving a wage that is mostly based on a piece-rate system. They may be fishermen, porters, boatmen, beedi rollers, etc., as occasions present themselves. About half of the women are coir workers, the rest being mostly engaged in housekeeping and child care. Roughly one half of the female coir workers are hired by other women. The other half run their own tiny coir manufacturing business, relying on hired workers to supplement their labour and that of their children. Only few women earn a living in trades such as plaiting mats and coconut fronds and crushing stones for building contractors. Women used to be engaged in drying prawns and later on in peeling, a job that has now largely disappeared, as I will discuss below.

Poomkara's 4,400 inhabitants live in about 700 hundred households with an average of a little more than six members.³ The population is extremely young. Particularly among Muslim households, birth rates have long been very high. It is quite normal for a Muslim woman to deliver her first child between sixteen and twenty and to have children at intervals of two years until her first born has married. Women spend most of their married life in the company of their children, the older generation of women being far too few to be of much help. As many as two thirds of the households in Poomkara are nuclear families with young children. Women's productive lives are therefore inextricably enlaced with those of children, for whom they not only have to care for but whose assistance they also require to perform their various chores. This family structure is of crucial importance in understanding how women's and children's work is embedded in the organization of artisanal fishing.

In spite of growing opportunities for trade and Poomkara's favourable position on a stretch of coast famous for its bumper catches of large prawns, fishing techniques have remained basically the same for centuries. In Sakthikulangara, just some thirty kilometers to the south, hundreds of motorboats trawl for prawns, and jetties, cold storage facilities, insulated vans and international commercial links provide the harbour with a relatively modern infrastructure. In Poomkara, by contrast, the traditional boats are still largely paddled and tugged ashore by muscle power. The bulk of the catches of cheap fish are still sold directly to the consumers and transported along inland paths in baskets carried on the head. Only the commercially more valuable prawns are brought by bicycle to the nearest cold storage house some three kilometers to the north. True, some modernization has taken place. The nets used by all-season boats are made of nylon, and ice is used to conserve major commercial catches. There have also been some experiments with fitting outboard motors to the boats during the high season. But otherwise much has remained the same. Wood and coir are still the only materials used to make and repair the boats. They are seasonally smeared with the fish oil the fishermen obtain from sardines. The second most important piece of equipment, the large beach-seine (*kambavala*), is still made of cotton and coir.

Of the 200 odd fishermen in the locality, eight own some kind of equipment. Only two of them own canoes (*tankuvallams*) suited for fishing throughout the season. These two owner-fishermen have recently also acquired outboard motors which, during the high season, enable them to undertake more than the usual one or two daily expeditions. A third man owns a large beach seine and an old canoe. The others possess small boats and seines of only seasonal importance. The rest of the fishermen have no craft or fishing gear of their own. They work as members of a crew on a large canoe, either in Poomkara itself or in a neighbouring village. Of these fishermen, 145 have a permanent labour relation with an owner-fisherman, which they have entered into by taking a loan which they have to repay on leaving. They are all adults. The others, two thirds of them boys in their early teens, are only employed to pull the shore-seines.

Men who fish at sea find employment for nine to ten months a year, either with their boss or as migrant labourers. Their wages are calculated as follows: the owner of the boat is entitled to one third of the value of the catch, and the rest is shared among the 14 or 15 men of the crew, each receiving 3 to 5% of the value of the catch, depending on the number of workers, their skill, physical strength and age. If an outboard motor has been fitted to the boat, one third goes to cover the cost of petrol. The men may then receive as little as 2 to 3%. All adult fishermen, be they part of a sea-going or a shore crew, live a hand-to-mouth existence that does not allow them to maintain their families the whole year round. During the lean period most of them migrate for months on end on uncertain fishing expeditions in the north of Kerala and are often unable to send money home. When fishing falls off there too, they return home to wait for the beginning of the new season. Sea fishermen inevitably face periods of starvation every year, which they take with a great deal of stoicism. They sleep

long hours and spend most of the day with their family and friends, resigned to a forced vacation with an empty stomach. They do not, as a rule, do any work other than fishing and the maintenance and repair of boats and fishing gear.

Those who only fish from the shore by working the seines, are different. Most of them are boys in their early teens. The few adults are mostly casual workers who take up whatever other work they can get during the long periods in which the shore-seines are not used. The reason that most of these workers are children is that the returns from seine fishing are miserably low, except for a few days or weeks during the seasonal high tide. The owner of a beach-seine takes as much as 50% of the value of the catch, sharing the rest among the 30 to 50 workers that are needed to haul the net. Adult seine-fishermen therefore invariably experience their work as degrading and shameful, and desperately seek alternatives in small business, fish vending, etc.

The lower the returns of a particular type of equipment, the more likely it is for boys rather than for adults to be engaged to work it. The income generated by boys in fishing is therefore marginal by definition. Children may undertake four types of activity:

- a Fishing and foraging for subsistence.
- b Small-scale fish vending.
- c Rendering services to the crew of a large canoe during onshore operations.
- d Work in a shore-crew.

The sequence in which these are listed reproduces a hierarchical ordering based on gender and seniority. Only the first activity, fishing and foraging for subsistence, is open to both boys and girls, even when very young. Girls, however, have but a short-lived part to play in fishing, after menarche their place is considered to be primarily in the home. The other types of activity are therefore the preserve of boys, who will undertake them with growing zest and will to learn as they develop skill and physical strength over the years. A long process of socialization marks their initiation into the male world of fishing. As boys display their eagerness in becoming full-fledged fishermen, they have to adapt to a subordinate position during an extended period of intensive labour, accepting, as do the women, to do what the full-fledged fishermen regard as inferior work (cf. also Fjellheim 1989:135ff.).

The prime mover for children's interest in fishing is want of food. Fish is not only important from a nutritional point of view in a diet composed of little else than rice and peppers. It is also a gourmandise which all coastal children relish. The way fish is served and shared within a family is an important expression of feelings of respect and affection. If there is no fish to prepare a curry, women and children, sometimes children as young as five, may angle in the backwaters in the evenings. Although angling is primarily undertaken for domestic use, on coming of age boys may become quite expert, and catch even large karimeen, a palatable flat-fish in great demand among the wealthier housewives. Foraging for fish during the landing of the catches of sea-fishermen is another way for children to obtain fish for domestic use. Custom demands that if fish have been driven into the nets of fishermen, nobody should go hungry. In practice this

means that when there are bumper catches of cheap fish such as oil sardines, anyone present during the landing will be given simply 'for having brought good luck.' For the rest, only fish that has fallen on the ground can be taken.

A child that shows an early interest in fishing by foraging on the beach is not only tolerated but also encouraged to mingle freely with the working fishermen, particularly if it is a boy. A boy's activities fit admirably well into artisanal fishing. They are also the first step towards a more specialized apprenticeship in fishing and fish vending, which starts when a boy is eight or nine, i.e. old enough to be of some help in the last stages of hauling the shore-seine or landing the catch of the canoe. He may also help cleaning, washing and spreading out the net in the sun, and carrying paddles, sinkers, floats, ropes and other implements to the boss's house for storage during the night. In appreciation for his help, he may be allowed to keep a little fish recovered from the meshes of the net or the corners of the boat. Often he may also be given a little additional fish, either for domestic use or for sale. Most fish is readily brought home, and a boy finds the grateful glance of his mother when he hands over his takings very rewarding.

The fish foraged by children from the beach or angled from the backwaters, does not amount to much. It does, however, contribute substantially to the protein content of the food basket of the poorest households in the locality. How much exactly is difficult to tell. Most people do not like to admit eating fish of inferior quality. An indication may however be found in the data collected through a year-long budget-study of 12 poor households. About one quarter of the fish consumed by households with at least one boy between 5 and 15, had been foraged. By contrast, households with only very young boys or none, had to buy 93% of the fish they ate.

If the fish foraged by a boy is more than needed for a curry, he may decide to sell some. The art of vending fish is something boys are keen on learning. At first it is like an exciting game, carried out with no other initial capital than a bit of fish and a little luck. A boy may freely dispose of his first gains and spend them on snacks and sweets. He will normally quickly discover that it is unwise to spend everything, and that one needs reserves to expand a business. A few years later, when he is ten or eleven, a boy will start a more specialized training, all depending on his physical and mental maturity. If he is endowed with better mental than physical talents, he may opt for the lonely life of the fish monger. Alternatively, he may feel more attracted towards heavy physical work in a crew of fishermen. He will by then start to be considered, to use Firth's term, a 'growing participator in work,' although it will take years to gain the status of 'full working member' (cf. Firth [1946]:72).

It is relatively easy for a boy to join the crew of a shore-seine. There exist outspoken notions about boys' place in seine-fishing and they seem to be firmly rooted in shared beliefs about the nature of artisanal fishing. As no one can predict in advance whether the fishing season will be good or bad, an owner-fisherman needs to be certain that he will be able to mobilize a crew to work the net whenever he needs one. He may therefore send small gifts on ceremonial occasions to the families of boys who seem fit to do the job, thereby notifying

them that he wishes to be able to count on the boy's labour. To some extent, the practice of tying boys' labour by offering advances is based on mutual interest. If the season is good, the owner-fisherman is assured that other net-owners will not seek to attract his boys by paying them higher rates. By contrast, if the season is poor, the boys' families can take advances to buy food, while the boys may look forward to an occasional snack which the owner of the net normally offers even in the event of failing catches. But even though the relation is based on mutual interest, it is in no way reciprocal: for while the boys are virtually powerless and depend largely on the owner's good disposition towards them, the owner benefits disproportionately whenever good luck strikes. The boys are obliged to come whenever requested, while the opposite is not the case. The owner has them called only when full-fledged labourers are either at sea or prefer business onshore because the returns from shore-seine fishing are too poor, i.e. in the slack season. When prospective returns are substantial, during the prawn-season for instance, only adolescent boys are included in the crew. One of the obvious reasons is connected to the social status inherent to the age-hierarchy. By and large Poomkara people believe the economic roles of children to be rather immaterial, and in this they hardly differ from general opinion. In a situation of great pressure on employment as is the case in Kerala, this attitude has the by-effect of setting an upper limit to what children can earn. Whenever this limit is reached, the general feeling is that a child threatens the earning prospects of adult men who have a family to care for. Children's income is therefore bound to remain within socially accepted brackets even in cases in which their productivity is comparable to that of adults. This reinforces the conviction that their contributions to production and to the income of their families is only marginal.⁴

The remuneration of fisherboys is so low that it does not even allow them to eat their fill. But it would be wrong to think that their activities are therefore of little economic importance. There are three aspects to this. First, it is clear that without their assistance, artisanal fishermen would be severely handicapped in carrying out their activities. Second, the marked seasonality of fishing adds to the significance of boys' work. By recruiting a crew of teenagers, an owner-fisherman can work his equipment even during the less productive period, in the weeks just before and after the main season. If successful, he is assured of a higher income from his equipment. If returns are disappointing, the whole operation costs him but a trifle anyway. Third, the foraging activities of children, have a bearing on the relation between a crew worker and his employer. As children meet their own consumption needs, they also relieve owner-fishermen from the responsibility of paying the worker enough to feed his family.

Most of the activities undertaken by women and girls, fall outside the ambit of fishery. No single labourer's household is able to live on the gains derived from fishing alone. Women and girls earn additional cash in coir manufacturing, or badly needed food by working as servants for their wealthier neighbours. When her children are still small, a woman may often be unable to earn anything but as soon as her eldest daughter is about six or seven, she can entrust the child

with the care of her younger brothers and sisters and devote herself to supplement her husband's income. Soon her daughter's help will be invaluable in helping her to increase her earnings. These earnings will enable the family to pull through if the adult males are unable to support it. They may even become the only source of income when disease or accident strike the man of the house, or when he abandons them altogether. This is crucial, as it allows men to stay on the job even when catches fail to the point that the returns no longer meet their personal requirements however minimal these may be.

In Poomkara, in sum, both women and children have an important role to play in fishing. Young children of both sexes forage for fish on the beach. But when nearing their teens, only boys continue to be encouraged to assist, in exchange for a little food, the fishermen working on the seashore. The presence on the beach of teenage girls and mature women is hardly tolerated. They are supposed to remain in the vicinity of the home where, in addition to house-keeping, they make coir yarn or work as domestic servants for wealthier neighbouring women. Their earnings enable them to buy food during the lean season and generally help reducing the cost of labour engaged in fishing. Having come so far, one may wonder whether it is legitimate to generalize about the role of women and children in fishing from the Poomkara example, considering that it is located away from the centres of modern fishing that have developed in the past thirty years. In short, how representative is the Poomkara case for the hundreds of thousands of women and children who depend on fishing in Kerala as a whole?

An undue preoccupation with the technical conditions of Kerala's fishing has distracted fisheries research from understanding the nature of the social relations of production. The scarce evidence available, however, suggests that the vast technical differences observed are not associated with an equally broad spectrum of these relations. A tentative comparison of six village studies confirms that there is much less diversity in the living and working conditions of fishermen than a focus on techniques would lead one to expect.⁵ As many as 80 to 95% of the fishermen in these six villages concerned, are either completely propertyless or do not have equipment that enables them to work throughout the season. They depend, in last resort, on owner-fishermen having the equipment combination needed for fishing throughout the season, who recruit them on their boats for at least part of the year. With the exception of one village in the far south, where the figure is lower, at least three quarters of the fishermen are indebted to these employers and are de facto bonded labourers. In this respect there hardly seems to be any difference between a remote artisanal village such as Tanur in north Kerala, and Sakthikulangara, where fishermen use only modern vessels (Mathur 1977; Platteau 1984).

Set against this background, it is not surprising that a picture of squalor predominates in the living conditions of fishermen. In 1979, according to a census undertaken in the state, 50% of the 118,000 fishermen's households had incomes below 1,000 rupees a year, against 3% whose income was above 3,000 (Kurien 1985:80). Ninety seven percent of the households lived under the poverty

level as set by the Indian government for 1980 (Cf. Mathew and Scott 1980). This means that, except for a tiny minority, fishermen survive in conditions that are, by and large, very similar to those I have described for Poomkara.

A similar conclusion may be drawn in respect of children's work. Low earnings, insecurity of employment and dependence on masters and creditors all contribute to their early introduction into the world of work. The practice of young children foraging for remnants of the catch on the seashore while the fishermen are at work is common all over Kerala (cf. also Mathur 1977:179-80). Boys, and in the Hindu and Catholic areas girls as well, keenly learn to resell whatever surplus they have to poor neighbours who cannot afford the more expensive fish traded by adult fish vendors (Puthenkalam 1977).

