Lagoon Life among the Langalanga, Malaita Island, Solomon Islands

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INTRODUCTION

The Solomon Islands obtained its independence from the United Kingdom in 1978, and now consist of seven provinces. The capital, Honiara, is located on the Island of Guadalcanal (5,310 km^2), and the Island of Malaita including small atolls such as, Ontong Java forms one province. The Malaita Province is known for its high population density, and the population of the province (4,214 km^2) was 80,932 in 1986 [INSTITUTE of PACIFIC STUDIES 1989: 158].

There are several dialect groups on the island. Among them the Kwara'ae (total speakers in 1983, 12,500), Kwaio (7,000), and 'Are'are (9,000) are the dominant groups. The western coast on the central part of the island is the homeland of the Langalanga (Figure 1), whose population is approximately 2,000. Beside the Lau Lagoon (northeastern coast) and the 'Are'are Lagoon (south-western coast), the Langalanga Lagoon forms a large, stable maritime environment, which has provided the inhabitants with a variety of marine resources for generations.

For the study of resource use and shell money production among the Langalanga, I stayed in a village, Abalolo, from August 11 to September 12 in 1990, from July 30 to August 31 in 1992, and from April 25 to May 31 in 1994.

1. HISTORY AND SOCIAL ORGANIZATION OF THE ABALOLO VILLAGERS

1) Descent Groups and the Villagers

The population structure of the Abalolo village in August 1990 is shown in Table 1. The basic structure is pyramidal, reflecting the present increase in birth rate [STATISTICS OFFICE, MINISTRY OF FINANCE 1989: Figure III.5]. But the proportion of males between 20 and 40 years old is substantially low, since the people of these ages tend to live in Honiara for education or wage-labor.

The Abalolo villagers currently belong to a political union, the *Gwa'ata Association* which also includes the villagers of two other adjacent Langalanga villages, Ailau and Gwa'edalo. The villagers of these villages have a common

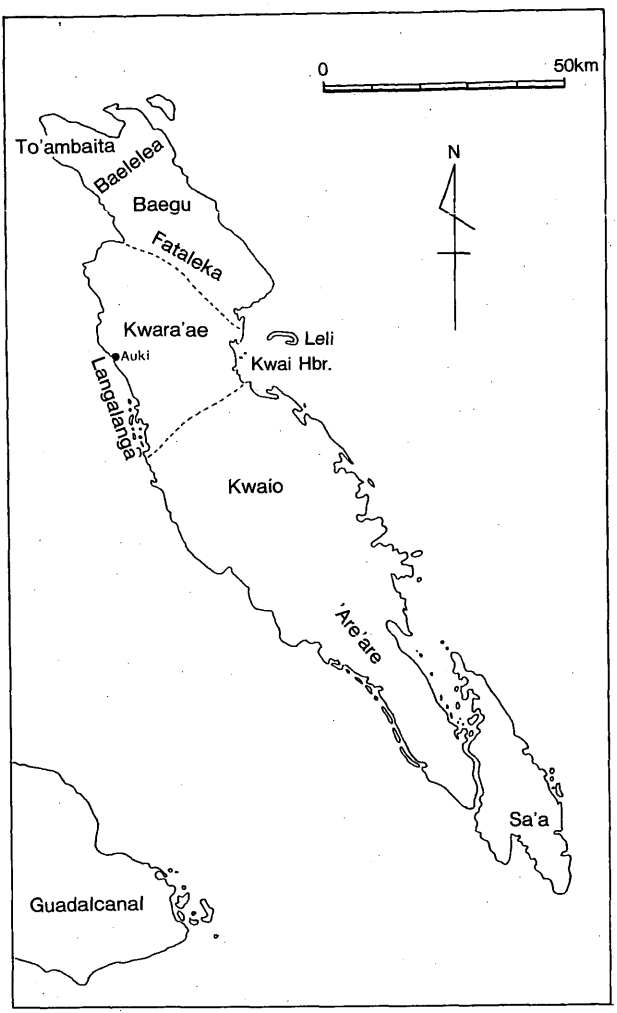

Figure 1. The Malaita Island ane Language Groups

Table 1. Population Structure of the Abalolo Village, August, 1990

Age Group	0–9	10–19	20–29	30–39	40–49	50–59	60–69	70–	Total
Male	15	11	3	3	2	1	3	2	40
Female	16	8	12	5	1	3	3	0	44
Subtotal	31	19	15	8	3	4	6	2	88

residential history. They used to live on an artificial island, Ta'alulolo, in the Arabara Harbor. In the early 70s', this island was severely damaged by cyclones, and the inhabitants started to settle on the island coast, where the present villages

are located. Currently, the Gwa'ata consist of seven descent groups, or "clans" (*fuiwale*). Two clans are living in Abalolo, two in Ailau, and three in Gwa'edalo.

Each clan has its own migration history. Oral traditions have it that the ancestors of the Abalolo people departed from the territories of other tribes, such as the Kwaio, Kwara'ae or Lau 15 to 20 generations ago. Around 5 generations ago, all started to live in the adjacent islands of Adofafo, Matalibore, and Gwaefou in Arabara Harbor (*1).

Langalanga people distinguish between clan members through male lines (*futa li wale*) and also through female lines (*futa li geli*), although patrilineal descent is emphasized. The status of the priest (*fata abu*), in particular, was supposed to be inherited through male lines. In the actual formation of clans, however, not only descent, but also residence plays an actual role.

In addition, the people usually have a secondary right (*e.g.* land rights) through female lines. Thus, the kinship system among the Langalanga should be defined as "cognatic descent with patrilineal emphasis" [Cooper 1971: 267]. In addition, as Keesing has pointed out for the Kwaio, "contexual definition of status" enables the Langalanga people to act as members of several clans. The kinship system among the Langalanga is not substantially different from those of other tribes on the island, such as the Lau [Ivens 1930], Kwara'ae [Maenu'u 1981] and Kwaio [Keesing 1982].

Post-marital residence is basically virilocal. The eldest boy in each family tends to stay in the village, but younger brothers could marry-out. More than 70 % of married females in Abalolo have come from other villages, mostly from Langalanga. In 1990, there are three women from other dialect groups, such as, Lau, Kwara'ae, and Kwaio. When engaged, girls often move to the boy's village to help in his family until marriage. But after marriage, some couples start to live with the bride's family for several reasons.

2) Village Life

Abalolo village is now situated on a flat peninsula, extending 500 meters into Arabara Bay (Figure 2). This peninsula was formerly covered by mangrove, and the villagers reclaimed the land where ceremonial structures for shark sacrifice were located. The hinterland is still covered with mangrove, through which a trail to the main road is now opened.

The main traffic to the village is from the sea, using traditional dugout canoes. The provincial capital, Auki, is 15 km north of the village. Now the villagers can ride on trucks to Auki on the road, about ten-minutes-walk inland from the village. Villagers own one truck, but it is not used regularly.

There was one store in the village (1990), where basic food stuff and other goods are available. In this shop, the villagers can obtain such merchandise as sugar, tea, biscuit, tinned fish, noodles, sweets, kerosene, and soap. The people can also buy from a vendor-truck that comes once a week. But the people often go to Auki by truck for larger purchases.

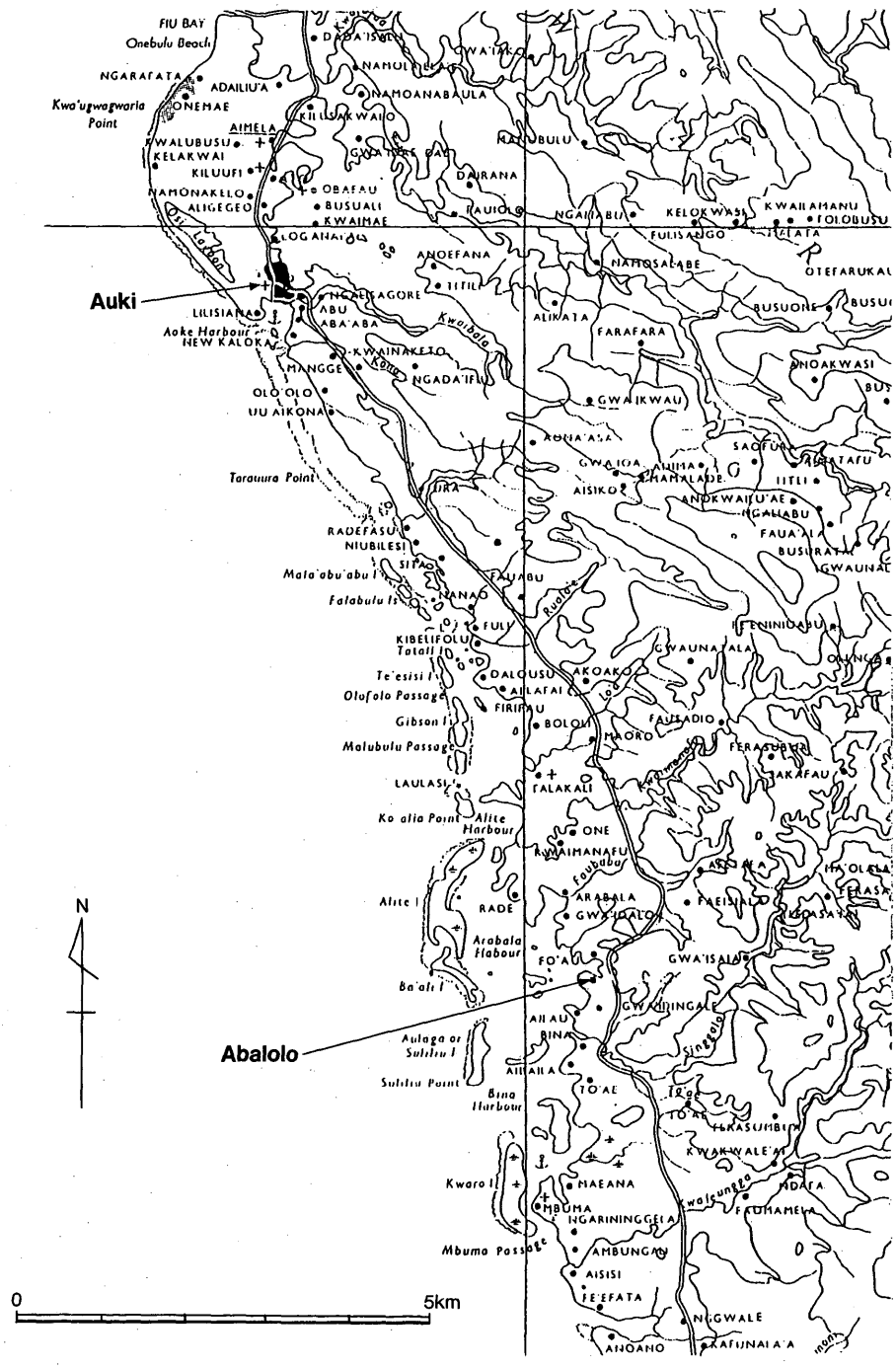

Figure 2. Map of Langalanga Lagoon

In 1990, there was a local market twice a week, where Langalanga people obtained some foods, from the Kwara'ae or Kwaio people, such as sweet potatoes, yam, wild-cabbage, beans, and betel nuts. Langalanga people usually bought these crops by cash, but occasionally, they exchanged them for fish. In 1992, this market was moved further away, and the Kwaio people came to the village for selling garden crops once a week.

2. ASPECTS OF SUBSISTENCE

1) Natural Resources on Land

The resources which Abalolo villagers live on are mostly obtained by fishing, gardening, or collection from the natural environment. The main resource zones are the offshore sea, outer-islands, reefs around outer-islands or in the lagoon, the lagoon itself, reefs around the coast, coastal plain, mangrove zones between villages, rivers, river terraces, and mountain slopes. Since I will discuss fishing later, this section focuses on gardening and foraging on land.

In Abalolo, each household owns one to three gardens. In 1990, the average garden size by household was approximately 620 m^2. Gardening is basically practiced by the household. If necessary, the close relatives help gardening, but no village-wide cooperation was observed in gardening during my stay. The gardening is basically slash-and-burn, on low terraces near rivers or slopes. The principal cultivator, the person who does the gardening most frequently in a household, is either the husband or the wife of the family. Among the fourteen households, women were the principal cultivators in eleven households in 1990, indicating the importance of women in gardening.

The main crop from the gardens are sweet potatoes. The average productivity (per unit of labor hour) was 2.7 kg/man-hour. This is estimated from my observations of average time spent for gardening and the average weight of sweet potatoes by hour of labor. Gardening includes different kinds of activities, such as transportation, burning, harvesting, and weaving. The energy expenditure in slash-and-burn agriculture ranges from 156 to 330 kcal/hour [KUCHIKURA 1988: Table 10]. The average productivity of sweet potatoes produces 2,678 kcal of energy, and the energy efficiency of gardening in the village is estimated to range between 8.12 to 17.12 units. This estimate lies within the range of comparative data on slash-and-burn agriculture in other Melanesian islands [ELLEN 1982: Table 6.6].

I had an opportunity to observe gardening in the neighboring village, Fo'au (Kwara'ae), whose economy is based on agriculture. Compared with the Abalolo village, the garden size of the Fo'au villagers was much larger. Also in Fo'au, a greater variety of crops were grown, and the frequency of gardening was higher. In their gardens, there were field shelters for drying crops and to rest. But I have never seen a similar structure in the gardens of the Abalolo villagers. This is

because the Abalolo people, who are the "saltwater people (*wale asi*)" living on the artificial islands for generations, have alternative productive strategies, such as fishing and shell money production.

In their gardens, the people grow several varieties of sweet potatoes (*Ipomoea batatas*), such as *kumala, butete,* and *ufi,* and cassava or *kaibia* (*Manihot esculeneta*). Both crops were newly introduced after contact with Europeans. In 1990, yams, which have a ceremonial importance, were not cultivated in Abalolo gardens except in the garden of one family, who obtained *pana* (*Dioscorea esculenta*) from a Fo'au villager in exchange for shell money. Large taro, *kakama* (*Cyrtosperma chamissonis*) was available in the swamps.

The villagers used coconuts (*liu*) grown in natural conditions, and one family grew them in the garden. Edible sago palm *sagu* (*Metroxylon* spp.) was present, but not as food: they are important material for roofing and walls. Edible mangrove root, *ko'a* (*Bruguiera gymnorrhiza*), was collected at river mouths, and served daily with coconut soup. Several varieties of vegetables such as *uta* (slippery cabbage, *Hibiscus manihot*), *sakwari* (sandpaper cabbage, *Ficus copiosa*), and *ofena* (a shrub, *Pseuderanthemum* spp.), were occasionally harvested from the gardens or the natural environment. Leaves of *rarafa* tree (*Pisonia grandis*) grown in the village, were used in coconut soup. Also a few families started to grow pineapples. But basically, the garden crops of Abalolo are for self-consumption.

In addition to the above crops observed in 1990, I noticed some new introductions in 1992. For instance, some households had started to grow Chinese cabbage around their houses, on the soil in wooden frames or discarded canoes. Besides bush cabbage (*sakwari*) grown in gardens, Chinese cabbage has now become the most popular green vegetable in the daily menu. Also I have observed that the villagers were using other new vegetables, such as green pepper, pumpkin, tomato, onion, and radish. They are not, however, grown in the gardens. Instead, they were bought in the market in Auki, or, else some villagers who have relatives in Kwara'ae or Kwaio villages obtained these vegetables from their gardens.

Several households in the village feed pigs in either the sties or in the wild conditions. Pigs, which are a traditional ritual food, are not consumed on a daily basis: pigs were cooked on special occasions, such as at a party and funerals. During the research period in 1992, I observed that one household killed their pig and that they served it to the village people. On that occasion, "pig" is listed in the dinner menu of 10 households among the total 17 household. Chickens are raised throughout the village, and they are occasionally cooked with coconut soup.

2) Food Consumption

In Langalanga language, a general term for food is *fana.* Each household has a kitchen house (*kisina*) for cooking foods as well as a sleeping house (*numa*). In kitchen houses, there are usually two kinds of ovens (*go'ona*). One is made of

round stones (*bitia*) for steaming tubers, and another is for heating water and baking foods (*e.g.* fish). The former is traditional, but is now often covered with a tire-wheel to hold heated stones. In addition, the villagers have portable cooking stoves. These stoves are used for baking fish and burning shell beads while making shell money (discussed later). Above the ovens, there is a shelf for storing firewood (*e.g. ona bua*).

The main food is steamed tubers and rice. These are usually served with coconut soup (*biina*) made with coconut milk (*lofa*). The most common ingredient in the soup is scraped *ko'a,* and if available, fish (including tinned fish), shellfish, or instant noodles are added. Tea with sugar is usually served with meals.

Tubers (*kakama* and cassava) are sometimes mashed to make pudding (*waiwai*). Tubers are mashed in a wooden bowl (*dako* or *tabili*) with a stick (*kai*). Mashed tuber is called *sufou* and they are mixed with coconut oil to enhance taste. This is a ceremonial food, cooked on special occasions or for Sundays.

In 1992, I undertook an intensive survey of the daily menu of each household (total 17 households) for one week. The most common foods were sweet potatoes and rice, followed by cassava, *kakama,* and *pana.* Some households ate bread baked in their cooking houses. Coconut biscuits sold at stores were also eaten. Figure 3 indicates the occurrence of sweet potatoes, other tubers, rice and bread/biscuit in each meal.

For breakfast, a variety of foods were consumed. Among them, sweet potatoes and tubers were often leftovers from the previous dinner. In addition to these foods, breakfast was characterized by foods which do not require cooking, such as biscuit or bread. (Bread is usually baked beforehand.)

For lunch, rice became the principle food. As shown in the following section, the villagers were usually busy making shell money after breakfast. During this busy time, rice requiring only washing and steaming was probably preferred to tubers for convenience. At lunch, "taiyo (canned bonito)" was often served with rice also out of convenience. Chinese cabbage, grown around the houses, was sometimes cooked for lunch.

For dinner, sweet potatoes were the main dish. Sweet potatoes coupled with other tubers comprise more than 96 % of the total meal frequency. As shown in the next section, these tubers were harvested from garden during daytime. In general, the most "delicious" menu was observed at dinner time, that is, tubers with soup. The soups contained *ko'a* mixed with fish/shellfish and vegetables, such as Chinese cabbage, *sakwari,* and *rarafa* (Figure 4).

Fish, shellfish and crabs caught in the lagoon showed similar frequency at breakfast and dinner. If the people went fishing during the daytime, their catches were mostly consumed at dinner. According to the lunar cycle, the villagers often went night fishing, whose catches were cooked in the next morning.