The disparity in cultural traditions and religious beliefs of Kerala's fisherfolk have an impact on the roles of women. For instance, Hindu women are likely to have less children than Muslim and Catholic women, and are therefore less preoccupied with raising a large family. In many places Hindu and Catholic women and teenage girls perform jobs that are directly connected to cash, such as fish vending, money-lending, processing fish and net-making (Abraham 1985; Ram n.d.; Nayak 1986). In the fishing centres in particular, where the population is mostly Catholic, women and girls provide a large amount of cheap labour for prawn processing and peeling (Mathew 1983; Gulati 1984; Baud 1989:147). Even though women's work is invariably performed onshore, their roles are more heterogeneous than those of children, particularly boys. In contrast to the Muslims, Hindu and Catholic women vend fish to coastal consumers, engage in small-scale trading and money-lending and process fish. Whatever they do, however, their work is invariably poorly remunerated and of low status (Gulati 1984:63ff.; Mathew 1983; Baud 1989; Ram n.d.). It is unlikely to yield significantly higher earnings than coir making, for instance. All women have in common that their responsibility lies primarily in childbearing and domestic work. It is in the gender division of labour within the household that similarities are most pronounced. Most women have to combine housekeeping with remunerated work to supplement the income of men, and they rely heavily on their children's help to be able to do so. Just as in Poomkara, women normally withdraw from work soon after marriage, until their eldest daughter is old enough to take over domestic affairs. This may occur when the child is as young as six (Gulati 1984).

To sum up, the heterogeneity of the technical conditions of fishing entails a great deal of local variation. It is therefore not an easy matter to generalize on the basis of available material. However, there is enough reason to believe that labour relations, and in particular its gender and age aspects, have broad common features. In this sense, the Poomkara case does not seem to be exceptional. In the whole of Kerala, as in Poomkara, women's and children's work is primarily oriented towards the continuity and welfare of the household through activities that are of a non-monetary nature, such as domestic chores and foraging. In addition, they also earn additional cash to supplement the income of men. Invariably, their earnings are modest, as their work is generally held in low esteem. The importance of this work for the household is then beyond dispute.

But let us now return to the main question: what is the impact of women's and children's work roles on fishery in Kerala as a whole?

Weapons of the Small

Over the past fifty years Kerala's fisheries have witnessed deep changes. In the 1940s, the government set out on a policy of modernization that included the introduction of nylon in the fabrication of nets, the use of cold storage, the motorization of artisanal craft and gave new impulse to the cooperative sector. Most of the governmental efforts concentrated on the area around Sakhikulangara, which had long been the main trading centre for the export of dried prawns and salted fish to Ceylon (Klausen 1968:139). The efforts first aimed at channelling a growing stream of fresh fish and fish products originating from the artisanal 'hinterland' towards the powerful Sakhikulangara fish merchants. At the beginning of the 1960s, the demand for frozen sea-food in Japan and the USA showed a sudden and phenomenal growth. Being just under 500 tons at the end of the 1950s, exports increased three-fold in barely three years. Prospects for realizing sizeable profits were alluring. While the shore-price for fresh fish landed by artisanal fishermen was only 150 rupees per ton, the export value of a ton could reach 4,000 rupees. In the hectic climate of those years, the Norwegian proposal to help Kerala to modernize her techniques of fishing by building a modern fishing harbour in Sakhikulangara, appeared to the trading elite as a gift from heaven.

The Norwegians introduced a new type of fishing boat, the 'pueblo', that was designed to suit the conditions of small-scale fisheries. These small trawlers, although they looked quite odd in Norwegian eyes, were large enough to revolutionize not so much the relations of production in fishing as those between producers and traders. The use of motorboats made the fishermen who owned them much faster in landing their catches than the artisanal fishermen, with their canoes propelled by oars and sails. However, modernized fishermen were tied to a harbour for landing their catches. In the fishing harbour, catches could be handled quickly and stored adequately. Exporting agents guaranteed comparatively higher prices than those obtained on the beach. These higher prices were necessary to pay off the loans and to meet the higher running costs of the new equipment. But it also allowed merchants to control the prices of fish more directly than ever. This put them virtually in control of the entire internal market. Their command over the large catches of motorized fishermen greatly enhanced their international reputation as reliable and steady suppliers. It gave them a tremendous advantage above the myriads of vendors who had to collect their highly perishable merchandise from remote and inaccessible shores. The Sakhikulangara merchants were therefore the only serious partners with whom Japanese and American fish food importers could deal (Galtung 1974, 1980).

Artisanal fishermen responded to foreign demand by an impressive increase of their marketable surplus. This surplus was obtained by fish traders for prices well-below those of fish caught by modern boats. Kurien and Willman have ex-

plained this phenomenon by relating the shore-price of the fish to the scale of operation of the fishermen. They argue that the smaller the catch of a fishing unit, the fewer traders there are to buy it, and that this has a negative influence on the price obtained by the fishermen. For instance in 1979, prawns caught by catamarans in Quilon district, fetched on average only 3 rupees a kilogram against 4.79 rupees for prawns landed in the fishing harbour by modern boats (Kurien and Willman 1982:42). The differential shore prices of prawns and the willingness of artisanal fishermen to bring to market the varieties of fish that were in demand, discouraged traders from investing in modern fishing methods. They simply had no compelling motive to do so. Their merchandise was either brought to them by agents operating in the artisanal fishing villages, or landed by motorboats in the heavily subsidized fishing harbours. Prompted by the strong price increases powerful traders from outside fishery, some of whom had faced a serious depression in the trade and processing of cashew nuts and coir, joined the prawn business in the 1970s (Kurien 1978:1563). It mattered little whether the fishermen they dealt with had modern or artisanal equipment. By the end of the 1960s new roads had made most of the artisanal fishermen's shores accessible to lorries and insulated vans. New entrants in the prawn business therefore also chose to invest their profits in an even larger number of insulated lorries and freezers rather than acquiring motorboats (Kurien 1985:86 note 91). Over the years this enabled the traders to increase the share of the profits realized in fisheries at the expense of the fishermen (Kurien and Thankappan Achari 1988:23).

The combined effect of booming exports and massive subsidies did lead most owner-fishermen living near the harbour to adopt motorized boats and trawl nets. The number of boats, only 693 in 1966, grew to 2,636 in 1972, to 3,038 in 1980, and reached 3,400 in 1987. But, in the meantime, artisanal fishermen brought more than twice as many new boats into operation than modern fishermen. The increment in the number of artisanal boats was from an estimated 21,000 in 1961 to 26,000 in 1980, and reached 27,700 in 1987 (Thankappan Achari 1987). The total number of fishermen, mostly recruited by the artisanal sector, nearly doubled: from 74,000 in 1961 it grew to 131,000 in 1980. In addition, artisanal fishing proved to have a few advantages above modern fishing, that were crucial in the years to follow. One was its flexibility when it came to adapt the operation costs to the results of the fishing effort. Operation costs in artisanal fishing entail, in the end, little more than the costs of labour. Given the wide difference in power between owner-fishermen and their crew, this means that the costs of a fishing operation could be reduced to a minimum if necessary.

Artisanal fisheries did witness a genuine revolution. Investments in fishing equipment of all types has proliferated, rendering it increasingly efficient. The use of ice and nylon nets has spread evenly along the coast, and many *tankuvalams* were fitted with an outboard motor in the course of the 1980s (Kurien 1985). This enabled them to return to the shore with their catches faster to explore new, distant fishing grounds. But these technical adaptations did not jeopardize the fisheries' low-cost rationality. Artisanal owner-fishermen retained their ability

to reduce operation costs when catches failed or the price of fish was too low. The cost of petrol was simply deducted from the crew's wages, the men having the option to switch off the motor and use their muscles in the event of their returning empty handed.

The costs of labour in artisanal fishing were then not only very low, they could be reduced at will as well. To understand why, one should consider the interplay between fishermen's work and the activities of women and children. Looking at these activities from the owner-fisherman's point of view, one can distinguish two factors that are important for the final cost of labour. The first one is obviously the direct cost of replacing the energy of labour directly engaged in fishing (direct reproduction). Some labour is cheaper than other, and such ideological factors as gender and age are of importance here. I have discussed above how teenage boys provide a pool of cheap labour necessary for fishing during the slack season or with low-productivity equipment and to assist the fishermen onshore. But there is another factor that plays a role in determining the cost of labour: the cost of replacing the worker in the long run (future reproduction). The host of unpaid domestic activities performed by women and children: their foraging for such products as fish, fuel wood, fruits, and vegetables as well as the additional cash they earn, all help significantly in keeping the cost of the direct reproduction of a fisherman's labour to a minimum. They also form a buffer for maintaining the worker when he is not employed. With respect to future reproduction, the wage should also cover the expenses of bringing up a new generation of fishermen. In artisanal fishing this is the task of the fisherman's family. In a male dominated society such as Kerala's, adult men are supposed to provide their children with food and shelter, while the women mind and train them. But reality is different. The wage income of a crew worker is often so low that he cannot provide for his children. Women are forced to supplement the income of their men, leaving the task of minding the small ones to the girls. Children also have to procure some of the food and money needed for their own maintenance, notably by helping their mothers and by assisting the fishermen onshore. In doing so, women and children defray a significant and flexible share of the costs of reproducing labour. The division of labour in the fisherman's household is therefore instrumental in maintaining and reproducing a vast reservoir of cheap human energy overtime. This gives artisanal fishing a phenomenal advantage over methods of fishing that have to rely on mechanical power.

To conclude, women's and children's work is not only indispensable for the livelihood of fishermen's families, but also for the fisheries as such. The fact that this work is mostly performed in the non-monetized periphery of fisheries provides it with its competitive endurance. Technological innovation, by its localized character, does not jeopardize this division of labour. On the contrary, it sustains artisanal fishermen in their successful competition with modern fishery. But the type of commercialized small-scale fishery that developed in Kerala is in no way 'beautiful'; it thrives on the desperate struggle of men, women and children for basic necessities. And as the symptoms of the depletion of fish stocks become undeniable, its advantage in terms of the cost of human energy

may even turn out to form a serious threat to the marine environment.

Women and Children at a Dead-End

Marine resources have seriously suffered from the intensification of fishing that came in the wake of the prawn boom. While Kerala's total fish landings in the period 1971-75 had reached an annual average as high as 406,000 tons, this figure suddenly declined in the period 1976-80 to a mere 332,000 (Thankappan Achari 1987). Given the increase in the number of workers and the amount of equipment, the declining tonnage of fish landings implied an even sharper decrease in the return per hour of fishing (Meynen 1989:19). While in 1973 one hour of fishing with a trawler yielded on average 82.6 kilograms of fish, in 1979 the return had come down to only 4.2. Artisanal fishing was hit even harder. A yield that dropped from 95.2 kilograms/hour in 1973 to 1.6 in 1979 made the result of fishing still more depressing (Kurien and Mathew 1982:82). The response was, as expected, a further intensification of the effort. The total tonnage of exports could therefore keep growing, although at a lower pace than before, increasing from 22,792 tons in 1962, valued at 277 million rupees to 31,637 tons in 1979, with a total value of 1,096 million rupees (Kurien 1985:78). Meeting export targets under these circumstances was realized by withdrawing fish from the internal market, much to the disadvantage of the poor coastal consumer, in particular the fishermen and their families (Kurien 1987:91; Meynen 1989:20ff.).

The combined effect of falling returns, the rising price of oil and the quick depreciation of the equipment, caused serious management problems for modern fishermen. The owner of a modern boat incurred monetary losses every time an expedition failed. The fish he caught therefore tended to become so expensive that he was forced to seek state support to remain in business. At first sight, artisanal fishing proved better equipped to deal with the problem of diminishing returns than modern fishing, because it relied so heavily on human energy. As he had maintained the share-system, the owner-fisherman met no special difficulties in compensating the fall in return per fishing effort by lower shares for the crew on the beach. If he had an outboard motor, he often simply reserved the use of costly petrol for profitable expeditions, choosing to utilize muscle power, which costs him virtually nothing, for the unlucky ones. Resistance was, in the highly competitive atmosphere in which the intensification of fishing was taking place, simply out of the question. A high rate of population growth had made the ranks of men in need of work swell, and this had only added to an owner-fisherman's power over his crew. As men were forced into submission, women and children finally bore much of the human cost of artisanal fishing's resilience.

Marine depletion affected their work roles in three ways: reduction in domestic fish, loss of employment and devaluation of female and child labour. From my fieldwork I gained the impression that children's customary rights to pick up remnants of the catch are being increasingly denied. Fish for domestic consumption has become scarce. There are a few signs that women's and children's

employment opportunities in fishing have been adversely affected. The use of artisanal fishing gear operated from the beach, such as seines, has declined markedly, thereby impairing the work opportunities of teenage boys (see also Kurien and Willman 1982). Many female jobs, such as net making and fish vending, have declined too, while drying and salting disappeared altogether. Demand for hand-made fishing nets sharply declined. In a depleted environment the more sophisticated machine-made nylon nets have become a must. Many teenage girls and women lost access to this lowly paid but rather stable source of earnings (Gulati 1984; Ram n.d.). Fish vendors, who are mostly women and children, faced increasing difficulties in procuring fish for trade and obtaining credit (Meynen 1989:20). In order to realize sufficient profits, they have, at increasing costs, to travel further afield and remain away from home for longer hours (Nayak 1986). Informants in Poomkara recollected that in the past women and girls used to find seasonal employment in drying prawns and fish all along the coast, a skill that almost totally disappeared with the soaring prices (Beena n.d.). Depletion also threatens the few female and child jobs that commercialization brought in its wake, such as sorting the catches of the trawlers, peeling prawns and transporting ice. Agents of the exporting houses have been hiring thousands of teenage girls and young women to peel prawns (Gulati 1984:114ff.). Women and children had therefore to seek to supplement family income by looking for occupations outside the realm of fisheries altogether, and had to content themselves with the heaviest and least rewarding jobs. Coir manufacture, tailoring, retail sale of snacks and drinks, are examples of these (Ram n.d.). The incomes one can earn in these occupations are even lower than those in occupations allied to fishing. They do not provide viable alternatives to fisheries. What they do rather, is to support the very conditions which lead to the intensification of the fishing effort. In the long run therefore, the resilience of women and children in the face of the ecological crisis, turns out to have led to a dead-end.