The calorie intake requirement for adult males (from 20s to 40s) is estimated

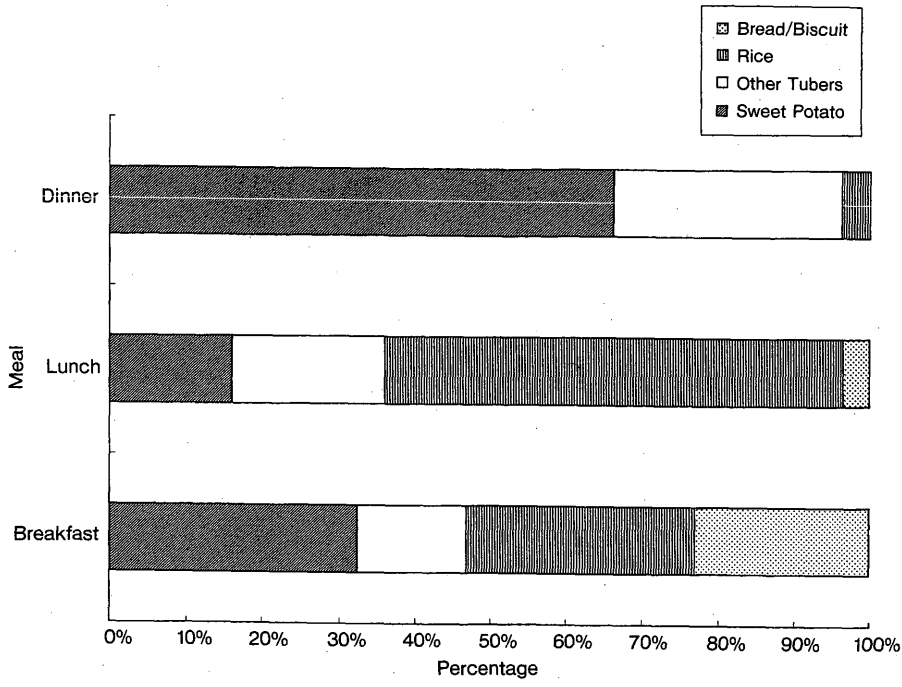

Figure 3. Main Foods by Meal

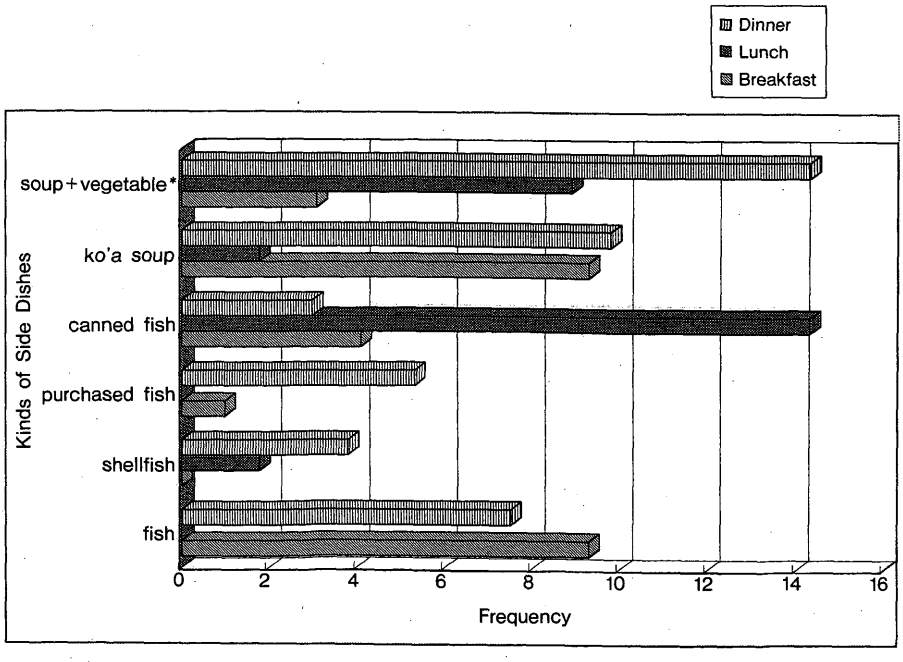

Figure 4. Kinds of Side Dishes by Meal

to be 2,180 kcal a day. Aged persons, adult females (except for pregnant women) and children require fewer calories than adult males. Assuming that aged persons and adult females require 80 % of the adult male caloric requirement, and children require 50 %, the total calories required for the Abalolo villagers (in 1990) was 15,484 kcal per day.

From the data on the edible portion of sweet potatoes and caloric content per 100 g, the villagers need 15.6 kg of sweet potatoes to meet the above requirement. This amount of sweet potato will be obtained by 5.7 man-hours of farming. There were 30 adults in the village (in 1990), and even if some of them never engaged in gardening, but only collected coconuts, mangrove roots, vegetables and other foods, one-hour of gardening by six adults may provide enough sweet potatoes for the villagers.

As seen in this section, the villagers actually consumed a substantial amount of rice. By measuring the weights of tubers and rice before cooking, I have estimated that the adult males consumed around 3,000 kcal a day, and that the calorie obtained from rice comprised between 30 to 40 % of total calorie intake.

Concerning protein, peoples in a similar, tropical coastal environment, obtain protein from plant foods, such as rice and tubers, and from animal fools, such as fish, shellfish, and canned fish [Suzuki 1991]. In Abalolo, the frequency of marine animals (*e.g.* fish, shellfish, and crabs) and canned fish was around 16 % in the total meals.

This figure is lower than that observed in coastal Papua New Guinea where marine foods comprise 50 % in the total protein intake. Also in Abalolo, the purchased meat (*e.g.* beef) was negligible. In addition, the villagers did not use hunted animals that the Papuans can use. Considering these factors, the contribution of animal foods to the total protein intake in Abalolo was estimated to be between 20 to 30 %. Instead, rice comprised between 40 to 50 %, and tubers, 20 to 30 %. The average protein intake among the adult males was estimated to be between 40 to 55 g a day.

3) Time-Allocation

I spent one week each in 1990 and in 1992 to observe the time allocation of the villagers. This study investigated how the people allocate their day (from 6:00 a.m. to 7:00 p.m.) to various subsistence activities, including housework, meal preparation, and resting. The method of observation and the details of the results will be discussed in another section of this report (see Suda, this volume).

Table 4 presents the time-allocation of the adults. In "productive activities (gardening/collecting, fishing and shell money production)", males spent substantial time for fishing and shell money production. Females spent much time for shell money production and then gardening/collecting.

In Table 2, the data on female time allocation in 1990 were broke down into married females, including widows (F) and single females (f). This shows that single females spent nearly 5 hours on shell money production. That is, they spent

Table 2. Time Allocation of Adults in Abalolo Village (1990 & 1992)

YEAR SEX (sample size)	1990 M (8)	1992 M (12)	1990 F (14)	1990 f (9)	1992 F (20)
Gardening & collecting	6.8	10.9	13.1	5.1	12.6
Fishing	12.5	5.8	1.1	0	3.1
Shell money making	12.5	18.6	20.3	46.8	21.5
Housework	10.5	6.4	11.0	8.6	13.9
Food preparation	5.8	7.7	24.7	15.4	21.5
Resting/sleeping	44.2	33.3	20.9	18.8	12.7
Vising others	0	10.9	6.6	2.6	5.8
Others	7.7	6.4	2.3	2.7	8.9
Total (%)	100	100	100	100	100

on this more than 90 % of the total time they spent on productive activities. In contrast, they spent much less time on gardening/collecting than married females. Thus single females focused on shell money production, and depended on their parents for food.

It seems that males spent more time for shell money production in 1992 than they did in 1990. This is because some males who worked in towns for wage-labor in 1990 returned to the village in 1992. Their sole means of obtaining money in the village was to engage in shell money production. In contrast, males appear to have spent much less time for fishing in 1992 than in 1990. During the research week in 1992, however, some people went night fishing, which is not included in this time allocation study. Therefore, I do not think that the importance of fishing has diminished substantially.

In 1992, females spent time primarily on shell money production, secondarily on gardening, collecting and fishing. This pattern is not different from that in 1990, but the actual time spent on shell money production decreased in 1992. One of the reasons is that seven of the nine single females observed in 1990 were absent from the village (*2). Married females spent around 20 % of 13 hours on shell money production both in 1990 and 1992.

Time spent on housework did not change between 1990 and 1992. Among various kinds of housework, females were mostly engaged in nursing and house cleaning, and males in house repairing. Females also spent much time for food preparation, although children often helped their mothers washing and scraping tubers. In contrast, males had a principal role in dismembering and cooking pigs.

Figure 5 indicates the frequency of the females engaged in various activities. Gardening was practiced during midday between 9:00 to 15:00. The peak was found in 12:00–13:00, and this shows that women, once out in gardens, tended not to return for lunch. There is also a small peak in gardening at 16:00–18:00. This is because some people went to the gardening to get food for dinner, after the shell money production during midday. In contrast, time for fishing was irregular.

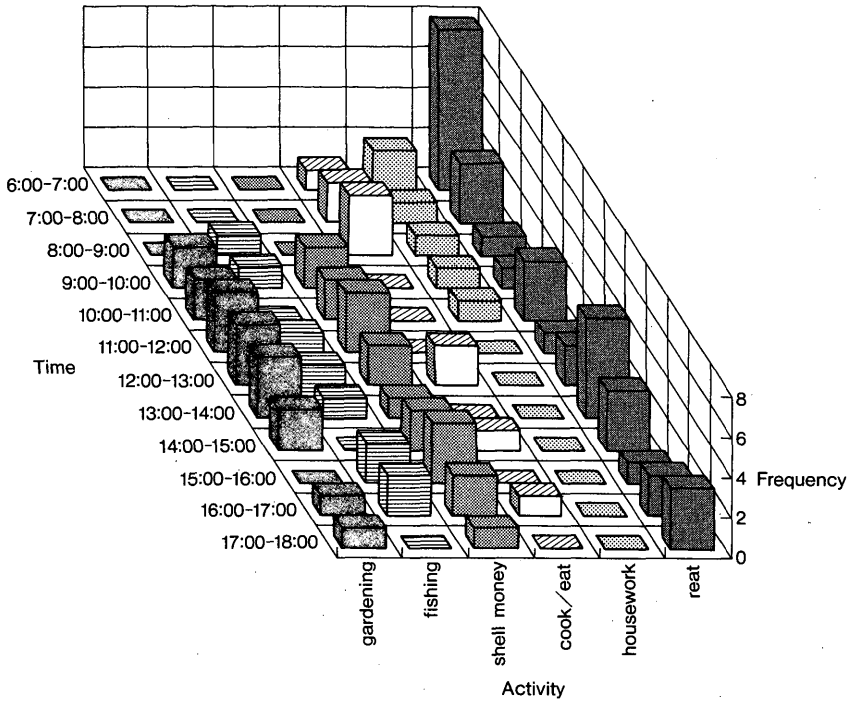

Figure 5. Frequency of Each Activity by Time

This is because fishing depended on such factors as the tidal cycle and climate.

As was the case for gardening, women started shell money production usually around 9:00, but the number of the people engaged in this job decreased around 12:00. In particular, females responsible for preparing lunch, tended to break in this time period. In contrast, the frequency of the people either cooking or eating had small peaks three times a day, corresponding to three meals. The people could do housework all day, but they often did it before and after meals. There was a peak for resting/sleeping around 14:00, indicating napping in the hottest time period after lunch.

3. FISHING ACTIVITIES

1) Overview of Indigenous and Introduced Fishing Strategies

As Akimichi (1978) has already shown, Solomon Islanders have an enormous amount of fishing lore. Langalanga people also have an extensive knowledge and technology for fishing. In the context of recent cultural change, such tradition has been gradually lost, but I could obtain an outline of the Langalanga fishing lore by interviewing skilled fishermen and examining fishing gear which are no longer used. For instance, I collected, by interviewing several fishermen, more than 260

Langalanga fish and shellfish names (Appendix A).

Gathering marine resources is a daily activity which provides the people with a stable food supply. Women go to mangrove zones to collect *ko'a* as well as shellfish inhabiting muddy soil, such as *ke'e,* and *iloilo.* In the shallow reefs around the village and islands in the lagoon, women dive to collect such shellfish as *wera, nau,* and *ralili.* On the reef flats of the outer islands, a variety of crabs can be caught. As seen in the next section, these shellfish and crabs are important supplements for the relatively unstable resources, namely, fish.

Langalanga had two kinds of stone-weirs which were usually situated on the reefs of outer-islands: *afeafe* (with high walls) and *ere'ere* (with low walls). This *ere'ere* was used at low tide: fishermen would open a part of the wall in order to make fish flee, and, with "*atola* net (round scoop net)," waited at the opening and caught the escaping fish. The fish caught in these weirs were *uala* (sardines, *Amblygaster* spp.), *dolala* (mackerels, *Rastrelliger kanagurta*), *mela* (fusiliers, *Caesio* spp.), *alubala* (rabbitfishes, *Oplegnathus & Siganus* spp.), and *suru* (emperors, *Lethrinus* spp.). Most of them were damaged by cyclones and now have been abandoned. I could locate two *ere'eres* on the reefs by observing air-photos, and visited one of them near Radefasu. Other fishing methods no longer practiced today are fish-drive (*rarabu*) using coconut leaves, fish-poisoning, kite-fishing (*kwaferao*), and angling with a straight-hook (*lana*).

Langalanga traditionally had several kinds of nets (*fuo*). I could observe two types of scoop nets, one with a round frame (*la'e*) and another with a four-sided frame, or scaff-nets (*gale*). Both types were used in the shallow water. Net fishing undertaken nowadays in the lagoon are: (1) circle net for *uala* in the channel of reefs, (2) drive nets in the lagoon, (3) circle nets used at the river mouth at night, and (4) block nets. The last type is situated at the river mouth at high tide. At low tide, several canoes go up the river and then drive the fish downstream to be captured in the nets. During my stay in 1990, I observed that there were a few groups in Langalanga that practiced the 3rd and 4th types of netting to sell fish. One person in Abalolo village bought fish from this group to sell in Honiara.

Spears (*fakarau*) with four iron points are used in the mangrove zones when fish come in with the rising tide. Spears with short shanks or spear-guns are used for dive-fishing (mainly at night) to catch *gwaile* (parrotfish, *Scarus* spp.), *bolo* (surgeonfish, *Acanthurus* spp.), *ume* (unicornfish, *Naso* spp.), *gome* (mullet, *Mugil* spp.), and turtles. During night-time, some fishermen engaged in spearing with lamps (*iroiro*).

The most popular fishing method is angling. In the past, angling was practiced with lure hooks made of shell shanks, or with bait hooks made of bone, shell and metal. Lure hooks were mainly used for *rau* (bonito, *Katsuwonus pelamis*) fishing, and bait hooks were used, according to the size, for either deep-sea fishing outside the lagoon or for lagoon fishing. The bait hooks were traditionally attached to the end of the leader, below the sinker. Nowadays, influenced by the Japanese method, the iron sinker is situated at the bottom. *Uala*

fish and *kokoro* shell are considered to be good bait (*mamu*) for angling. Fish-hooks are now imported from Japan, and most are of the U-shape type with barbs. Langalanga distinguish between two types of hooks, *oigege* (bend point) and *oitoro* (strait point).

For *uala* and *mela* (perches, *Caesio* spp.) fishing, small hooks, *filau wawade* (No. 9 hooks; shank length between 2 and 3 cm) themselves work as a lure because they shine: fishermen just pull up and down on the line, and *uala* are attracted. The same and longer types of hooks (No. 5 hooks) are used for *buli* (squirrelfish, Holocentridae) fishing on bright nights. Fishermen attach two to five hooks, 50 cm apart, on the line. During the bright night and high tide, fishermen drift the line without bait to catch *buli* and *duli mou* (Apogonidae).

For catching *baraulo* (barracudas, *Sphyraena* spp.), *karanoa* (snappers, *Lutjanus* spp.), and *mamala* (threadfin-breams, *Pentapodus* spp.), medium hooks, *fanaruga* (No. 1-2 hooks; shank length between 3 and 4 cm) are used, often with wire leader. This type of fishing is done in water channels at night. For deep-sea angling of larger fish, such as *ia bala* (emperors, Sparidae spp. and *Paracaesio kusakarii*), *tori* (snappers, Lutjanidae spp.), and *malifu* (snappers, *Lutjanus* spp.), large hooks, *lofo lae* are used.

Deep-sea fishing (*talamae kwalo*) with lure hooks of white plastic shank has been done for several years. It is said that this method, *kura,* was introduced by Filipino fishermen. For deep-sea fishing, Langalanga started to use round-shape hooks which the Japanese fishermen use for longline-fishing of tuna.

2) Aspects of Fishing Activities in Abalolo Village

Among various fishing strategies seen above, fishing strategies actually observed in the village were angling in deep sea and in the lagoon, spearing, netting, and collecting (including diving) marine invertebrates. In Abalolo, none owned nets in 1990, but one household had a seine net in 1992 [cf. Laumani 1989]. This net was used for fishing on the reef flats around the outer island.

Fishing is primarily for self-consumption, and none practiced fishing to sell fish in Auki or Honiara, although casual exchange between villagers was observed. In 1990, one villager started to buy fish from other Langalanga fishermen and transported the products to Honiara market to sell. This business was made possible with the ice boxes provided by the Japanese Government. In 1992, however, this business had already ceased, because the supply of ice from the division of fisheries to preserve fresh fish was not enough. Also the transportation from the village to Auki, where the ship to Honiara departed, was irregular. Thus the consolidation of infrastructure including transportation is needed for properly marketing fish.

In August/September of 1990, the villagers did not use unexploited resources, trepang, which inhabit the sandy bottom of the lagoon. Trepang fishing is one of the most popular kinds fishing in Papua New Guinea [see Suda pp. 89–104 and Tawa pp. 81–87 in this volume]. During the research period of 1990, I did not

Table 3. Variation in Fishing Methods

	Deep-sea angling	Spearing	Angling	(Pole-angling)	Diving	Collect-ing	Number of Individual
Male	3 (3)*	3 (2)	10 (8)	〈2〉	1 (1)	0	13
Married females	0	0	12 (8)	〈5〉	13 (8)	15 (8)	16
Single females	0	0	6 (0)	〈4〉	8 (2)	9 (5)	10

* The number in the table is based on interview, and the number in parenthesis is from actual observation.

observe trepang fishing in Langalanga. The people in this area started to collect trepang to sell after that time. By July of 1992, trepang around the Abalolo village had already been over exploited. Thus nobody in the village engaged in trepang fishing.

But in Ailau and Gwa'edalo, there are some households which are catching and drying trepang. The men went trepang fishing at night-time when trepang move to shallower places. They dive to catch trepang, and bring them back to the village for drying. In Ailau and Gwa'edalo, there are a few structures for smoking trepang. Dried trepang is sold in Honiara, priced by the species and size. In 1994, one Langalanga man engaged in exporting lobster to Australia. He owns a motor boat to transport lobster to Honiara, and some Langalanga men worked for him.

Apart from the above fishing for sale, the fishing activities in Abalolo is for self-supply. I will analyze some aspects of fishing activities observed in 1990.

Except for the daily collection of invertebrates by women, 60 cases among the 64 observed fishing trips were for angling, and 3 were for spearing. Hand-lining, pole-lining, and deep-sea hand-lining were the methods used in angling. Women and two men often practice pole-fishing when fishing in the lagoon, but the other men only used hand-lines instead (Table 3). The choice of angling method is thus related to sex, and, probably to individual preference.

Fishing is usually done from the canoe. Abalolo villagers had 16 canoes and boats in use. Most of the canoes used for daily fishing were of the combined and dugout types. There were 2 combined and 14 dugout canoes in the village. One household owned a motor-boat which was mainly used for transportation. Two households had motor canoes, and one canoe was used for fishing and transport.