The Dilemmas of Resource Management

I have argued that women's and children's roles in fishing have been unduly neglected. Within the family, women and children primarily perform those tasks that allow for the continuity of fishing at low levels of income. This work is mostly oriented towards subsistence and, as a rule, leaves little room for remunerated work. However, conditions in fishing may force women and children to turn their hands to new activities in order to earn additional cash. This has been the case in Kerala's fisheries, where artisanal fishermen have been confronted with an increasing competition following upon a booming foreign demand for prawns. The disturbing devastation of the marine environment that followed threatened those activities on which women and children based their subsistence. In the absence of alternatives to fishing, fishermen have had to cling to their jobs, even though their earnings were insufficient for a family to survive. It was up to women and children to find imaginative ways to make a living. As they bore up against

the effects of the ecological crisis, they could not but add to the further destruction of the environment on which their lives depend. They thus became trapped in a vicious circle from which they may not be able to break out without far-reaching and possibly unforeseen consequences.

Beyond the immediate effects discussed above, two possible consequences stand out: damage beyond repair to the environment and an escalation of violence. While all eyes are turned towards the crude destruction of the environment caused by bottom trawling, another type of damage caused by ever more refined methods of artisanal fishing may very well remain unperceived. However, it is impossible to tell what the long-term consequences of this creeping devastation will be.

The second possible effect may be the escalation of violent conflict. There have been regular clashes between artisanal and modern fishermen on the issue of resource management. Women and children often play a leading role in organizing unions in the south (Meynen 1989:24). Organized action has been instrumental in realizing in the early eighties a government ban on trawling in shallow waters. They have also resulted in other policy measures such as the provision of subsidized outboard motors to artisanal fishermen. But such action seems as yet unable to prevent a widening of the social gap between owner-fishermen and their crew. Organized action has hardly helped relieve pressures on the men of the crew to intensify the fishing effort at their own expenses. Nor has it been instrumental in helping women and children to break out from the vicious circle in which the decreasing incomes of men keep them trapped. Answers sought for halting depletion have therefore until now failed to formulate long-term strategies relevant for the wider social setting of fisheries (Meynen 1989:29ff.). Simply ignoring that women and children are an integral part of fisheries, these answers share the belief that marine depletion can be halted without those who stand to lose. One cannot therefore but fear violent confrontation further to escalate.

Acknowledgements

This article is a revised version of a paper written for the International Symposium on the Environment and the Future of Fish Workers, Lisbon, Portugal, 19-24 June 1989, organized by ICSF (International Collective in Support of Fish Workers, Brussels, Belgium). I am grateful to ICSF and to the South and Southeast Asia Department, Anthropological-Sociological Centre, University of Amsterdam, Netherlands, for their support. Of those who attended the symposium, I wish to mention in particular Ronald Haagensen, George Kent, Wicky Meynen, Cornelia Quist, Geraldine Reardon and Mariet Witkamp for discussing with me some of the views expressed in this article. Thanks are also due to Gísli Pálsson (University of Iceland), Kristoffel Lieten (University of Amsterdam), Robert Pool and the editors of MAST for their valuable comments and suggestions and for improving my English.

Notes

1. The research was funded by the Netherlands Foundation for the Advancement of Tropical

Research (WOTRO). It was part of a project of the South and South East Asia Section of the Anthropological Sociological Centre of the University of Amsterdam (Netherlands). The research was carried out in Central Kerala, in a locality situated along the densely populated coast of Karthikapally taluk, with the assistance of S. Seethalakshmi, Beefathumma Kunju, P. Mohanakumari, and Saraswatiamma between 1978-80 and 1982. The main findings will be published in a book under preparation.

2. To protect the identity of my informants I have used fictitious names and slightly changed some of the situations.
3. Quantitative data refer to the period 1978-80. They were obtained through a survey of all households, a year-long budget-study of 12 selected households and from local records.
4. For a discussion along similar lines on girls' work see Nieuwenhuys (1989).
5. This view is based on the comparison of the following empirical studies: Mathur (1977) (Tanur), Platteau a.o. (1981) (Purakkad), Anonymous (1981) and Platteau (1984) (Sakthikulangara), Gulati (1984) (Puthentura), Vattamattam (1978) (Poonthura), Platteau a.o. (1980) (Poovar).

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Ambivalent Co-operators

Organisational Slack and Utilitarian Rationality in an Eastern Nova Scotian Fisheries Co-operative¹

Anthony Davis

St. Francis Xavier University

Svein Jentoft

University of Tromsø

ABSTRACT Employing case study data, we contend in this essay that the success of co-operatives among small boat fishers, in large measure, depends on the degree to which members remain loyal to the organisation, especially when dissatisfied with particulars of its operation. Furthermore, we contend that co-operatives' ability to cultivate and nurture this equality, referred to here as 'organisational slack,' is jeopardised by a Canadian Fisheries policy which rewards individualistically referenced utilitarian rationality.

RESUME En nous fondant sur les études de cas, nous démontrons que le succès des sociétés coopératives des pêcheurs indépendants (small-boat fishers), dans une large mesure, dépend de leur loyauté envers la société, surtout dans les cas où ils sont peu satisfaits de la gestion de la société en question. En plus, nous démontrons que la capacité de la société pour promouvoir ce caractéristique, que nous appelons *organisational slack*, est menacée par une politique du Ministère Fédéral de la Pêche (Canadian Fisheries) selon laquelle on récompense la rationalité utilitaire et individualiste.

Introduction

Producer co-operatives within fisheries have been the subject of considerable interest on the part of community development organisers, fisheries social researchers and fishermen themselves (Jackson 1984; Jentoft 1986; Poggie 1980; Pollnac 1989; Siemens and Trudel 1984). Co-operatives have been considered by many as an attractive organisational form enabling independent, especially small-scale, producers to capture greater control over economic conditions key to their survival. For instance, fisher participation, as collective owners in community-based business ventures which buy, process and market marine resources, enhances the share captured by producers of the economic wealth generated from marine resources. A greater share enhances the material conditions of fishers, their families and their communities. Moreover, greater shares of fisheries generated wealth retained within fishing communities has the potential to generate spin-off economic activity that creates employment and development beneficial to the entire community and area in so far as it produces economic diversification, thereby reducing dependency on the fisheries.

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In addition, a co-operative is an attractive organisational form to many small boat producers because it maintains *independence*. That is, in joining a co-operative small boat fishers envision an organisation that will both reinforce and develop their independence from marine resource buyers and processors as well as enable them to capture an increased share of potential economic wealth. Important to their independence is the co-operative principle of *participatory democracy*; that is, participation enables fisher members a say in the general and daily decision-making processes. Consequently, participation in decision-making enables the members to reconcile their day-to-day concerns as clients with their broader interest as owners.

These factors have important implications for the viability of the co-operative as a business venture in competitive markets. Firstly, co-owners and active participants in decision-making and management, the members become attached and committed, so the argument goes, to the organisation, something that keeps the organisation together as a coalition in hard times. Attachment makes members willing to sacrifice some of their economic interests, at least in the short term. Secondly, the fisher's dual relation to the co-op, as co-owner and producer (client), has similar effects. If he loses as owner, he may still gain as producer (client), and vice versa. A third factor is also important for the viability of the co-op. Ownership participation provides a fisher member with an extra channel for expressing his dissatisfaction with the services of the co-op. He can use 'voice' in addition to exit, the latter being the only option in private capitalist firms to which the fisher's only relation is as producer/client (cf. Hirschman 1975).

Here lies the real comparative advantage of co-operatives over private capitalist enterprises. Attachment, dual relations and voice provide a "shock-absorbing capacity" (Löfgren 1972) in periods of crises, a situation which frequently occurs in the fishing industry. Or, to put it in Cyert and March's (1963) terms: co-operatives have "organisational slack." In private firms, slack often stems from incomplete information on the producers' side of what their alternative sales opportunities are, or to a time lag in adjusting the aspiration-levels to the actual economic performance of the organisation. In addition to these factors, slack in co-ops is also related importantly to ideology, personal commitment and active participation in an organisation which is literally theirs. It follows from this that fisheries co-operatives should be, *ceteris paribus*, more resistant to economic pressure when times are hard than is the case for private firms.

This paper traces the roots of the slack factor in ideology and members' attachment to an independent Eastern Nova Scotian fishermen's co-operative - The North Bay Fishermen's Co-op, located at Ballantyne's Cove, Antigonish County, Nova Scotia, Canada. To what extent is slack ideal or real? Considering the many failures of co-ops in fisheries (Jentoft 1986; Poggie 1980), there is a risk that slack either gets lost in the business process or that the slack factor unique to co-ops is not sufficient to make them viable.

In this case study we identify membership attachment and how it is converted into slack. In particular, we contend that, in spite of the formal aspects of the

co-operative organisation (i.e., dual relations, voice option, commitment to co-op principles), slack is something a co-op cannot take for granted. On the contrary, it has to be reproduced in business affairs on a daily basis. Crucial to the reproduction of 'slack' is participatory decision-making. Fisher members have to be involved actively in decision-making to feel attached and therefore willing to make sacrifices which permit the co-op to survive in the face of adversity.

We also contend that organisational slack, key to the survival and prosperity of fisheries co-ops, is jeopardised by the individualistic, utilitarian rationality inherent in and emphasised by federal government approaches to the management of access and participation in the small boat sector of the Atlantic Canadian fisheries. Through regulatory approaches such as limited entry licensing largely introduced in and developed since 1968, the federal government, in particular the Department of Fisheries and Oceans (DFO), has cultivated an individualistic utilitarian ethic among small boat fishing captains. Captains, as individual owners of fishing effort, only have access to the 'privilege' of participating in particular fisheries (e.g., lobster, long-line, crab, otter trawl) by obtaining the pertinent federal licenses. Their ability to satisfy individual livelihood needs is levered by possession of the necessary licenses, often obtained from other captains at prices greatly inflated by scarcity created through strict controls on the number of licences issued (cf. Commercial 1985, Policy 1976, Levelton 1981 and Navigating 1983). Consequently, fishing captains increasingly have assumed a posture regarding participation and fishing effort which sets their individual needs and goals in opposition to those of other captains active in similar fisheries (cf. Davis and Thiessen 1988; Thiessen and Davis 1988, and Sinclair 1982). That is, the ethic of and economic costs arising from regulatory mechanisms such as limited entry licensing directly situate each individual captain in a competitive posture relative to other captains. In short, public policies premised on the notions that resources are scarce, and producers are exploitative maximisers and, therefore, in need of regulation, have produced the necessary conditions for small boat fishing captains to become maximising exploiters creating resource scarcity through pursuit of individual utilities in redefined competition with other captains.

Theoretically, such a situation would be expected to reduce the organisational slack within a captain-owned fisheries co-operative such as the North Bay Fishermen's Co-op. The cultivation in individual captains of utilitarian rationality would express itself in judgements and attitudes about the co-operative's ability to deliver economic goods, e.g., better resource prices, business, and returns on share capital. In other words, membership commitment in such a policy environment would become increasingly conditional upon assessments of the co-operative's performance in satisfying goals, needs and the like, as these are defined by the immediate utilitarian priorities and imperatives of each captain member. That is, the process, for each member, of articulating futures through commitment to collective action becomes increasingly sublimated to the immediacies of current results, as these are assessed continually relative to the immediacy of individually-referenced priorities and imperatives. Dissatisfaction,

voiced or not, would be expected to express itself quickly in reduced loyalty, intolerance, and increasing detachment. So, in addition to documenting the character of organisational slack, we will also examine the extent to which this necessary feature is contextualised and jeopardised by the *cultivation and manifestation* of individualistic utilitarian rationality. Before we put these contentions to the test, a short history of The North Bay Fishermen's Co-op is in order.

The North Bay Fishermen's Co-op

Established in 1983, the North Bay Fishermen's Co-op is the latest descendant of area fisher co-operatives first formed in the context of the Antigonish Movement. Indeed, Moses Coady, a founder of the Movement, personally participated in the initial study clubs and development of the original co-operatives, including the St. George's Co-op, established in 1935 and situated at Ballantyne's Cove. The St. George's Co-op was a producer/consumer co-operative organisation. Among other activities, it operated a lobster and fish buying/processing facility as well as a general store which provided agricultural services such as ploughing and mowing.

In 1954-55, the fish buying business was transferred to the Antigonish Co-op Fishermen (ACF), a county-wide producer co-operative organised by the St. Francis Xavier University Extension Department. Antigonish Co-op Fishermen marketed their resources through the United Maritime Fishermen (UMF), which was developed as an umbrella organisation within and through which local fisheries producer co-operatives could centralise and concentrate their marketing and economic interests. The North Bay Fishermen's Co-op arose from the ashes of a failing ACF-UMF business relationship. Once established, it purchased existing office and processing facilities at Ballantyne's Cove.² Since its inception in 1983, the North Bay Fishermen's Co-op has developed new facilities and aggressively pursued market opportunities. Today the co-op has 60 members, most of whom have previous experience and investment with fisheries co-operatives. In the following we examine in specific detail the characteristics and qualities of membership attachment and participation.³

Dimensions of Participation

There are a variety of ways to measure and to describe membership participation. In this instance, activities such as meeting attendance, active participation in the co-op's affairs as measured by membership involvement with the Board of Directors, committees, official delegations and the like are considered. Over ninety percent of the fishermen interviewed (46 of 51) reported that they had been members of the co-op for three or more years. In addition, many of the current members belonged to the fisheries co-operatives which preceded North Bay. Consequently, the vast majority of the membership interviewed have lengthy association with and experience in co-operative organisations. When

asked to indicate the various reasons why they joined the North Bay Fishermen's Co-op, 72.5% replied that the co-op represented the best opportunity to sell their catches; 62.8% felt the co-op was vital to the community and they wanted to support it; 33.3% noted that support for co-operatives is part of their family tradition; and 43.1% reported that they also joined because the success of the co-operative depended upon the support of as many people as possible. In addition, 25.5% of the membership noted that they joined because the co-operative form of organisation gives them a greater say in and benefit from matters directly concerning their livelihood such as dockside prices.

In sum, from these responses it is apparent that many of the members, as a consequence of their previous experiences with co-operatives, readily support and have formed positive feelings about the co-operative type of organisation. Most joined for these reasons, noting that they chose participation in the co-operative over the available alternative of selling their catches to a local private fish buyer. This is a particularly telling set of attitudes given the fact that most of the members had recently experienced the failure of both the Antigonish Co-op Fishermen and the United Maritime Fishermen co-operatives. Numerous captains lost, in their judgement, considerable economic resources, i.e., their share capital in the collapse of these co-operatives. Yet, instead of exercising the option of throwing up their arms in despair and exiting from participation in co-operative ventures, they immediately began the process of organising and building another co-operative within a local environment which contains an alternative and, in terms of prices attractive outlet for their sales. In short, this pattern of response suggests that, by and large, the membership expresses 'co-op consciousness' in their feelings, attitudes and choices.

Curiously, the breadth of the membership's willingness to join and support co-operatives is not replicated in the more direct measures of participation. For instance, almost thirty percent of those interviewed report that they attend meetings either occasionally, rarely or never. Over sixty-six percent stated that they have never held an official, elected position with the co-op (34 of 51) and almost sixty-three percent (32 of 51) claimed that they had never been a member of a co-op committee or delegation. These data indicate that, while the vast majority of the membership are committed to joining and supporting co-operatives, a substantial number are not motivated sufficiently to always attend meetings and only about one in three of the membership actively participate, beyond attending meetings, in the co-op's affairs. Moreover, the spouses and children of co-op members are almost totally uninvolved in the co-op. Of the married members interviewed, only a couple reported that their spouses were involved with the co-op. In addition, none of the members interviewed had children who were involved.

These data suggest that the instrumental purposes of fish sales and situational conveniences such as location and services (e.g., credit, supplies, and so on) underwrites, for many membership and participation. Certainly, the recent negative experiences of many captains with co-op failures has left a residual of cautious conservatism when it comes to co-op involvements and affairs. Yet, for

these captains, the option of forming and/or joining a co-operative, with all of its attendant risks, outweighs the alternative of simply selling catches to the local private fish buyer-processor, Arisaig Fisheries. It would be simplistic to attribute this choice primarily to instrumental purposes such as economic opportunism, particularly in a setting where negative economic experiences with co-operative organisations have been the rule rather than the exception. For these fishers the co-operative represents the organisational form of choice, choice itself reflecting almost sixty years of association between these fishers, their families, their communities and the co-operative form of organisation. While it would be foolhardy to deny instrumental associations, the maintenance of the co-operative preference, especially given the extensive experience with failure, can only be understood in reference to the 'co-op consciousness' that has resulted from the years of association. However, having noted this, the reported lack of participation and integration of many in co-op affairs reveals a window of vulnerability for the organisation and its membership.

Dimensions of Attachment

Potentials for vulnerability and crisis evident in the dimensions of participation are further underlined by direct measures of membership attachment and loyalty to the co-op. For instance, when asked if they would sell to another fish buyer if offered higher prices, over thirty-five percent (18 of 51) of the members interviewed reported that they would sell to another buyer. Needless to say, while a minority of the membership, the resource supply represented by this group would be substantial, especially significant because of the extent to which the co-op is a specialised, seasonal venture largely dependent on lobster and herring roe sales over six months of the year. For the North Bay Fishermen's Co-op these data reveal a fundamental vulnerability to resource supply. This is rooted in both qualities of the relationship these members have with the co-op and their feelings about the co-op.

Aside from this measure of willingness to sell to other buyers, responses to several other questions clearly indicate the extent to which the membership has doubts about the co-op. Almost sixty-seven percent of those interviewed (34 of 51) reported that they are unwilling to put more of their fishing income into the co-op. About eighty percent (40 of 51) disagreed with the statement that members should be prepared to surrender income today in order to encourage long-term success and over eighty percent (42 of 51) responded negatively to the suggestion that the co-op management knows what is in the best financial interests of the co-op and its membership. In short, a large majority of the membership is unwilling to put more money into the co-op and an even larger majority expresses suspicion regarding the judgement of co-op management. Given that the members own the co-op and that the success or failure of the co-op reflects directly on the members livelihoods, the pattern of responses here hints at unease among the membership and the potentials for difficulties concerning attachment and loyalty to the organisation, thereby jeopardising 'organisational slack.'

This situation is further underlined by the fact that few of the members are prepared to sacrifice aspects of their individual vested interests in fishing to the co-op. In their responses to a question which asked what they would be prepared to do if a majority of the co-op membership decided that the success of the co-op required redistribution of fishing effort, over ninety-six percent of those interviewed would refuse to surrender a fishing license; over eighty-six percent would refuse to replace their current boat with one that is smaller and less powerful; over eighty-four percent reported that they would not voluntarily transfer a license to another co-op member; ninety percent claimed that they would, as individuals, apply for new licenses; and almost seventy-seven percent reported that they would refuse to allow the co-op to hold and distribute licenses and quota. Only in one instance, reduction of fishing effort (e.g., number of days fished and/or the amount of gear fished), did a slim majority of those interviewed (52%) indicate a willingness to sacrifice individual interests for the benefit of the co-op and its membership.

These data reveal that, when it comes to their individual livelihood interests, most of the membership feel it necessary to maintain an arms length relationship with the co-op. Without question, a good number of the members are, minimally, unconvinced that the organisation can or should be trusted to represent their individual interests. These findings contrast sharply with the overall positive attitude and support expressed by the vast majority of the members toward co-operative forms of organisation. Why would members generally in favour and supportive of co-operatives report little willingness to sacrifice their individual interests for the benefit of the co-op and its membership, including themselves? Could this be yet another expression of the classic small boat fishermen's, as 'rugged individualists,' distrust of representative organisations, whatever form they may take?⁴ Are there aspects of the North Bay Fishermen's Co-op management and organisation which underwrite members' suspicion and hesitation? In order to attempt answers to these and other questions we must search out explanations for the causes of the membership's ambivalence. Indeed, this ambivalence is expressed even more emphatically by the fact that over ninety percent of the members (46 of 51) report that they feel their opinion counts in the co-op and fully two in every three of the members report that they would *not* sell to another fish buyer, even if offered high prices, both features demonstrative of 'organisational slack.'

Dimensions of Satisfaction

To isolate aspects of satisfaction, we asked members questions intended to reveal general feelings about the co-operative as well as opinions concerning specific aspects of its organisation and operation. The vast majority of the membership interviewed reports that they are moderately to very satisfied with the service they receive from co-op dockside/plant workers (92.1%) and co-op office personnel (88.3%). Many made a point of emphasising that the people and their work were of 'the best sort.' Eighty-two percent indicated that they were moder-

ately to very satisfied with selling to the co-op. Apparently, while about one in three would sell to another fish buyer, most are satisfied with their present arrangement. The levels of satisfaction notably decrease in association with co-op management and co-op business and accounting practices. Almost sixty-seven percent reported satisfaction with business and accounting practices while under sixty percent (58.8%) noted they were moderately to very satisfied with co-op management. These data suggest that a sizable number of members feel uneasy about these two particular aspects of the co-op. Responses to several general questions shed some light on the factors involved here.

Almost sixty-five percent of the membership interviewed reported that the co-op represents their needs and concerns. Yet, about only one in every two of the members (26 of 51) claim that the co-op is satisfying their needs and concerns. The suggestion here is that while the majority of the membership welcomes the co-operative form of organisation as representative of their needs and concerns, many feel that these are not being satisfied through aspects of current practices. In particular, almost fifty-five percent of those interviewed (28 of 51) claim that they are *not* being kept adequately informed about the practices and plans of the co-operative. Fully sixty-seven percent (34 of 51) feel that they are *not* consulted frequently enough about management and development plans and initiatives.

These data reveal that the ambivalence of many towards the co-operative specifically concerns the perceived or real distance that they feel from the management and development plans, practices and initiatives on-going within the co-op. A majority of the members report they are inadequately informed and insufficiently consulted about these areas. Consequently, they are saying that, while they feel their opinion counts, it is not being sought out frequently enough. As a result, the suspicion noted earlier is rooted, at least to an extent, in the feeling that they are not being integrated adequately in the decision-making processes, leaving many of the members without confidence in their knowledge about co-operative affairs as well as in disagreement with management decisions and practices and, therefore, uncertain about and distrustful of management.

Analysis of Selected Characteristics

In order to develop a better understanding of the patterns reported above, members' responses were examined in relationship to their attendance at meetings and whether they felt they were being kept adequately informed. Table 1 examines membership responses in terms of meeting attendance. This information reveals that those who always attend meetings are much more likely than those that do not to hold an official position with the co-op (43.2% vs. 0%); to feel the co-op members are consulted enough about plans and initiatives (70.3% vs. 57.1%); and to continue selling to the co-op even if another fish buyer offers them higher prices (73.0% vs. 42.9%). This information clearly reveals the importance of membership attendance at meetings as a foundation for attachment to and participation in the co-op, thereby maintaining 'organisational slack.'

Table 1. Members' Reported Attendance at Co-op Meetings by Selected Response Categories

Attendance at Meetings	Response Categories									
	Would Sell to a Fish Buyer Other than Co-op		Held/Hold Official Position with Co-op		Co-op Represents Needs and Concerns		Co-op Members are Kept Adequately Informed		Members are Consulted Enough about Plans and Initiatives	
	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %
Always (N=37)	27.0	73.0	43.2	56.8	59.5	40.5	43.2	56.8	70.3	29.7
Less than Always (N=14)	57.1	42.9	--	100.0	78.6	21.4	50.0	50.0	57.1	42.9

Notably, meeting attendance exerts little influence on whether members feel they are being kept inadequately informed (43.2% vs. 50.0%).

Indeed, if anything, regular attendance at meetings reinforces some members' suspicions about not being kept adequately informed, 56.8% of those always attending report they feel this way as compared with 50% of the less frequent attenders. Furthermore, always attending meetings exerts a negative influence on whether or not members think the co-op represents their needs and concerns. Almost forty-one percent of those always attending report they feel the co-op does *not* represent their needs and concerns while only twenty-one percent of the less frequent attenders claim a similar opinion. Several of the members interviewed volunteered the opinion that an insufficient number of meetings are called each year. Indeed, the general membership is drawn together on only a few occasions such as the Annual General Meeting and fisheries section meetings (e.g., ground fish and herring). The frequency with which the membership meets with its board of directors and management, in addition to attendance at meetings, would be important to instilling and cultivating the sense as well as the experience among many of the members that they both are being kept informed and are participating in the decision-making process. Without question, the current practices provided limited opportunity for the membership, particularly those resident in and fishing out of ports other than Ballantyne's Cove, to sustain a sense of ongoing, active participation in the co-operative. Moreover, for those motivated to attend and to participate the practice of meeting infrequently will provide little opportunity for nurturing attachment, encouraging participatory decision-making and building confidence in the relations between members and management.

It is curious that a greater percentage of those always attending meetings,

when compared with the less frequent attenders, express doubt about the co-op representing their needs and concerns, especially since a good majority of these very same members report they feel that members are consulted enough about plans and initiatives (70.3%). This indicates that, while those always attending think they are consulted enough, some of them do not agree with the direction the co-op is taking. However, the attachment that most have to the co-op is strong enough thus far to maintain, regardless of this disagreement, their willingness to continue selling to the co-op even if another fish buyer offers higher prices. This is a rather strong indication of 'slack' in the organisation.

The impact on membership attachment and satisfaction of feeling adequately informed is demonstrated in the distribution of responses presented in Table 2. Of those claiming they feel adequately informed, 78.3% report that they would *not* sell to another fish buyer, 78.3% feel the co-op represents their needs and concerns, and 69.7% report that they think members are consulted enough about plans and initiatives.

In stark contrast, of those reporting they feel inadequately informed, 46.4% would sell to another fish buyer, 46.4% feel the co-op does *not* represent their needs and concerns, and fully 96.4% report that they think members are *not* consulted enough. This pattern clearly reveals that the development and maintenance of membership attachment to and satisfaction with the co-op is strongly influenced by the extent to which attention is paid to assuring the members have access, on a continual basis, to information and participatory decisionmaking about the organisation's practices and plans.

In order to explore characteristics of satisfaction with co-op organisation and practice, members were asked to indicate their feelings about specific features on a five-point scale, ranging from very satisfied (5) through to very dissatisfied

Table 2. Members' Response to the Kept Adequately Informed Question by Selected Response Categories

Kept Adequately Informed	Response Categories							
	Would Sell to a fish Buyer Other than the Co-op		Held/Hold Official Position with Co-op		Co-op Represents Needs and Concerns		Members are Consulted Enough About Plans and Initiatives	
	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %
Informed (N=23)	21.7	78.3	34.9	65.2	78.3	21.7	69.7	30.4
Not Informed (N=28)	46.4	53.6	32.1	67.9	53.6	46.4	3.6	96.4

Table 3. *Measure of Members' Satisfaction with the Co-op by Attendance at Meetings*

Attendance at Meetings	Response Categories											
	Co-op Management		Co-op Office Staff		Co-op Business and Accounting Practices		Selling to the Co-op		Time Given to the Co-op		Members' Sacrifices to the Co-op	
	S* %	D** %	S* %	D** %	S* %	D** %	S* %	D** %	S* %	D** %	S* %	D** %
Always (N=37)	59.5	40.5	89.2	10.8	62.2	37.8	86.5	13.5	73.0	27.0	75.7	24.3
Less Than Always (N=14)	57.1	42.9	85.7	14.3	78.6	21.4	71.4	28.6	42.9	57.1	42.9	57.1

* Satisfied

** Dissatisfied

(1).⁵ The responses are presented in Table 3. This information reveals several important characteristics of membership satisfaction and dissatisfaction. To begin with, satisfaction is generally reported in association with selling to the co-op. Here the greatest dissatisfaction with selling to the co-op is registered among those who attend meetings infrequently (28.6%). Secondly, members are divided on their satisfaction/dissatisfaction with co-op management, including the business manager and Board of Directors. Almost sixty percent of those always attending meetings reported satisfaction with management while about forty percent claimed to be dissatisfied. Given that confidence in management is a key to the day-to-day operation and long-term success of organisations such as co-operatives, the several levels and specific distribution of dissatisfaction in this regard represents a particular source of ambivalence. As profiled in Table 3 a substantial number of those interviewed report that they are dissatisfied both with the sacrifices they have made and the time they have given to the co-op. High levels of dissatisfaction are reported by a majority of those who attend meetings infrequently (57.1%) for both sacrifice and time. Indeed over one in four of regular attenders also report dissatisfaction in this regard. Here a good number of the membership is expressing an awareness of the fact that they could and should be doing more for the co-op. There is little doubt that developing means to enable increased contributions/participation for these members would dispel some concerns, raise satisfaction with management and shore up 'organisational slack.'