The villagers could identify a variety of fishing grounds, although some are no longer used now (Figure 6). In particular, stone weirs and turtle-hunting grounds near the outer islands have been mostly abandoned. Figure 6 indicates that daily fishing activities of the villagers are largely focused in the 5 km catchment. This area is covered with approximately two-hours round trip by paddling canoes.

In total, most zones used by the villagers are found in the southern half of the Arabara Harbor. This is because small islands, including artificial islands (*e.g.* Ta'alulolo, Gwaefou), are mostly distributed in this southern area. The shallow reef flats around the island are the most productive grounds for catching fish and

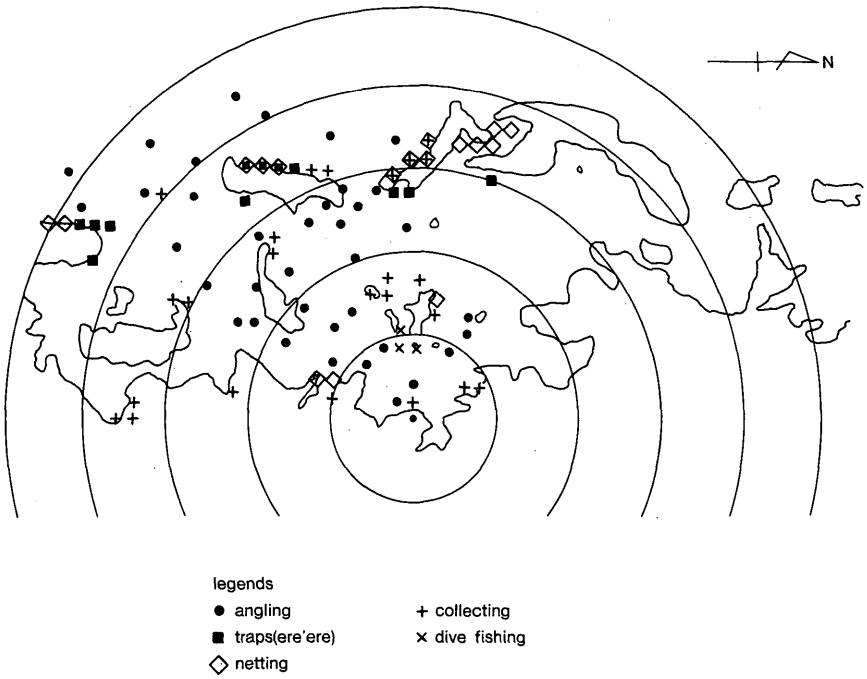

Figure 6. Fishing Zones within 5 Km Catchment

Table 4. Fishing Trips by Fishing Grounds

Fishing ground	Number of Trips	Male	Female
Near reef	9	5	4
Mangrove	1	1	0
Lagoon	43	40	3
Outer reef	8	7	1
Offshore	4	4	0
Total	65	53	8

shellfish. Also the angling grounds of *mela* and *kulafu* are concentrated in this area, probably because of the distribution of reefs and channels.

Table 4 indicates how villagers used fishing zones, and it is easy to note that the angling grounds in the lagoon were by far the most important. Most of the fishing was done by single individuals (Table 5). Occasionally, two persons, usually husband and wife, practiced angling together, and a group of three men was once observed to engage in deep-sea angling. The largest group consisted of four men for turtle spearing at night.

Women frequently collected shellfish by walking on the beach or diving in front of the village and in reefs around the outer islands. Their collecting

Table 5. Fishing Trip by Number of People

Number of People	Number of Trips	Male	Female	Male & Female
1	56	49	7	—
2	5	2	1	2
3	3	2	1	0
4	1	1	0	0
Total	65	54	9	2

Table 6. Successful and Unsuccessful Fishing Trips

Week	Successful	Unsuccessful	Total
1st	5	1	6
2nd	6	8	14
3rd	17	2	19
4th	13	10	23
Total	41	21	62

activities accompanied gardening or collecting for the coastal resources, and I could not observe the exact frequency. But married women collect much more frequently than single women. In particular, diving for shellfish was mostly practiced by married women, although all the single women said that they could dive. Women often collected shellfish, crab and other invertebrates (*e.g. takwai*) when they went out for line-fishing. The shellfish collected most often were *nau* (conch shell, Strombidae), *abuli* (giant clam, *Tridacna* spp.), *buli* (cowry, *Cypraea* spp.), and *wera* (cone shell, *Conus* spp.). Crabs often caught were *ma'abua* (*Oziu guttatus*), *kuka-li-madama* (*Carpilus* spp.) and *upara* (*Geothelphusa dehaani*). In contrast, men usually fished in or out of the lagoon, but often returned without a catch.

Among the observed 60 fishing trips for angling, 19 cases were unsuccessful. Thus nearly one-third of fishing trips produced no catch. The average time spent for successful and unsuccessful trips was 4.39 hr. (S.D.= 2.55; n= 35) and 2.56 hr. (S.D.= 2.04; n= 21), respectively. The latter figure indicates that villagers may give up fishing after fishing two and half hours.

The frequency of successful and unsuccessful trips in four weeks is indicated in Table 6. It is notable that the ratio of successful to unsuccessful trips changed between the second and third weeks. The second week corresponded to the period of a new moon.

Fishing efficiency also changed by week (Table 7). The efficiency of successful trips did not change considerably, but if both successful and unsuccessful trips were combined, the actual efficiency fluctuated by the week. The energy

Table 7. Fishing Efficiency

〈7.1 Only Successful Trips〉

Week	Time (hr)	Man-hour	Catch (kg)	kg/hr	kg/mh	No. of trip
1st	8.8	8.8	2.4	0.28	0.28	4
2nd	9.0	12.0	4.4	0.49	0.36	4
3rd	78.4	81.9	37.1	0.47	0.45	14
4th	37.0	46.5	9.7	0.26	0.21	9

〈7.2 Including Unsuccessful Trips〉

Week	Time (hr)	Man-hour	Catch (kg)	kg/hr	kg/mh	No. of trip
1st	9.8	9.8	2.4	0.25	0.25	5
2nd	28.3	33.3	4.4	0.16	0.13	12
3rd	81.4	84.9	37.1	0.46	0.44	16
4th	67.5	80.5	9.7	0.14	0.12	20

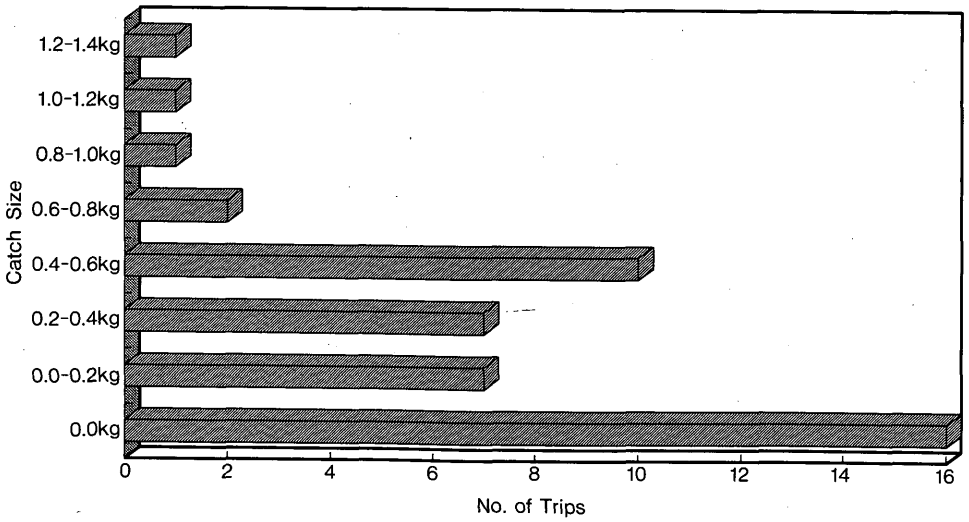

Figure 7. Catch Size by Man-Hour

expenditure for angling was about 156 kcal/hour [KUCHIKURA 1988: Table 10], and the yield of the successful fishing trips in Abalolo ranged mostly between 0.2 to 0.6 kg (Figure 7). The energy efficiency of fishing is then estimated to range between 1.06 to 3.18 units. This is substantially lower than the efficiency (8.6) recorded at Ontong Java in 1970's [BAYLISS-SMITH 1982].

In the first week, most fishermen attempted to catch *uala* with unbaited hooks, and then to catch *kulafu* and other bottom-fish with *uala*-baited hooks. In the second week, it became difficult to catch *uala*, and therefore, other fish as

Table 8. Individual Variation in Angling by Male Fishermen

Fisherman	Age	Total Days	Fishing Trips*	Trip Frequency	Hour Spent (hr)	Hour/ Trip	Total Catch (kg)	Catch/ Hour (kg)	Fishing Grounds** N	L	R	O
No. 1	60'	25	3 (1)	8.3	3.00	1.00	1.34	0.44	3			
No. 2	60'	25	2 (2)	12.5	9.50	4.75	3.25	0.34		2		
No. 3	50'	25	6 (6)	4.1	19.75	3.29	5.52	0.28		4	2	
No. 4	40'	13	9 (4)	1.4	25.25	2.80	4.82	0.19		9		
No. 5	30'	20	8 (5)	2.5	38.20	4.78	18.05	0.47		7		1
No. 6	20'	19	10 (8)	1.9	56.95	7.11	10.53	0.23		8		2

* fishing trips: total trips (successful trips)

** fishing grounds: N (near reef), L (lagoon), R (outer reefs), and O (offshore)

well. Usually, fishermen spent two or three hours searching for bait, and when they could not, they gave up fishing for that day.

In the third week, before the full moon (*fuli afola*), *mela* came into the lagoon. This week was when fishing trips were observed most frequently. I noticed that the men who did not go fishing in the other periods went fishing during this week. Fishermen said that the best time to catch *mela,* that were caught with unbaited hooks, was after the rain or when it was cloudy, because *mela* could not see the hooks. In the third and fourth weeks, it rained almost every afternoon, creating good conditions for *mela* fishing.