Determination of the extent to which members are prepared to give their time

and resources as well as subordinate their immediate personal goals to the welfare of the co-op and its membership provides an important measurement of member attachment to and understanding of the organisation and its purpose. Table 4 profiles responses to several questions intended to examine this. Responses to several questions not included in the table clearly outline aspects of what the members are *not* prepared to give. For instance, 96.1% of the members would *not* transfer a fishing license to another co-op member; 86.3% would *not* reduce the capacity of their fishing vessels; 84.3% would *not* surrender fishing licenses; and 90.2% would *not* individually pursue new licenses. In short, co-op members are not prepared either to jeopardise or to subordinate their ability to fish, as this is specified by licenses and vessel capacity, to the co-op and its membership. In part, the vested unanimity expressed here reflects the influence of federal licensing policy upon the conditions of individual access to participation in the fisheries. Livelihoods are inaccessible without appropriate licenses. Such a 'reality,' attaches individual livelihood needs/goals, first, to possession of federally dispersed/regulated licenses, rather than co-operative organisational forms that are necessarily sensitive to some notion of majority, if not collective, interests. The individualistic utilitarian rationality emphatically cultivated by federal government regulatory policies delimits arenas of action available to the co-operative, especially in regard to areas such as pursuit of member interests through supply and/or access management. Moreover, the terms of reference concerning member attachments and expectations will be defined, to some degree, by the logic of individually 'licensed' privileges, countervailing 'organisational slack.' However, as is apparent in Table 4, many would voluntarily reduce their fishing effort, for example the number of days fished and/or the amount of gear fished, if this was necessary in order for the co-op to succeed. But, an almost equal number would be resistant to taking such a step. Those that reported they always attend co-op meetings are much more likely to reduce fishing effort voluntarily (70.3%) than are those that attend meetings infrequently (57.1% would reduce). Corroborating this pattern, additional analysis not included in Table 4 shows that 56.5% of those reporting that they are kept adequately informed would reduce fishing effort while only 48.1% of those feeling inadequately informed would support such a measure. These data reveal that participation in the co-op (meeting attendance) and feeling informed all positively impact upon members attachment to and confidence in the co-op and its purpose, to the extent that they would voluntarily reduce their fishing effort if such a measure was deemed necessary for the success of the co-op.

As apparent in response to the question about allowing the co-op to hold and distribute licenses and quotas, there are real limits to the extent that the members are prepared to trust the organisation with management of access and participation in the fisheries. Although this is generally true, a much greater percentage of those who always attend meetings and report feeling adequately informed would be prepared to trust the co-op with access management responsibilities. Again, the importance of developing and maintaining membership attachment to and confidence in the co-op is apparent here. Membership attachment de-

Table 4. Measure of Members' Attachment to the Co-op by Attendance at Meetings

Attendance at Meetings	Measure of Members' Attachment							
	Members Should be Required to Give Time to the Co-op		Would Reduce Fishing Effort		Would Allow the Co-op to Hold/ Distribute Licenses and/or Quotas		I've Put Enough Money into the Co-op	
	Yes %	No %	Yes %	No %	Yes %	No %	Yes %	No %
Always (N=37)	67.6	32.4	70.3	29.7	25.0	75.0	70.3	29.7
Less than Always (N=14)	35.7	64.3	57.1	42.9	14.3	85.7	57.1	42.9

velops trust in the organisation and its practices, reproducing and nurturing 'organisational slack.' It also cultivates confidence in management and membership decisions, confidence that the interests and practices of the co-op are synonymous with those of the individual member.⁶

Similar associations are seen in the responses to the measure concerning members' financial commitments. Here the principle explored expresses the idea that the more attached to and confident in the co-op, the more likely the members will closely identify the co-op with their economic interests and future. Consequently, members so disposed should be willing to commit more of their dollars to the co-op. While a majority of the members interviewed indicate that they feel they have put enough money into the co-op, notable differences in the responses support the association between attachment and willingness to commit more financial support. For instance, 47.8% of those feeling adequately informed seem willing to put more money into the co-op. On the one hand, these data suggest that those who feel they are being kept adequately informed are much more likely to perceive their economic interests as synonymous with those of the co-op and, as a result, willing to commit even greater portions of their earnings to the organisation. On the other hand, widespread dissatisfaction, as measured earlier, concerning management practices, information management and consultation processes without question would deter members from committing further financial resources since they would have neither the confidence in nor attachment to the organisation. Certainly this is expressed in the extent to which the largest number of members feel that they have put enough money into the co-op. When contrasted with member responses to the idea that members should be *required* to give time to the co-op, most think that members should be required to give time to the co-op as a condition of membership. This is particularly the case for those who report that they always attend meetings

(67.6%). Notably, in analysis not included in the tables, almost sixty-one percent of those who feel they are *not* adequately informed think that members should be required to give time. Only in the case of those who attend meetings infrequently do we see a majority expressing resistance to this idea (64.3%).

Conclusion

The description and discussion presented here support our two contentions. 'Organisational slack' has been isolated within the measures of participation and attachment examined. This is particularly evident in the contrast of relatively high membership dissatisfaction in areas such as management, consultation processes and information dissemination with essentially moderate membership tendencies to feel dissatisfied with co-op prices and to report that they would sell to another fish buyer. For many members, loyalty and attachment to the co-operative overrides their dissatisfaction and unease to the extent that they would not sell to another buyer, even if that buyer was offering higher prices. The evidence presented also demonstrates that participation in the co-operative is key to maintaining and reproducing 'organisational slack.' For instance, those who always attend meetings when compared with those who do not, report greater contentment with most areas of co-op organisation and operation and claim to be notably *less inclined* to sell to other buyers. Remarkably, those members who always attend meetings, also report a much stronger conviction in regard to the co-op *not* meeting their needs and concerns. Surely, the co-existence of strong loyalties and attachments with negative assessments of needs satisfaction is a clear indicator of organisational slack particular to the unique characteristics of co-operatives, representing a tremendous resource relative to its functioning as a business. That is, most of the membership remains attached to the co-operative alternative, even though notably unhappy with particular aspects of their own co-op's management and organisation, thereby providing the organisation with the sort of support and flexibility countervailing to exercise of the 'exact' option in times of discontent. For the co-operative as a business this 'organisational slack' is a resource in so far as it constitutes the basis of confidence regarding resource supply, allowing the co-operative to invest its energies in the development of alternatives in other areas of products and/or markets.

However, slack is not an aspect of membership attitudes which the co-operative's management can take for granted. To the contrary, slack must be nurtured, maintained and reproduced through measures that facilitate membership participation. The positive effect of this is evident in the responses of members whom report that they always attend meetings, while the consequences of failure to do this is foreshadowed in the reports of members who attend meetings infrequently. However, the *assumption* on the part of management of slack, rather than constant attention to developing and sustaining it, would transform an organisational and, especially, business strength into a lost opportunity, thereby eroding the economic viability and threatening the co-operative's survival.

Indeed, the necessity to underline the conditions sustaining and reproducing organisational slack is made even more urgent given the evidence of membership resistance to subordinating their individual prerogatives in fishing to insure the well-being of the co-operative and its membership, including themselves. The almost universal resistance of members to scenarios such as transferring licenses to other members and allowing the co-operative to hold and distribute licenses, clearly indicates an elemental tension between convictions concerning livelihood self-interests and attachment and sublimation to the co-operative as the organisational vehicle through which to realise livelihood self-interests. Here is evidence of the individualistically-referenced utilitarian rationality cultivated in federal government access management regulations. Self-interested utilitarians would be suspicious of and resistant to a co-operative, or any other organisation for that matter, as the vehicle through which their livelihood needs and goals are met, particularly if they were compelled to subordinate some of their individual prerogative to an organisation directed by the judgement of its members/owners in terms of what is in collective best interests. For instance, the redefinition of participation in fishing as a privilege granted individuals by government through issuance of limited entry licenses countervails practices or attitudes among small boat fishermen that reference individual self-interest to collective organisation and outcome (cf. Acheson 1979; Andersen 1979; and Davis 1984). Once the individual captain is in possession of the privilege, livelihood success is a measure of his/her ability to exercise the privilege in his/her individual self-interest. Co-operation, while possible, is not the idea residing at the core of the sort of rationality presumed in this model (cf. Clark 1981). In fact, the resistance to sublimation of individual prerogative evident among the membership suggests that organisational slack is quite fragile an attribute. Members unwilling to perceive their most elemental self-interest in the co-operative are likely intolerant to abiding dissatisfaction for long. While management would woe the presumption rather than nurturance of slack, numerous of the members threaten slack through their utilitarian posture, a condition aided and abetted by the utilitarian rationality inherent to federal government regulatory policy. Indeed, taken to its logical conclusion, cultivation of individualistic utilitarian rationality among small boat fishermen will erode organisational slack and, thereby, threaten the viability of co-operatives as attractive alternative forms of organisation.⁷

Notes

1. The research reported here was funded by a research grant from the Centre for Research on Work, St. Francis Xavier University. We would like to thank Drs. L. Brown, D. MacInnes, V. Thiessen and the editors of MAST for their critical assessment and advice on an earlier draft of the essay. This manuscript was prepared, with the usual care and professionalism, by Mrs. Frances Baker of Antigonish.

2. While the failure of the UMF has yet to receive systematic study, preliminary analyses suggest a number of interrelated reasons underwrite its collapse (cf. Clement 1986). To begin with, the

management bureaucracy had grown to the extent that it had come to absorb a disproportionate share of the wealth generated by the co-op, leaving less for the fishermen and fish plant workers. Secondly, the growth in bureaucracy associated with the formation of a Maritime regional co-op reduced the product, marketing and business decision-making flexibility available to co-op management, particularly in times of market downturns and economic squeezes. Thirdly, the sheer regional character and scale of the co-op increasingly distanced membership from management, leaving professional managers in the position of determination over co-op affairs. Consequently membership involvement and loyalty waned as their client experience with the co-op seemed to indicate that it was like any other fish business, thereby eroding the readiness of members to sacrifice income and time for the purpose of sustaining the UMF. Indeed, the regional scope of the co-op and the negative consequence of this for member attachment, loyalty and satisfaction underwrites the significance of modesty in scale to co-op success (cf. Jentoft 1986). Discussion with members also indicated that the UMF was systematically barred by existing players from participating as a broker/wholesaler in U.S. shellfish markets. These members argue that this development seriously eroded the ability of the UMF to remain competitive and economically viable.

3. The data presented in this study was gathered through in-person, structured interviewing. An interview questionnaire was designed and pre-tested. The pre-tested interview, objectives of the study, and a request for participation were presented to the Board of Directors of the North Bay Fisheries Co-operative. The Board of Directors agreed to participate with the study and released to the researchers the most current membership list, including mailing addresses. It was understood that, in all other ways, the study would proceed independent of the co-operative's management. Once in receipt of the membership list a letter introducing the study, outlining its purpose and requesting co-operation was sent to all members. The interviewing was done by Ms. Kimberlee Adams, Ms. Audrey MacNevin and Anthony Davis. One of the sixty-one members listed had withdrawn by the time interviews had begun. Every effort was made to establish face-to-face contacts with the remaining sixty members through repeated visits to their homes and boats between April and July, 1988. In this manner, fifty members were met and asked if they would participate in the study. Forty-nine agreed to be interviewed and one declined. Since it was essential that as many members as possible be included in the study, copies of the questionnaire accompanied with an explanatory letter, and stamped, self-addressed return envelopes were mailed to the remaining ten members. Of these, two returned completed questionnaires. One member sent back an uncompleted questionnaire with an enclosed note indicating a desire not to participate. In sum, fifty-one members participated in the study (85%) two declined (3%) and seven did not respond to the mailed questionnaire (12%).

4. Additional findings not reported in this essay question presumptions concerning fishermen's distrust of representative organisations. Thirty-one of the members interviewed also belong to the Maritime Fishermen's Union (MFU). Generally, this block is among those most favourably disposed toward the co-operative. Yet, most of the MFU members also emphatically express the resistance and concerns noted. Notably, the association of union membership with ardour of support for the co-operative challenges assumptions some have made concerning the association between 'class consciousness'/class politics and the form of representative organisation adopted (cf. Clement 1986).

5. The small number of cases involved in the study (51) requires that the responses on the scale be recoded to the categories satisfied (scores 4-moderately satisfied and 5-very satisfied) and dissatisfied (scores 1-very unsatisfied, 2-moderately unsatisfied and 3-neutral). Neutral is included in the dissatisfied category in so far as such responses reflect lack of explicit satisfaction.

6. The role that co-operatives can play in the management of access and participation has been documented in several situations. For instance, Japanese fisheries co-ops play a control management role in distributing licenses, quotas, territorial rights and so on (Jentoft 1989). Co-op participation as agents of management has also been documented in the Southwestern Nova Scotia herring fishery (Kearney 1984).

7. Indeed, membership exercised its concerns in the winter of 1989 by firing the co-operative's manager, a full-time professional, and replacing the Board of Directors. Several of these ex-Directors resigned from the co-operative and have shifted their catches to a private fish buyer/processor. Apparently, the remaining membership and new Board of Directors have down sized operations and withdrawn plans for expansion and development, at least until the co-operative achieves a sounder economic footing.

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Discussion

Homo Sapiens Baymenesis

A Critique of the "Baymen Of The Great South Bay ..."

John A. Black

Suffolk Community College

Jeffrey Kassner is to be congratulated for venturing into the perilous waters of ecology and evolution in attempting to define the life style of Long Island's baymen. Kassner's paper fails almost immediately, however, since the concept of ecological niche, though pivotal to his thesis and implied throughout, is misapplied.

Niche is defined as the functional role of a population in its community. Modern ecological thought distinguishes between fundamental and realized niche – both of which are evolved characteristics of a species. Although it is impossible to determine the extent of the fundamental or total niche of a species, it is considered to be a genetically determined characteristic and a species cannot change its fundamental niche without undergoing profound genetic change. Realized niche is that portion of the fundamental niche that a population actually occupies.

Homo sapiens occupies a remarkably wide niche. They can survive at a wide range of temperatures, from arctic to tropical, can utilize an astounding variety of food, and are able to make use of a plethora of breeding sites – from high rise apartments to the back seats of autos, etc. To imply that the baymen occupy a unique 'baymen niche' apart from the remainder of *Homo sapiens* is to hold that the baymen are genetically different from the remainder of the species.