Around the full moon, from the end of the third week to the fourth week, one fisherman started to catch *buli* during bright nights. *Buli* are a nocturnal carnivore, and fisherman could catch them even without bait. During the same bright nights, other fishermen caught *baraulo* and other fish by using hooks baited with *uala* in the channel of the lagoons.

As already noted, there is individual variation in the choice of fishing strategies. Table 8 lists the angling strategies of six men. Three men (No. 1-3) in the table did not go fishing very often, but they were all the principal cultivator of each household. One man (No. 1) practiced hand-lining only in front of the village, and never went out into the lagoon. Another man (No. 2) went fishing for *mela* only in the third week. A third man (No. 3) practiced both pole-fishing, and collecting shellfish and other invertebrates in each fishing trip.

Three men (No. 4-6) who fished most often in the village all preferred hand-lining to pole-fishing, and they went deep-sea fishing outside the lagoon as well, when the weather condition was favorable. They never collected marine invertebrates during the fishing trips. No. 5 did not own a canoe, and he always borrowed one from his brother or non-kin. No. 6 man did not own equipment for deep-sea fishing, but usually borrowed from his wife's brother who was away in Honiara. Thus, there does not seem to be a rigid relationship between ownership of fishing gear, and frequency or intensity of fishing.

As discussed in Appendix B, the choice of strategies is dependent on several

other factors, such as presence of other cultivators in the family, other methods for obtaining cash, and personal preference for fishing strategies.

4. SHELL MONEY PRODUCTION

1) Shell Money in the Solomon Islands

Shell money has been one of the most important cultural items in Melanesia, and there are several types of shell money. One type consists of cowry shells. This type, also found in mainland Southeast Asia and East Asia, have been important items for exchange and accumulation in Papua New Guinea.

Another type of shell money consists of shell beads, which could be used both for ornaments and for shell money. This type is widely distributed in Melanesia, such as Papua New Guinea, Bismarck Archipelago, Solomon Islands, New Caledonia, and New Hebrides. On Bougenville, northern Solomon Islands, shell money of this type (*e.g. mauai*) has been used. Most of them were imported from the Central Solomons [CONNELL 1977]. One *mauai* could be exchanged with such items as a garden of taro, coconuts, swords, arrows, pottery, and sago powder.

There is another type of shell money in the Solomon Islands. In Western Province (the New Georgia), shell money called *poata* was used. *Poata* is a large ring (*e.g.* diameter between 7 cm to 15 cm) made from giant clam shells. *Poata* was made by a specialist, *matazona,* who inherited his status through descent. *Poata* was used for bride price and for exchanging with slaves, stones, bark clothes, shields, necklaces, and bird eggs. In the Choiseul Islands, yet another type of shell money, *kisa,* was used. This is a drum shape money made of giant clam shells. It had different exchange rates by size [MILLER 1978].

2) Shell Money Production in Langalanga

Langalanga is among the few areas where shell money production continues until today. The shell money produced here is shell beads type which is widely distributed in the Central Solomon Islands. Among the Langalanga, four types of shells are currently used for production of shell beads: *romu* (*Chama pacifica*), *ke'e* (*Beguina semiorbiculata*), *kakandu* (*Anadara granosa*), and *kurila* (*Atrina vexillum*). Shell beads are produced in the following processes.

Shells are crushed with an iron hammer on a flat stone (*fou li ui*) to remove the hinges and other useless parts. Shell fragments (*kwai fuloa*) are then held with fingers and retouched with hammers, to make round disks. The disks have diameters of around 1 cm, called *didia suiro.*

Disks of *romu* and *kakandu* shells, which retain a rough surface, are smoothed on concave lime stones (*fou li safa*). The people place around 40 to 50 disks on a half cut smoothing stone (*ma'ai*), and smooth them on *fou li safa* by pushing down and moving the *ma'ai* with both hands. This process is done with some water and broken red sand stone as grinder.

All the disks are then drilled in the middle. The drilling is done from both sides. Traditionally, pump drills (*futa*) were used, but now hand-drills bought at stores are used for efficiency. Drilled disks (*kwakwa suiro*) are then pierced and strung together. The disks at this stage could be used for shell money, but they are usually polished into smaller beads.

The strung shell disks around 3 m long, are placed on an elongated wooden stand, and ground with polishing stones. This work is the hardest labor in shell money production. This process produces round beads with diameters of around 3 to 5 mm.

Beads of *ke'e* shell are then burned on an iron plate heated on the stove. This is done with wooden sticks on the heated plates to change the color from dark purple to orange. This process is called *para,* and is one of the most important steps of shell money production. If the heating is not enough, the beads do not get a proper color. If the heating is too much, beads become too white, and useless. The color of *ke'e* shell is an important factor for the value and price of several types of shell money.

3) Social Context of Shell Money Production

Shell money is produced by household. It is women that are engaged in the whole process. Children often help their mothers shaping and drilling discs. Polishing strung shell beads is often practiced by men, although women can do it. Also men and children string shell beads. In 1990, only women were observed burning *ke'e* shell beads, but in 1992, I have observed that men occasionally do this work.

As seen in time-allocation, women start working around 9:00 a.m., after breakfast and housework. When women drill disks or string beads, they could work inside the house, but, usually, they work under the house floors. This is especially true when they crush shells, because this process produces much debris. When women work under the floors, they tend to work together. Since cooperation is not necessary for shell beads production, they form groups mainly for enjoyment (*e.g.* chatting, and listening to the radio together).

I found some tendencies in women's group formation. Married women who are classificatory sisters tend to work together, or between sisters and brother's wife. There were women who came to marry from Lau or Kwaio, where Langalanga type shell money is not made. They usually worked together with their her husband's sisters to learn the manufacturing technique. It seems that shell money production has an important role of socialization among the Langalanga women.

In 1990, there was a working group of single women in their late 10's and early 20's. Three or four women usually worked together under the floor of the same house. This group consisted of sisters living in this house. Two single women of other households were also the usual members. They worked for one group member, alternative days. Married women have never been observed to

join this group.

4) Kinds of Shell Money

Langalanga people make various kinds of shell money for themselves and for other tribes. Their indigenous shell money used for bride gift is *isae galia* that is made of only white beads of *kakandu* shell. *Isae galia* are made of ten strings (*fula*) of *kakandu* shell beads with diameters of around 10 mm. Each string is folded twice in the middle before being bundled. Thus *isae galia* appears to be made of 40 strings that are about 50 cm in length. *Isae galia* is the shell money that is used only in Langalanga, and the people show hesitation to sell it to outsiders.

The shell money that is produced in Langalanga and distributed widely in the island is *akwala afu*. *Akwala afu* means "ten (strings) together" in Langalanga language. It is called *tafuli'ae* among the Kwara'ae and Lau, and this name is more popular than the Langalanga name.

Akwala afu is subdivided into several types according to its length measured by the human body: *awae rarate* (which means "tip of the chin"), *obe susu* ("over the chest"), *tari bo'o* ("reaching the navel"), *gwae uruuru* ("reaching the knee"), *buigao* ("standing in the middle"). The longer the *akwala afu* is, the higher the price is. There is a special type of *akwala afu* called *maifuo,* which means "net of diamond shape." On *maifuo,* ten strings are combined into a net shape in the middle, and *maifuo* is the most valuable among the shell money which the Langalange make.

As its name suggests, *akwala afu* consists of ten strings. On each string, white (*kakandu*), black (*kurila*) and red (*ke'e or romu*) beads are arranged, according to strict rules. The people arrange *akwala afu* only depending on their memory, not by "watching" specimens. I have once observed that one family were re-making *akwala afu,* since they made a mistake in the proper arrangement.

For red beads, only *romu* shells seem to have been used before, and *ke'e* shell beads currently used are the substitute for *romu* shell beads [Connell 1977: 92]. Langalanga people prefer using *romu* beads to *ke'e* beads in the middle part of strings. In particular, the netted parts of *maifuo* must be *romu.*

Langalanga people are especially careful of the quality of *romu* shell. The most valuable kind is called *firai* that has a salmon pink color. *Romu* shells that do not have enough color for shell money are called *romu ko.* The *maifuo* that is made of only *firai* is called *bata firai.*

The Langalanga people distinguish several parts of *akwala afu,* according to kinds of shell beads used. From the middle to the end, there are parts called, *firai romu, lige bata ke'e, lige kurila, lige bata ke'e* and *lige furu* (*lige*= side). *Lige furu,* at both ends of each string, consists of white and black beads arranged alternately. But careful observation indicates that the diameter of black beads is smaller than that of white beads. This unbalance looks strange, since the diameter of beads on one *akwala afu* should be the same. This phenomenon may come

from the fact that *furu* originally means black plant seeds used for shell money. Since *furu* seeds are not used during my research, black shell beads with small diameter are the substitute.

Apart from the *furu* part, the beads in one *akwala afu* have the same diameter. Langalanga people, however, distinguish between *bata baela* ("big money") and *bata wawade* ("small money"). The beads of the former have larger diameters than those of the latter. Connell [1977] suggested the possibility that older shell moneys were reshaped to make them appear new. These reshaped shell moneys were traded to Bougainville.

One of the most frequently made products in Langalanga is *safi* that is strings of shell money. *Safi* is used among Kwaio and 'Are'are. These people obtain *safi* from the Langalanga people, and they re-arrange them into their own shell money. After being finished, strings of *safi* are brought to Honiara market and sold there. Or *safi* is exchanged locally with the 'Are'are and Kwaio people.

Kwaio make various kinds of shell money for their own use, often incorporating red beads of *safi* made in Langalanga (*3). However, I have observed that Abalolo villagers occasionally provide neighboring Kwaio communities with complete shell money of Kwaio, such as *fafa'a* and *banii'au*.