Moreover, to imply that the baymen are genetically different is to hold that they are a distinct species or, at least, a subspecies. By definition, a species is a group of organisms actually or potentially capable of producing a viable, fertile offspring. Thus, to apply the concept of 'baymen niche' fully, baymen should only be able to reproduce successfully with baywomen or baymen's daughters, and baywomen with baymen and their sons. This, obviously, is not the case since bay-people can, at least potentially, reproduce with yuppies of either sex.

A cardinal principle of evolution, overlooked by Kassner, is that of fitness. Modern ecological theory also predicts that the individuals filling their niche most successfully are the best adapted and, therefore, the fittest. Darwin's 'Survival of the Fittest' implies a differential reproductive rate with the fitter flourishing, having a higher reproductive rate and, thereby, producing more individuals for future generations. Over the long-term the sheer numbers of the offspring of the fit will overwhelm and outcompete those of the less fit; as the species changes so too does the niche. Fit baymen do not appear to have a higher reproductive rate than less fit baymen, nor do their offspring appear to be more efficient in occupying Kassner's 'baymen niche.'

The major variable distinguishing a bayman from a starfish in interspecific competition is the bayman's ability to become a used car salesman or a gas station attendant

when shellfish resources become scarce. The baymen turned gas station attendants do not change their genetically determined niche; rather they merely occupy a different segment of the niche filled by *Homo sapiens*. The starfish, on the other hand, cannot do this without profound genetic change. In reality, a non-human species filling the 'bay niche' exclusively would be forced to contend with ever increasing competition for a dwindling resource – the shellfish. The fittest would survive, reproduce and leave fitter offspring to continue the niche. The baymen's offspring, during good times and bad, are free to fill other *Homo sapiens* niches; they can become used car salesmen, gas station attendants or even bay management specialists!

Some might argue that when a bayman is forced to become a used car salesman, etc. he would have to make a significant cultural change. While this is true it would be a cultural, *not* a biological change. This is a much different change than a starfish would need to make should it be forced from the 'bay niche.' For a starfish to occupy the realized niche of a used car salesman it would have to change genetically, so drastically that it would no longer be a starfish. Nor could it return to its original bay niche should conditions improve.

A key factor overlooked by Kassner is the bayman's inability to live in harmony with his preferred resource. This is due to the obvious fact that shellfish are not the sole, nor necessarily the preferred food of the baymen. Rather, shellfish to the baymen, like cars to used car salesmen, are a commodity to be sold. Thus, the baymen, as do virtually all members of the species *Homo sapiens*, with the possible exception of primitive hunter-gatherer or agrarian societies, convert the primary food supply of their competitors into cash. Kassner equates cash with energy; which can then be converted into an alternate food supply such as noodles, be used to purchase an auto from our used car salesman, be saved or, in Kassner's terms, be converted into 'nonessential amenities.' This is a key difference in the use of a resource by the baymen vs. the starfish. The starfish can only use the energy garnered from the resource for growth, the repair of tissue and reproduction. The baymen can convert the resource into cash, save it or spend it on 'nonessential amenities.' The ability to save 'energy' or to use it to keep up with the Jones' invariably leads to overexploitation of the resource.

It might be argued that a starfish's ability to 'save' energy as fat is akin to the baymen's ability to save money or to acquire 'nonessential amenities.' During sustained hard times, however, once the starfish's fat reserves are depleted, it has no recourse save to seek new shellfish beds. The baymen, on the other hand, can always resort to other energy getting pursuits available in the very large *Homo sapiens* niche.

Thus, once shellfish resources become scarce the competition among starfish increases. The fittest should survive while the least fit will perish or migrate to another area. The baymen, on the other hand, can demand government intervention in the form of augmentation programs. In many areas on Long Island, particularly Brookhaven Town, the local government will grow shellfish in taxpayer supported hatcheries and throw them into the bay for the baymen to dig up and sell. A starfish population cannot expect this type of welfare system to intervene and allow them to continue to occupy their genetically determined niche. If this were the case the bay would be as full of marginally fit starfish as it is of baymen.

One might applaud Kassner for attempting to apply an ecological and evolutionary metaphor to anthropological thought. It is, however, important to base a metaphor of this sort on firm scientific concepts correctly applied to the case in point. Thus, even as a metaphor, the thesis fails. It might, therefore, be more fruitful for Mr. Kassner to investigate how cultural mores, lobbying and legislation can interact to convert 'rugged, independent individualists' into welfare recipients.

Response to the Critique of John A. Black

Jeffrey Kassner

Town of Brookhaven, Division of Environmental Protection

Applying ecological concepts to human populations is not without difficulty; after all, ecological theory was developed for non-human species. To be successful and meaningful, the application of ecological concepts to human populations obviously requires an understanding and synthesis of ecology and anthropology. Perhaps more importantly, however, considerable care and thought must be given to establishing the requisite conceptual parameters and analytical structure as well as to the development of the necessary analogs. When properly executed, ecological concepts can provide an excellent framework for exploring the functioning of human communities.

Professor Black's critique of my paper "The Baymen of the Great South Bay, New York: A Preliminary Profile" (cf. *MAST* 1988, 1(2)) reflects more the failure to undertake a critical application of ecological concepts to human communities than an indictment of its application to the baymen of the Great South Bay. His central argument is that I have misapplied the concept of niche and from this he proceeds to argue that a baymen niche does not exist. However, while he correctly defines niche as the "... functional role of a population in its community ...," he never rigorously evaluates the baymen against this definition. Had he done so, he should have been able to focus his analysis on the role of the baymen in the hard clam fishery and thereby avoid introducing considerations that are clearly superfluous.

Integral to niche is the concept of community; community is defined ecologically as a group of interacting populations of organisms in a particular place (Krebs 1972). Community can thus be directly applicable to the analysis of human population and is essential to my ecological analysis of the baymen. For the Great South Bay hard clam fishery it provides the structure to describe the organization of the several interacting populations (both human and non-human) and to analyze the functioning which includes how each of the individual populations interact, how the community is regulated and maintained, and how each of the populations respond to perturbation. In spite of its importance, Professor Black does not apply community to the Great South Bay hard clam fishery or to the baymen in the context of a fishery based community. As a consequence, he does not, from the outset, establish an appropriate analytical framework, one that community provides.

The Great South Bay hard clam fishery clearly meets the ecological criteria of a community: it has geographical limits and is comprised of, for simplicity, interacting populations of baymen, hard clams, and hard clam predators. The functional role of the baymen is essentially that of another species preying upon hard clams. Like the other hard clam predators in the Great South Bay hard clam fishery community, the size of the baymen population is directly related to the sufficiency of their hard clam harvest. Furthermore, the baymen, like the non-human predators, must confront intraspecific and interspecific competition for hard clams and must adapt to changing environmental conditions. Thus, a bayman niche clearly does exist in the Great South Bay hard clam fishery.

A second problem inherent in Professor Black's critique is that he does not appreciate that fishing is unlike most other occupations as it has a large cultural component. As

Gatewood and McCay point out, "... fishing is not just a livelihood, it is a way of life ..." (1988:126). In general, fishing as an occupation attracts a certain type of individual and fishermen can be characterized by a unique set of values and attitudes (see, for example, Poggie and Gersuny 1974) and there is no reason to believe that this is not true for the baymen. While a bayman is theoretically able to pursue any occupation, in reality, changing occupations is likely to be resisted. Furthermore, even though the baymen niche is open to all humans, in actuality the occupation is probably biased towards a particular personality type so there is some occupation selection. Thus, the movement into and out of the bayman profession is sharply constrained thereby making the bayman occupation fairly distinct.

It is true that the dynamics of the bayman population are somewhat different from that of non-human species but, given the validity of the bayman niche, this can be easily reconciled by applying the proper analogs. When the Great South Bay hard clam fishery is viewed as a community with the baymen one of the component populations, the 'origin' of a bayman does not matter; only the absolute number of baymen is important as this number determines competition and the rate of exploitation. To a hard clam, it does not matter if it is 'consumed' by a bayman or another predator and no matter who consumes it, it is unavailable to the other consumers.

The inflow and outflow of individuals into the bayman occupation is determined to a large extent by the relative economic attractiveness of harvesting hard clams as a profession. Just like any other species, under relative favorable conditions on the bay, baymen abundance will increase while it will decline whenever conditions deteriorate. Furthermore, under deteriorating conditions (i.e., reduced hard clam abundance), the fitter baymen (here defined as having more efficient harvesting skills and/or having lower operating and/or living costs) will remain longer on the bay than those that are less fit. Consequently, the baymen population as a whole becomes increasingly fit or else it goes extinct. The same scenario happens with nonhuman species. While the selection is not genetic, the results are essentially the same.

The only difference between baymen and other species is that whenever conditions deteriorate, the individuals in the baymen profession or niche have the potential for alternative employment or income, an option that other species do not possess. Again, from the perspective of the Great South Bay hard clam fishery as a community, it is the number in the bayman population and not the fate of an individual that is important. Once a bayman has left the bay, he is no longer participating in the community and that is all that matters to the community.

Finally, it should be noted that fishermen are able to transfer experience from one generation to the next through their common culture and heritage (see, e.g., McCay 1984). Many of the present baymen, for example, have attitudes that can be traced to events occurring before they became baymen. This transfer of information is analogous to genetic transmission from parent to offspring.

At the conclusion of his critique, Professor Black suggests that rather than apply an ecological metaphor to anthropological thought, I should investigate "... how cultural mores, lobbying and legislation can interact to convert, 'rugged, independent individualists' into welfare recipients ..." This suggestion is contradictory because cultural mores, lobbying and legislation can best be examined from an ecological perspective. All are forms of adaptation, mechanisms by which a species is better able to cope with its environment. Over time, these activities have proven to be the most effective for enhancing the survival of the bayman population. They are therefore maintained, passed from generation to generation, even though they are culturally based. Furthermore, they work

and thus persist because society as a whole has allowed them to work and for this the baymen should not be faulted. Lobbying and pro-baymen legislation are simple and direct solutions to the problems facing the baymen.

It appears, therefore, that all of Professor Black's criticisms of my application of ecological concepts to the baymen are based more on a faulty analysis of the baymen rather than an inherent flaw in the validity of my work. Of course, ecological concepts had to be constructed and refined to take into account human differences, but this did not compromise the legitimacy of my approach. Whether ecological analyses can be successfully applied to other human communities, however, must be assessed on a case-by-case basis.

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Book Reviews

ACHESON, James M. *The Lobster Gangs of Maine*. Hanover: University Press of New England, 1988. xiv + 193 pp., 23 b&w photographs, maps, figures, appendix, notes, references, index. \$20.00 (cloth) \$9.95 (paper)

This book presents the results of extensive anthropological fieldwork and practical projects carried out over several years. While it focuses on a narrow group of producers, a particular fishery, it raises some important general questions regarding kinship, territoriality, technical skills, resource management, and the economics of the firm.

The discussion is divided into eight chapters. The first chapter describes the biology of lobster, the climate, geography, and ecology of the coast of Maine, and their implications for the activities of lobstermen in the daily round and the annual cycle. The second chapter shifts from the natural to the social, emphasising local identities and the social relations of lobstermen and other members of the harbour communities. Belonging to a community, Acheson explains, is not simply a matter of residence and ownership of land, for many property owners and permanent or semi-permanent residents in the harbour communities – summer people and retired folk or 'outsiders' and 'newcomers' as the insiders call them – never become 'full' members of the local community. They remain "black holes in the social universe," as Acheson puts it (p. 42), unless they gain access to a local network of kinship relations. Such networks are not necessarily in complete agreement with genealogical facts, for people "create . . . (their) kinship past with certain contemporary aims in mind" (p. 30). Together the first two chapters provide the necessary background for understanding the activities and the cultural models of lobstermen, discussed in the chapters that follow.

The central grouping among lobstermen is that of the informal 'harbour gangs.' Gang members share important information and collectively they protect the fishing territories they use. To be a competent lobsterman, to have access to information and fishing space, therefore, means to belong to a harbour gang, to respect its rules, and to identify with its members. While the gang is united when competing for fishing space with other gangs in the neighborhood, it is not a homogeneous group. Some lobstermen are successful 'highliners,' others are less successful 'dubs.' Lobstermen tend to regard fishing as a highly individualistic game, and they are right to the extent that skippers play on their own without the aid of a team, but Acheson emphasises that the players are not autonomous individuals and that playing the game is intimately connected to the politicking of the harbour community, in particular the negotiation of gang membership and the control of access to fishing territories. The defense of fishing areas is a complex process with important economic and ecological implications. There are two kinds of fishing areas, Acheson argues; fishermen have no terminology to describe the differences but they are well aware of them. In 'nucleated' areas fishermen's sense of territoriality is strongest at the centre, decreasing with distance from harbour, whereas in 'perimeter-defended' areas the sense of ownership is just as strong at the boundary as closer to the centre. Fishing effort, Acheson points out, is less in the latter areas than the former, lobsters are consequently larger and fishing is more economical.

The chapter on fishing skills, 'Tricks of the Trade,' is the longest one in the book. Acheson argues, on the basis of folk accounts as well as statistical analyses, that personal differences in fishing skills partly explain differential success and that the most important skills relate to trap placement, the ability to guess where lobsters occur and to manoeuvre around offshore ledges. Acheson admits (p. 105), however, that the statistical results

"need to be taken with more than a grain of salt." But while exceptional skills may be important for success in the short term, to some extent they are detrimental in the long term. Acheson suggests that skills are gear-dependent, not being transferable from one kind of fishery to another, and that, as a result, fishermen are reluctant to give up the gear they have been using. This is not a convincing argument, for in many fisheries where technical skills are, no doubt, quite important fishermen seem to switch rather easily from one kind of gear to another. The lobstermen's lack of interest in gear innovation may have more to do with the fact that alternative kinds of gear are likely to require cooperation among crew men, and some even among boats. One suspects that the lobstermen regard gear innovations as a potential threat which could undermine established forms of social organisation associated with solitary trap fishing, especially the organisation of harbour gangs and the territorial system.