For the people on Guadalcanal, Langalanga people make yet another type of shell money, *talina*. This type has three strings of *ke'e, kakandu,* and *kurila*. Unlike *akwala afu, talina* has *kakandu* with *kurila* beads in the middle.

5) Bride Gift and Functions of Langalanga Shell Money

Isae galia and *akwala afu* is used today as bride gift and for other purposes (*e.g.* funerals). *Akwala afu* is also used to obtain important cultural items, such as, pigs, canoes, and *pana* (yams) from other tribes. The *pana* that is exchanged with shell money is called *ruda,* and the current exchange rate is one *akwala afu* to one thousand *panas*.

In Langalanga, engagement is called *alufafi,* and the boy's family has to pay engagement money (*galina*) to the girl's side. *Galina* means to "close (or taboo) the girl to other boys." If the engagement is set, the boy's side starts accumulating shell money for bride gift (*kwatena*) (*4).

Traditionally, only *isae galia* was used for bride gift, but nowadays, *akwala afu* as well as *isae galia* is used. Langalanga people regard two *isae galia as* equal to one *akwala afu,* although the cash price of the latter is much higher than the former. They count the number of *akwala afu* by recalculating it by the number of *isae galia*. The amount of shell money paid for bride gift is negotiated beforehand between the two sides.

Besides bride gift, *wainuma* has to be paid to the girl's mother. In particular, *wainuma* expresses special thanks to the mother who has raised the girl. The same custom is reported among Lau bride gift [IVENS 1930: 95–96]. A *maifuo* should be used for *wainuma*.

On the day of engage payment, the relatives of boy's family go together to

girl's village by canoes, rented ships or trucks. Shell money are lain on the ground in front of the girl's house. Usually a specialist is employed to count the number of shell money. After the engage payment, private refund is given from the relatives of boy's side to those of girl's side. This refund, *du'una,* is paid either by shell money, strings of *isae galia* or cash. The *du'una* is the time for joking and chatting. At the end of this ceremony, girl's family presents foods to boy's family. The foods include both uncooked (*e.g.* the pig, rice, etc.) and cooked (sweet potato, soup, etc.) one.

If the proper amount of bride gift is paid, the wedding takes place. It seems that Langalanga does not have a word that exactly corresponds to "wedding." The word "party" (*ioruru*) or "celebration" (*fabuna*) seems to be used. This may mean that, to the Langalanga people, the process of paying the bride gift is the most valuable occasion for creating new kinship ties.

On wedding day, the bride was traditionally decorated with arm rings (*obe*), bracelets (*mae nima*), necklace or chest band (*sau sako*), head bands (*fo'u dara*), and hat (*kwao*). All of these ornaments are made of shell beads. She is then transported to the groom's village in a canoe paddled by women, such as aunts, sisters and other relatives. Women are supposed to sing a ceremonial song *nulu geli.* Nowadays, young couples tend to prefer western (Christian) style of costume to the above traditional style on the wedding ceremony, although they wear some kinds of traditional ornaments, such as necklaces, chest bands, or head bands. The wedding ceremony is now performed in church. In one wedding which I observed in Abalolo [APRIL 1994], groom and bride exchanged shell beads necklace each other.

6) Shell Money Production in Transition

Cooper has already pointed out that in the late 60s', (*e.g.* Gela) Langalanga people were buying shells from other areas or going to other areas to collect shells (1971). Although *ke'e* and *romu* could be still collected in the Langalanga lagoon, their supply is far from enough. During one month stay in Abalolo (1990), I have observed only once that village women went diving to collect these shells. In 1992, I have also observed that one villager paid money to a diving specialist to collect *romu* shells that inhabit deep beds near the mangrove.

Nowadays, people usually buy shells packed in bags that are sold in Honiara market. Each bag is supposed to contain 25 kg of shells, and the price of each shell is listed in Table 9. The most valuable shell, *romu* is sold by the piece. Also, shells are supplied not only from Malaita and neighbor islands, but from remote islands, such as New Georgia.

Among the three basic elements for shell money (red, white, and black), the red colored shells seem to be the most crucial. Traditionally, the fishing grounds of *romu* shell were preserved strictly, and men who observed proper rituals could dive for collecting *romu* shells. But *romu* is now too scarce and expensive, so that *ke'e* shells have come to be used, except for the central part of *akwala afu* and

Table 9. Price and Origin of Shells for Making Shell Money

Shell	Price*	Origin
ke'e	$80	Western Province
kakandu	$15–20	South Malaita
kurila	$15–20	Western Province and Russel Islands
romu	$10 (10 pieces)	South Malaita

* Price is given by one rice bag (25 kg of shells), except romu.

maifuo. Recently, however, *ke'e* shells themselves have become expensive today.

The red colored elements for shell beads other than shell money tend to have been replaced by non-traditional shells, such as *se'ere* (small *Trochus* shells with red part inside). For instance, I have collected *sau sako* (chest band for ceremony) and modern necklaces made with red beads of *se'ere*. It seems that the replacement of materials has started earlier for the peripheral part or informal use than for the central part or formal use.

Modern necklaces and other ornaments that are worn for personal adornment or sold as souvenirs seem to have the least strict rules for production. Therefore, these products are seen with a totally new element, such as purple element made from sea snails (probably *Apollon pusillus*). Thus, technological change does not occur simultaneously for all the products or parts. For shell money whose production is under strict rules, the speed of change is slower.

Not only materials, but also manufacturing tools are changing. Now the people use iron hammers to crack and shape shells. These iron hammers are bought at stores, whereas traditionally people used long pebbles collected in the rivers. Also, traditionally pump drills (*futa*) were used for drilling. *Futa* was made of wooden sticks with disks made of turtle shell. At the end of the stick, a pointed flake of chert (*ladi*) was attached. *Ladi* is a kind of stone blade chipped off from a core with a "striking platform." I heard that in the old days some women were specialized in making *ladi* blades. For polishing, sand stones from the rivers were used before, but nowadays, the people use grinding stones sold at stores.

Shell money was produced for marriage of families and relatives, or for exchange of important items. Thus, labor for production was not evaluated with cash. But nowadays, the villagers employ other villagers, usually women, temporarily for shaping and drilling shell beads. For polishing, men are often employed. The pay is $1.5 to drill disks of shell in 200 g fish cans, and around $3.0 to polish a string of *safi*. In 1992, all the women in Abalolo worked full days, to obtain money ($40.0 a day) for the church fund, once a week. They shaped *kakandu* shell disks supplied from an other Langalanga village.

Drilled *ke'e* disks have been even sold at the village store since 1990. The exchange rate is 30 disks for 20 cents. Villagers bring *ke'e* disks to the store to exchange with cash, and then buy items with the money. Sometimes, children

were observed to bring disks they drilled themselves to buy some sweets. Traditionally, shell beads obtained a value only after being properly arranged into strings or shell money. Nowadays, they are dealt with as a kind of cash among the Langalanga people. In Gwa'edalo, one man buys shells for shell money, and distributes them to the other villagers. He then pays money for drilled disks brought back.

As seen above, a small-scale division of labor and a kind of domestic industry are emerging as a new form of shell money production.

7) Economic Efficiency of Shell Money Production

In the 1960's, Cooper [1971] had already noticed that shell money production of the Langalanga was in transition. After the war, Langalanga people once focused on trading their shell money to Bougainville [CONNELL 1977], however this "Bougainville connection" has been broken down now because of political problems. Shell money is still one of a few means for obtaining money among the Langalanga now. My time-allocation study found out that the people spent from 2 to 5 hours a day for this work, and both men and women spend most of their time on shell money production. Thus shell money production is by far the most important activity among the Langalanga, and the penetration of the cash economy into the society must have profound effects.

One of the most important aspects is that shell money itself can be sold. In other words, each type of shell money now has a cash price, and, thus, the value of shell money has come to be evaluated with cash. Shell money together with shell ornaments can be sold locally, or brought to Honiara market for selling.

Except for polishing that takes several hours, I measured the time spent for each stage of production of *safi,* made most frequently, using a stop-watch. I also estimated the average number of shells contained in one rice bag, counted the number of tablets made from a half shell, and the percentage of loss due to breakage in shaping and drilling. All of these measurements were used for estimating the economic efficiency of shell money production.

It is estimated that it takes around 10 hours to finish one string of *safi.* Around 10 strings of *safi* are made from one rice bag of *ke'e* [cf. CONNELL 1977: 93–94]. These estimates are in line with the villagers own. Since one string of *safi* is sold for $30, one-hour labor for shell money production is calculated to produce $2.75, when expenditure for buying *ke'e* is deducted. But this estimate holds only in the ideal situations, where the rice bag is full of shells (actually, rice bags usually contain less than 25 kg of shells), the loss of shell tablets is minimum (assumption of loss rate is 10 % both in shaping and drilling).

There are other factors which decrease the economic profit. First, the villagers need to buy several tools for making shell money: rubbing stones (one stone for 6 to 10 strings of *safi* costs 3 to 6), strings (40 yards for $1.8), drills ($20), and drill-needles ($2). If one has to bring shell money to Honiara to sell, he/she needs to pay transportation fees and some living expenses in the town. In

addition, all the purchased shells are not necessarily made into shell money. Some shell money is kept to be exchanged or given away in traditional ways. Some portion of shells are used to make ornaments for self-use. Considering these factors, the profit from shell money production is much lower, probably around $1.

From my observations, the Abalolo villagers rarely sell garden products. I observed that they buy sweet potatoes from other tribes, and that the price of potatoes is around $0.25 to $0.33 per kg. I measured the weights of potatoes in local markets, and checked their prices. The Abalolo people produce 2.7 kg of sweet potatoes per hour, and their one-hour labor is thus calculated to produce between $0.67 and $0.90. One household in Abalolo paid $5.00 to a Kwara'ae man for working in their garden. If this man works five hours a day, he gets $1.00 per one-hour labor.