Chapter six analyses the local lobster market as a 'relational system.' Lobster fishing involves a high degree of risk and uncertainty. Market conditions are difficult to predict, partly because of fluctuations in supply, and price negotiations involve fishermen in a web of relationships over which they have little control – with dealers, wholesalers and consumers. To reduce the level of uncertainty, many fishermen regularly sell their catch to the same dealer. Fishermen agree to give up the right to bargain in exchange for services and a sure market. This may be a 'rational strategy,' but at the same time the mechanism of price formation becomes mystified as something totally beyond human control, at any rate beyond fishermen's understanding. Recently established cooperatives in the lobstering industry, Acheson argues, have managed to pass higher fish prices on to fishermen and to demystify the mechanisms involved.

Chapter seven discusses government intervention in the lobster fishery, fishermen's attitudes to regulations and changes in these. Acheson argues that with increasing economic difficulties fishermen are gradually coming to the conclusion that in order to cope with their problems they will have to co-operate with the state. Acheson's discussion of the issue of management and the territorial system in Maine suggests that, contrary to Hardin's thesis of the 'tragedy of the commons,' privatisation and governmental control are not the only solutions to the problems of managing commons. The 'co-management' of lobster gangs and government is a workable, if not feasible, alternative. In the final chapter Acheson sums up his conclusions and their theoretical significance for the issues of common-property, 'relational' markets, personal fishing skills, resource management, and social adaptation to conditions of risk and uncertainty.

Acheson's discussion of the harbour gangs and the biological and the economic effects of the territorial system is quite interesting (he presents some numerical details in the Appendix). Readers with an anthropological background are likely to complain, however, that the general issue of 'territoriality' does not receive the comparative and theoretical treatment it deserves, given the apparent uniqueness of the system and its detailed and valuable ethnographic description in the book. Acheson emphasises that the privileged access to fishing territories enforced by the lobster gangs is not protected by the law, but nevertheless he describes it as a kind of 'ownership.' In doing so, he implicitly conflates the proxemic or ethological notion of territoriality and the sociological notion of appropriation, the social appropriation of space through relations of property. At times, however, his informants do the same, for Acheson remarks (p. 36) that sometimes when property is being sold to someone outside the community "townspeople act as if a place has not been sold at all." A binary logic in the fashion of structuralism, perhaps! People sometimes refuse to acknowledge the institution of property when in reality it does exist, in the form of land tenure, and insist it exists, in the form of sea tenure, when it does not.

Another weakness of Acheson's book is that the social universe of the harbour commu-

nity is defined in narrow terms as the world of males. Acheson explains in the introduction that the book focuses on "what happens at sea and in the harbor communities . . ." (p. 1). Events at sea are well documented in the book, but there is very little on family life, husband-wife relationships, and the role of women. The male bias is not unique to Acheson's ethnography. In anthropological literature on fishing, women remain 'black holes,' much like tourists and retired folk do in the social world of the lobstermen in Maine. In fact, there is more on 'outsiders' and 'newcomers' than 'local' women in Acheson's book, but this is, perhaps, to some extent understandable since Acheson is trying to understand how people *become* members of local networks, how outsiders become insiders. After all, gender, unlike kinship status and gang identity, is largely beyond negotiation.

Despite its debatable flaws, this book is an important contribution to both economic anthropology and the ethnography of fishing. It is well balanced in terms of approach and method, providing a spicy mixture of theory and ethnographic details, and combining intensive fieldwork and qualitative methods with surveys and numerical techniques. The discussion is well organised, the presentation is clear and straight forward, and there is no technical jargon to discourage readers who may be newcomers to anthropology and fishing. *The Lobster Gangs of Maine* nicely illustrates the potentials of doing 'anthropology at home.' It is obviously based on a rich ethnographic and detailed local knowledge. The author skillfully presents a holistic analysis of the lobster gangs, weaving together the outside perspective of anthropology and the inside view of lobstermen, and without assuming the role of a totally detached and distant 'observer.'

Gísli Pálsson
University of Iceland

McDONALD, Ian D.H. (Edited by J.K. HILLER) "*To Each His Own*": *William Coaker and the Fishermen's Protective Union in Newfoundland Politics, 1908-1925*. (Social and Economic Studies no. 33). St. John's: Institute of Social and Economic Research, Memorial University of Newfoundland, 1987. x + 198 pp. 23 b&w photographs, map, 5 appendices, notes, bibliography. CDN \$23.95 (cloth).

Relative to fisheries, Newfoundland (part of Canada only since 1949) is the major province of that region of eastern Canada usually referred to as 'The Maritimes' (despite recent attempts by the government to implement usage of the term 'Atlantic provinces' on the grounds that the traditional term is 'pejorative!'). Coaker's biography is one of the most recent in the series of publications by ISER, most of which deal with fisheries and/or Newfoundland.

Despite declining stocks, technological changes, and government attempts to consolidate fishing ports, there are approximately 32,000 fishermen and some 1200 'outports' – those very small (sometimes no more than a dozen or so families), relatively isolated rural villages whose inhabitants eke out a living from fishing, subsistence gardening, and some wage labor, mainly in mining and pulp and paper – scattered along the 6000+ miles of coastline in the Island of Newfoundland, not including the province's mainland territory, Labrador. Newfoundlanders endure the highest provincial tax rates in Canada but substantial entitlement programs for an economically marginal population mean that about half of the province's revenue come from federal transfer payments and equalization grants. Though nearly 60% of the slightly more than half-million population now live in cities, many outporters resent attempts to move them and stubbornly cling to 'the old ways.'

There is, in Canada, a broadly held lumpen-stereotype of Newfoundlanders as residents of the province's. The fishery folk are so notorious for their supposed slow wittedness, naïveté, and uncouth life-style that, over the last decade or so, there has been a spate of 'dumb Newfie' joke books (example: How many Newfies does it take to change a light bulb? Three; one to hold the bulb and two to turn the ladder).

McDonald's study of a particular historical crisis poignantly illustrates how and why the fisherfolk not just in Newfoundland but in many parts of the world find themselves identified in this way and, more in point, are so vulnerable to external political and economic manipulation. Posthumously edited, this self-admitted dated version of McDonald's (1971) London University Ph.D. thesis is, as Hiller, the editor, acknowledges, an analysis

... open to some obvious criticism – lack of attention to the Union's non-political activities ... and a tendency towards a 'great man' interpretation which leads to perhaps overly harsh judgements on Coaker's opponents (p. x).

In 1908, Coaker (who was knighted before his death in 1938) conceived and organized the Fishermen's Protective Union. His impact and, in large measure because of his vision and charismatic leadership, the role of the FPU in the political and economic affairs of the province, was significant. Yet it is, I think, a measure of the extent to which many Canadians trivialize the role of the maritime provinces in national life that *The Canadian Encyclopedia* (Hurtig Publishers, 1988) allows him a brief 19 lines – the same as allocated, e.g., to one R.C. Berkinshaw, identified as a Goodyear Tire and Rubber Company executive.

McDonald presents a telling argument for recognizing the significance of Coaker's achievements. A crown colony for most of its post-contact existence, the majority of its inhabitants were given little attention save as producers. London paid little heed to the island except as a source of exported fish – and the local elite, the professional upper middle class and the merchant class, who controlled life in the island's capital, St. John's, respectively used the political and economic spheres to further their own ends. The people of the outports lived each in their own community, subject to the economic demands of outsiders and to the political (as well as moral) directives dictated by such respected figures as the clergy and the prosperous burghers. Coaker, says McDonald, saw a divided society that had little sense of or care for the larger whole and was subject to the vagaries of world fish prices, the weather, and local ecopolitical machinations. Coaker set out to change all that by organizing rural working people, especially fishermen, so they might begin to exercise the political clout needed to pressure for reforms in a wide range of sectors – education, health care, old age pensions as well as accident and sickness insurance, improved working conditions (particularly for loggers and sealers); local government, especially a system of referendum and recall so constituents could control their representatives – and salaries for the latter so as to enable fishermen to elect representatives of their own class to the Assembly (pp. 23-24).

Coaker appealed to the fishermen by fostering class consciousness in an attempt to direct their resentment against those elements of society that exploited them, and then by offering a formula by which Newfoundland society was to be reconstructed. Elucidating the union motto, "To each his own," Coaker argued that clergymen, clerks, lawyers, and merchants all received "their own" from society and often a great deal more at the expense of the fishermen (p. 21).

However, Coaker concentrated on making the fisheries less economically vulnerable to manipulation, whether by market forces or venal local elite. He attempted to rationalize and modernize the fishing industry in all its aspects and proposed a number of changes:

... a government-legislated standardization of fish grades to be enforced by government-employed cullers ... appointment of government fish inspectors to provide an impartial and objective grading system for the export trade ... the establishment of a state trust fund to issue supply loans so that fishermen could choose not to sell their fish at inordinately low prices to supply merchants ... the appointment of overseas trade commissioners to cultivate old markets and develop new ones ... the initiation of measures to prevent foreign speculators from manipulating the price of Newfoundland fish. ... Proposals were also put forward to improve the herring and lobster fisheries. In order to lower the fishermen's entire costs of production in the fishery, it was proposed that the tariff be readjusted in the fishermen's favor at the expense of overprotected local manufacturing concerns (p. 24).

Coaker was elected first president and by the end of the first year (1909) there were over 1200 members (membership was limited to those in fishing, farming, logging, and manual labor) in approximately 50 local councils. Coaker started the Union Publishing Company – a limited-liability company in which only unionists could initially purchase shares – to publish a weekly newspaper, the *Fishermen's Advocate*, that included market advice, the cost of provisions, and the prevailing fish prices in St. John's and the major outports along with union news. This company formed the basis for the establishment of cash stores in local branches with over 200 members so that members could benefit from the Union Trading Company's (UTC) ability to buy bulk wholesale provisions. By 1913 there were 20 (ultimately 40) stores and the UTC supplied them by investing half its share capital in a steamer to service them. Even as early as 1912 the UTC needed capital and that opened the way for another venture; it entered banking by accepting money on deposit at 5% – when the Newfoundland Savings Bank rate was 3%.

In 1916 the UTC began construction on a central depot, outside of St. John's, in order to have lower overhead. Port Union, as it came to be called, eventually consisted of 3 large piers, "a large general store, a bakery, offices, a woodworking factory and cooperage shop, a forge and machine shop, a seal-oil and coldstorage plant ... a Congress Hall ... a church and 50 houses for FPU employees," all linked by a railway spur to the branch railway line.

Electricity was supplied by a hydro-electric plant under the control of another new company, the Union Electric Light and Power Company, and power was eventually supplied to several neighboring outports. In 1916 a shipbuilding company was established to provide the union with schools. Before its eventual liquidation it had built 25 vessels, some as large as 400 tons and worth \$115,000 each. In the early stages these companies were managed almost solely by Coaker ... (p. 30).

In only seven years those who had bought the \$1 or \$10 original shares (the latter requiring only 25% downpayment) received 68% of each share's par value. Only ten years after Coaker began his attempts to unify and organize workers, the UTC was doing an annual business of \$3,000,000 and carried a reserve fund of \$145,000. The union operation consistently offered higher fish prices than other buyers and, at times, was able to force increases in the price of seal fat, cod oil and herring. The UTC was "responsible for the introduction of written accounts in dealings with fishermen, and ... payment for fish

in cash rather than 'goods notes' used in the merchants' stores where only the balance was paid in cash" (p. 32).

By 1919 the Trading Company with its 4421 shareholders could claim invested share capital of \$225,000. In addition it had sold \$100,000 worth of 8 percent debentures and held \$200,000 on deposit from 2000 union members. The Export Company had invested capital worth \$80,000, the Union Electric Company had \$50,000 and the Shipbuilding Company, \$25,000; the Advocate, with a circulation of 9000, had a plant worth \$60,000 . . . By the late 1920s, the UTC was carrying over 5000 fishing accounts . . . and it also sponsored a five vessel sealing fleet (p. 31).

Yet, it all failed. As we read in the 'Conclusion' (pp. 131-45), by 1932 provincial affairs had deteriorated so much that Coaker not only refused to lead a national government, he declined to support either party in that year's election (p. 134). In 1933, facing bankruptcy, the legislature (without consulting the electorate) voted itself out of existence after a British Royal Commission recommended Britain appoint a commission to manage the affairs of the province. In the years to follow, Coaker's dream for fishermen, for workers, for Newfoundland, were all to vanish.

McDonald's analyses of what went wrong are laid out in Chapters 3 through 7: The FPU in politics, 1908-1915 (pp. 34-53); Flirtation with Confederation and the formation of the national government of 1917 (pp. 54-72); The fall of the national government (pp. 73-85); The Coaker regulations (pp. 86-105); The FPU in politics, 1919-1924: The end of the Journey (pp. 106-30).

"*To Each His Own*" has many flaws – not the least of which is poor editing of what, after all, was a doctoral dissertation, not usually the best of writing. But the story it tells about the problems of the people of the fisheries is so compelling and the particular issues of the Newfoundland situation are so broadly applicable, that anyone who has ever studied the fisheries anywhere will be caught up in the drama.

M. Estellie Smith
State University of New York – Oswego

RUDDLE, Kenneth & Gongfu ZHONG *Integrated Agriculture-Aquaculture in South China. The Dike-Pond System of the Zhujiang Delta*. Cambridge: Cambridge University Press, 1988. xiii + 173 pp., notes, references, index. \$49.50 (cloth).

Integration has become a common catchword in development theory and practice. But the quest for integrated development, specifically integrated farming systems, is usually not based on visible, empirical examples of the advantages of integrated systems. It is rather a handy term that comes easily to mind in view of the obvious deficiencies in disintegrated systems. Not only have very few integrated farming models been tested on a large scale, there also have been very few attempts to analyze existing integrated systems.

Keeping this in mind, Ruddle's and Gongfu Zhong's monograph on integrated agriculture-aquaculture in South China is surely to be welcomed. It is an extraordinary empirical study in various respects. The study is based on in-depth field research from 1980 until 1983 in the Zhujiang Delta, an area widely under dike-pond cultivation. The spatial extent, the complexity, and the degree of integration of the system practised in the Zhujiang Delta is unmatched worldwide. The system was under continuous change and improvement for some 600 years until the present stage of sophistication. Most

remarkable, there are detailed contemporary records available on each of the various stages.

Ruddle and Gongfu Zhong take advantage of such a favorable situation and begin the monograph with a vivid description of the historical development of the system. In the mid-fourteenth century water control measures were started in the flood-prone Zhujiang Delta. The first and foremost purpose was to establish fish ponds for commercial carp fry rearing. The dikes have also been commercially used right from the beginning. The first products were fruits. Between 1620 and 1650 there was a conscious shift from fruit production to mulberry and silkworm cultivation, at first because of higher economic returns, and later on because farmers detected that mulberry and fish cultivation are highly conducive to each other. During the 'Great Depression' silk prices fell dramatically, and after 1932 sugar cane became a major dike product beside vegetables and rice. Thus, until 1949 cultivation patterns were dictated by market prices. Since 1949, the dike-pond production has also been run under ecological considerations. It became increasingly integrated, elaborate, productive, and efficient. This is a still ongoing process, and further refinements are forthcoming.

The present system integrates a polyculture of various carp species in the pond with mulberry, silkworm, sugar cane, mushrooms, vegetables, grass, and bamboo on the dike. Pigs are kept in sites constructed on the dike. Besides being meat suppliers, pigs are regarded as "walking fertilizer factories." The only commodity that must be supplied from outside is rice. The system is otherwise completely self-sufficient and sustaining. Favorable cooperation with external forward linkages like processing plants etc. reinforce the self-sufficiency of the system. For example, sugar cane refinery wastes are returned to the ponds and serve as additional feed.

The complexity of interdependencies between and mutual conduciveness of the various subsectors deserve careful investigation. The authors present a comprehensive analysis of this intricate subject in the following chapters. In chapters 2 and 3 the pond and the dike system are discussed separately while chapter 4 is concerned with the integration of dike and pond under the aspect of energy flow. The analysis of material inputs, production amounts, and product value never becomes purely technical or mechanistic, because the various cultivation techniques and the way people manage the overall production system are also brought into the picture. This is the more interesting "since the economic results of individual subsystems are not viewed as important; rather, maximizing the returns of the whole system is objective."

In chapter 5 the operation of the system is analyzed in terms of labor inputs specified according to: the different production sectors and activities; sex; age and season. The analysis reveals that, despite labor-intensive production methods, the labor supply by far exceeds the labor demand for operating the dikepond system. Like in other agricultural and aquacultural production systems, there are deviations in labor demand depending on the season. But, owing to the polycultural character of the system, the range between peak and slack seasons is less significant than in many monocultural systems. Nevertheless, considerable amounts of labor need to be allocated outside the immediate dike-pond production sphere.

Flexible response to changing labor requirements in different sectors and areas has become easier since the introduction of a mixed economy in the late 1970s. The import of transforming the organization of production from collectivist to household-based forms of responsibility cannot be overestimated. Ruddle and Gongfu Zhong discuss this issue with due magnanimity.

In the course of the national reforms, Guangdong Province (where the Zhujiang Delta is located) was granted far-reaching autonomy for economic policy-making. As a result

of this autonomy, the household responsibility system in the Zhujiang Delta is distinctly different from many other areas in China. It functions within the three-tiered system of commune, brigades, and production teams. It appears to be a well devised pattern of division of responsibility. Overall planning and coordination are still the duty of the three-tiered system while the households now have considerable freedom in allocating their labor and capital resources. An informal committee, consisting of production team members, only establishes reasonable minimum productivity levels. Most decisions on how to reach (and usually exceed) these levels, are now under the responsibility of the households.

The committees are also in charge of implementing and supervising the land allocation process, and of negotiating contract periods with individual households. The allocation process starts with drawing lots which settle the quality of land to be allocated to a household. The size of land depends on the number of household members, or "mouths to be fed." Ponds are allocated through public tender in the course of which households guarantee to pay certain amounts of money to the production team in addition to the compulsory delivery of fish according to certain quotas. The payment of this sort of rent is usually not problematic because households may sell any product exceeding the quota level on the free market.

Contract periods range between one and five years, depending on the dike conditions and the crops to be cultivated. Some crops require longer periods until maximum productivity is reached. Households cultivating such crops are given longer contracts so that they can enjoy the fruits of their work.

The contract system impressively shows how a pattern of communal landownership and private responsibility for this land can work. According to Ruddle and Gongfu Zhong,

It establishes levels of productivity and the economic relationship between the household and the production team. It allows scope for households to establish flexible schedules . . . while adhering to the team's management plans for each crop. It also affords scope for individual households to improve their economic situation via free market sales.

It is obvious that the system is more productive, profitable, and efficient than collectivist systems, and surely guarantees more social justice and economic security than straight capitalist systems could provide.

In the last chapter Ruddle and Gongfu Zhong narrow their analysis down to the empirical household level. The analysis is based on comprehensive in-depth interviews with four households (= 7%) of one production team. The authors state that "although small the sample is representative, as was confirmed by the aggregate data for the entire Production Team." The complexity of the subject analyzed also justifies the decision for a small sample. A major subject of the chapter is the allocation of labor and material inputs within the household as an economic unit. Unlike many other household-based studies which cover only labor inputs of male and/or female household heads, Ruddle and Gongfu Zhong have taken into account every household member's productive activities; formal and informal, paid and unpaid, within and outside the system.

The diversification in labor input allocations and material inputs to the ponds show how every household tries to "take advantage of the variety of income-generating opportunities . . . as a result of the implementation of the household responsibility system and its related free market." Spare time hours are widely used for economic pursuits, and cultivation methods are in a transitional period wherein the use of external inputs such

as pond prophylactics, concentrated fish feed instead of sugar cane waste, etc. becomes common.

It is obvious that sourcing inputs from external suppliers means the end of self-sufficiency, and probably of self-reliance in the long run. The use of new external means of production entails both technological and economic risks. Nevertheless, the Zhujiang Delta people appear to use those new inputs carefully and in a very efficient way. Given fairly high input values, it is surprising that the sample households produce on energy efficiency levels of only 4 to 12% below the optimum, as calculated by Ruddle and Gongfu Zhong. Furthermore, the establishment of a mechanized production system and its maintenance will generate new income-earning opportunities.

Such a success story surely attracts the attention of social scientists and development practitioners. It also raises a number of questions which are discussed only to a limited extent in this monograph. Why is the system so successful and the transition process so smooth while other developing countries struggle for any kind of integrated development, and against the pitfalls of modernization? What is the information basis and the decision rationale that makes a household apply a certain resource allocation pattern? How can technological findings of this monograph be utilized for further improvements in the framework of the existing administrative development system? Is it possible to transfer this, or a similar system to other developing countries?

It must be welcomed that the authors, in their conclusion, put a damper on possible over-expectations especially related to the last question. China is on a level of human resources development, managerial skills, and effective rural organization that is perhaps unmatched in the developing world. Communal land under household management, allocated by local production team committees, is another unique and crucial factor that makes the system so successful. Anybody working on particular approaches in rural extension might be interested to learn that, according to the authors, in China,

research, education and training should not be elitist and separate activities, but . . . should be closely coordinated and made to serve production. . . . Farmers, teachers and researchers teach and learn from each other. Together they identify production problems and seek solutions to them, and together they carry out the physical labour of production.

Such conditions for rural extension endeavors would rarely be met elsewhere. However, the overall situation for rural development in the Zhujiang Delta probably does not represent a closed system in a sense that the lack of, or deficiencies in, one or two components would make the whole system fail. Some components, perhaps modified, might well fit into the overall conditions met in other countries. This makes the study of Ruddle and Gongfu Zhong of immediate interest for anybody theoretically or practically involved in rural development.

Wolfgang Hannig

Yayasan Dian Desa - Appropriate Technology Group Yogyakarta, Indonesia

DIEGUES, A.C. and R. RIVABEN DE SALES (Eds.), *Ciências Sociais e o Mar no Brasil. Coletânea de trabalhos apresentados. Programa de Pesquisa e Conservação de Areas Umidas no Brasil. II Encontro Julho 1988. São Paulo, 1988. 293 p.*

This collection of papers is the result of a seminar on 'Human Sciences and the Marine

Environment' that took place in 1988. In Brazil it was the second of its kind, uniting various disciplines, and organized by the São Paulo-based 'Research and Management Programme on Wetlands in Brazil.' This Programme is sponsored by the Ford Foundation and the International Union for the Conservation of Nature. This sponsorship should not amaze us. Brazil's shores along the Atlantic extend over thousands of kilometers, and its inland wetlands in regions such as the Amazon Basin and the Mato Grosso Pantanal (to mention only the most important ones) are almost unimaginably large. What should amaze us, however, is the fact that until quite recently Brazilian social scientists were not very much involved in wetlands research. Contrary to what foreign colleagues may think, this cannot be explained through small numbers of Brazilian social scientists in general. Just speaking about my own discipline, anthropology, I estimate the number of colleagues involved in scientific research to be about 700, and research results are often of a very high quality. Next to the traditional field of the study of indigenous societies, emphasis is on rural communities and (most of all) urban society. Concerning the country's enormous wetland areas and the variety of human communities that try to eke out an existence in this particular habitat, one can speak of a virtual blind spot in Brazilian social science research. This is not to say that, say, fishing communities got no attention at all, but as Diegues points out in his introductory paper, studies have been tainted by a folkloristic and idyllic vision. As this collection demonstrates, the picture is changing rapidly for the good.

There are some reasons for this growing interest in wetland studies. First of all, in the second half of the sixties the military government implemented a policy strongly supporting the expansion of capital-intensive fishing and the development of a fishing industry. This has had disastrous consequences for traditional fishing communities and resulted also in a rapid exhaustion of several fishing grounds. Another reason is the expansion of the cities along the coast, as well as along the river banks. This urban growth is of gigantic proportions. While it may, on the one hand, create more markets for fish consumption or diversify economic activities in fishing communities (cf. Conrad Kottak's 1983 restudy of Arembepe, *Assault on Paradise*) it also means an ecological disaster of immense proportions through pollution and the massive destruction of, for instance, the mangrove woods. Where the Amazon is concerned, another ecological calamity threatens the world's most extensive inland wetland area. A combination of deforestation and mercury pollution, the latter linked to gold winning, destroy the river banks and the river's fish reserves alike. More and more these problems are recognised as of social, economic and political importance, and the publication of this collection can be seen in this light. In the meantime, the idyllic tinge of fishing community studies has disappeared completely. Though World-Systems analysis and other neo-Marxist approaches are strongly represented (e.g. Diegues's paper), the most important breakthrough, at least to my mind, has been the publication, in 1971, of Shepard Forman's well-known *Raft Fishermen*. His incorporation of the fishermen into the peasantry, and the use of the peasant society concept, gave an adequate frame for analysis, and made the study of fishing communities respectable, if not fashionable. Representative of this line of research are the studies on Amazon fishing communities, published in the excellent series of the Museu Goeldi in Belem, the state capital of the Amazon state Pará.

The collection under review is an important effort to bring together research findings as well as projects, still to be executed, covering almost the whole of Brazil, which in itself is no small success given the country's dimension. The volume contains twenty-one papers, a number that defies a detailed review. Topics are extremely varied, ranging from primary school teachers in fishing communities to dietary habits, while, of course, a lot

of attention is paid to technology. Diegues's introductory paper gives a good overview of the transformation fishing activities went through in recent decades, and his classification of types of fishing is useful. Though his neo-Marxist approach is sometimes rather mechanical, he makes an effort to stimulate the theoretical debate. In the collection itself theoretical reflection is, however, wellnigh absent, which is something to be regretted. While the volume shows clearly that the study of the Brazilian wetlands is emerging as a legitimate research topic within the country's social sciences, one should wish another meeting to pay more attention to theoretical debate. This being said, I think the collection to be a good overview of Brazilian research on wetlands. It is a pity that the Portuguese language is not facilitating colleagues concerned with wetlands research elsewhere to profit from the results presented, but the very good bibliography may be of help in this respect.

Geert A. Banck

CEDLA/Amsterdam and University of Utrecht

Announcement

Whaling Communities in the North Atlantic

The *Center for North Atlantic Studies*, Aarhus University and the *Society for North Atlantic Studies* have decided to co-host an international conference entitled "Whaling Communities in the North Atlantic." There will be a public hearing with an invited panel of speakers directly afterwards. The conference is to take place from the 22nd to the 24th of January 1990.

The current debate on the degree and methods of exploitation of marine mammals is of great political and economic importance for the North Atlantic coastal communities – stretching from the Canadian east coast over Greenland, Iceland, the Faroe Islands and to West Norway. A common characteristic of all these communities is that they are marginal regions in relation to the rest of North America and Europe, both geographically and economically. They share a common dependence on maritime resources. It is vital that the formation of public opinion concerning the use of the resources of the Northern seas is not controlled by conservationist points of view alone; consideration must also be given to the economic, social and cultural ways of life of the populations dependent on maritime resources for their existence.

A major purpose of the conference is to make room for a more balanced public discussion on whaling and whaling societies than the emotional one that has dominated in recent years. Therefore we have decided on a form where biologists, social scientists and public officials are gathered during the conference itself, and where politicians, the International Whaling Commission (IWC), the World Wildlife Foundation (WWF), environmental groups, etc. can take the floor in the independent hearing following the conference after having attended the scientific conference.

This construction should induce a more constructive discussion during the hearing, because the panel will have current data and analyses from the conference in mind (among other things, the first results from the international whale count, summer 1989, ought to be available at the conference). Finally, it is our intention to relay the results of the conference to a larger audience in order to create public sympathy and understanding not only for marine mammals, but also for the societies where their exploitation is an integral part of the conditions for the local society's existence and culture.

For further information please contact
Elisabeth Vestergaard,

Center for North Atlantic Studies, Aarhus University,
Finlandsgade 26. DK-8200 Århus N.,
Denmark.

Phone: (45) 86 16 52 44, ext. 23.

Telefax: (45) 86 10 82 28.

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MAST welcomes articles, commentaries, review essays, and book reviews. To spare editors needless work, and themselves frustration, authors should be sure to:

1. Double-space *all* copy, including notes and references, on quarto or A-4 paper, using one side of the page only.
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3. Limit articles to 10,000 words, maximum, and include a 150-word summary.
4. Place figures, tables, graphs, charts, and maps (titled and numbered) on separate pages, and note clearly in the text where they should appear. Draw charts and maps in black waterproof ink, and submit them camera-ready.
5. Use author-date references (Byron 1980:228-31; Taylor 1983; Löfgren 1979), and list all works cited alphabetically by author:

Byron, R.

- 1980 Skippers and Strategies: Leadership and Innovation in Shetland Fishing Crews. *Human Organization* 39(3):227-32.

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6. Consider the option of submitting "on disk" final versions of manuscripts accepted for publication. (The editors of MAST will provide detailed information about this on request.)

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