5. FUTURE OF LAGOON LIFE—Conclusion—

In Melanesian studies, one of the central issues has been the contrast between exchange and trade (*e.g.* barter, swapping, etc.), and between "gift" and "commodity." In this context, there is a growing concern with the "commodity-ness" of exchanged items such as shell money in pre-cash economies [DAVENPORT 1986; GELL 1992].

Langalanga people have kept a central role in the local Malaita economy [cf. ROSS 1978]. In the exchange economy between the "sea" and the "bush," Langalanga people as well as Lau have supplied marine resources to the tribes living inland. In particular, Langalanga people have been the sole supplier of shell money that has been the keystone in social transactions.

Langalanga people have been making their own shell money (*isae galia*) to be used among themselves. They are, at the same time, making shell money (*akwala afu*) to be exchanged not only within their societies but to be traded with other peoples in exchange with a restricted range of items (*e.g.* pigs, canoes, yams). Langalanga people now make strings for shell money (*safi*) and the shell money (*e.g. fafa'a* to Kwaio and *talina* to Guadalcanal people) purely for exchange. In addition, among the Langalanga, shell beads (before being arranged into shell money) has entered this new cycle as a kind of cash.

Unlike other areas where shell money production has ceased [*e.g.* BELSHAW 1950], shell beads craft (making shell money and ornaments) among the Langalanga has thus continued under socio-economic changes. Although shell money as "bride gift" is still the basis for social bonds among the Langalanga people, this craft has attained economic importance under the increased influence of cash economy [cf. COOPER 1971; CONNELL 1977]. The materials for shell beads are far from enough locally, but shells must be supplied from other areas. In addition, the introduction of new manufacturing tools, such as drills and polishing stones has made productive efficiency even higher.

Analyses of food consumption indicate that introduced foods, such as rice and canned fish have had increasing effects on the local diet. One of the factors leading to the reliance on purchased foods is the fluctuating efficiency of fishing discussed earlier in this paper. Fishermen throughout the lagoon have noticed that the marine resources have decreased probably because of over-exploitation. Once the consumption pattern depending on introduced foods has been established, the people need cash for the daily diet. Then, the people have to spend more time for shell beads craft. But at the same time, they need more cash for coping with the increased prices of shells and manufacturing tools.

Analyses of time allocation indicate that the time spent on shell beads craft has become competitive with the time for other productive activities, such as gardening and fishing. Since commercial fishing (*e.g.* trepang collecting, fish marketing) is still under developing, shell beads craft is almost the only means to coping with the penetration of cash economy.

The concentration of the younger generations, especially single women on shell beads craft could lead to the decreased rate of gardening and collecting. Young men do not have enough opportunity for local jobs. They tend to move to Honiara for wage labor (See the skewed population structure). One of the serious effects of this is the loss of interest in managing the gardens and fishing grounds.

Like other Melanesian societies, Langalanga society is in transition. Although many societies have given up their indigenous technology, Langalanga people have continued shell beads production. In order to cope with socio-economic changes, Langalanga people seem to be depending more and more on this traditional craft.

Langalanga people are thus faced with a complicated situation of "tradition" and "change." In order to keep their indigenous craft as the keystone of social bonding and as a means for coping with the cash economy, a well-balanced policy will be needed in the future. For this purpose, a holistic analysis of their economy, subsistence, food consumption, and time-allocation is the most necessary.

Although not included in this paper, I have started to record the Langalanga oral history on their migrations. I have also started to map the distribution of historic sites around the Gwa'ata area with the help of the villagers. Some Langalanga people, including the Abalolo villagers, hope to establish a "Langalanga Cultural Center" for preserving their traditional crafts and customs, and also for the development of exhibitions and tourism industry. I believe that resource management should go hand in hand with such kind of "cultural management" that aims to preserve the historic environments.

Research by an outsider such as myself offers one view of the present situation. The "outsider-view" should be continuously supplemented by the "insider-view," in order to overcome the prejudice and irresponsibility of outside researchers. My previous report [Goto 1992] has been read by villagers, and they have given me many valuable comments. This report should also be read by many

Langalanga people and Solomon Islanders. Evoking continuous discussions, comments and criticisms between the two sides, I believe, helps to explicate current social, economic and cultural problems. Commitment to mutual discussions is also my responsibility as an anthropologist.

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Finally, I would like to express my greatest gratitude to all the Abalolo villagers and Langalanga people for their enormous hospitality and friendship. While I was suffering from malaria in the village, the villagers took very good care of me. That, I will never forget.

NOTE

(*1) Adofafo and Matalibore are the two sides of one island. Gwaefou is an artificial island.

(*2) Some of them have gone to Honiara to help their families or relatives. Others are engaged and living with the fiancée's family.

(*3) For the detail of Kwaio shell money, see Keesing (1978).

(*4) *Kwatena* has been translated as "bride price" by Westerners, but the villagers do not like this translation. They recommended me to use the term, "bride gift."

APPENDIX A.

Langalanga Fish Names

Local Name	Species/Genus	Family
afana	*Cheilinus trilobatus*	Labridae
akono	*Lutjanus rivulatus*	Lutjanidae
ala'alauou	*Monotaxis* spp.	Lethrinidae
aloa	*Bolbometopon bicolor*	Scaridae
alubala	*Oplegnathus* spp.	Oplegnathidae
alubala	*Siganus guttatus*	Siganidae
amera	*Scarus quoyi*	Scaridae
arara	*Sargocentron* spp.	Holocentridae
arau melau	*Elagatis bipinnulata*	Carangidae
asia	*Lethrinus* spp.	Lethrinidae
asiasi	Mullidae spp.	Mullidae
asiasi-ole	*Lethrinus harak*	Lethrinidae
ba'a	*Acanthurus thompsoni*	Acanthuridae
baekwa	Heterodontidae spp.	Heterodontidae
baekwa	Scyliorhinidae spp.	Scyliorhinidae
baekwa qwaulo	Sphyrnidae spp.	Sphyrnidae
baiko gwaulo	*Rhina ancylostoma*	Rhinobatidae
bairo	*Hemiramphus far*	Hemiramphidae
balifila	*Scarus sordidus*	Scaridae
balubalu	Balistidae spp.	Balistidae
barabara	*Pseudocheilinus hexataenia*	Labridae
baumeo	*Siganus vulpinus*	Siganidae
beau	Blenniidae spp.	Blenniidae
bebe	Chaetodontidae spp.	Chaetodontidae
bebe	*Evistias acutirostris*	Pentacerotidae
belafa	*Acanthurus lineatus*	Acanthuridae
bobola	*Lethrinus nebulosus*	Lethrinidae
boe	Tetraodontidae spp.	Tetraodontidae
bolali gwau	*Mugil cephalus*	*Mugilidae*
bolo	*Acanthurus* spp.	Acanthuridae
botabota	*Thalassoma* spp.	Labridae
bubu	*Sufflamen fraenatus*	Balistidae
bubu taba	*Rhinecanthus aculeatus*	Balistidae
bubusuli	Balistidae spp.	Balistidae
buli	Holocentridae spp.	Holocentridae
buli arara	*Sargocentron* spp.	Holocentridae
buli fou	*Sargocentron* spp.	Holocentridae
buli kalame	*Myripristis berndti*	Holocentridae
buma	*Trachurus japonicus*	Carangidae
bumarau	*Scomber japonicus*	Scombridae

Local Name	Species/Genus	Family
burasi	*Scarus sordidus*	Scaridae
daululu	*Gymnothorax* spp.	Muraenidae
diadia	*Acanthocybium solandri*	Scombridae
didime	*Amphiprion* spp.	Pomacentridae
dolala	*Rastrelliger kanagurta*	Scombridae
doru	Exocoetidae spp.	Exocoetidae
dulimou	Apogonidae spp.	Apogonidae
edaeda	*Caranx melampygus*	Carangidae
fafawai	*Plectorhinchus diagrammus*	Haemulidae
fakata	*Acanthurus mata*	Acanthuridae
fakuku	*Plectropomus laevis*	Serranidae
falata	*Siganus vermiculatus*	Siganidae
fali	Rhinobatidae spp.	Rhinobatidae
fali malu	*Aetobatus narinari*	Myliobatididae
fali malu	*Rhinoptera javanica*	Myliobatididae
farasifa	Haemulidae spp.	Haemulidae
fasura	*Lutjanus* spp.	Lutjanidae
filafila mamala	*Zebrasoma* spp.	Acanthuridae
filafila mamala	Zeidae spp.	Zeidae
filalila mamala	Veliferidae spp.	Veliferidae
fisi	Pempheridae spp.	Pempheridae
folofolo	*Sphyraena* spp.	Sphyraenidae
fologalia	*Scarus rubroviolaceus*	Scaridae
foto	*Abudefduf bengalensis*	Pomacentridae
fou li fuo	*Siganus* spp.	Siganidae
gafalu	*Amblyeleotris* spp.	Gobiidae
gafiu	*Labrichthys unilineatus*	Labridae
galani	*Neoniphon* spp.	Holocentridae
gale ido	*Ophichthus bonaparti*	Ophichthidae
gaso	*Sphyraena* spp.	Sphyraenidae
gefu	*Centrophorus moluccensis*	Centrophoridae
gela	*Centropyge* spp.	Pomacanthidae
gela	Pomacentridae spp.	Pomacentridae
gela ufi	*Chromis* spp.	Pomacentridae
geru	*Liza vaigiensis*	Mugilidae
gifiu	*Remora remora*	Echeneididae
giga	*Amblyeotris* spp.	Gobiidae
gome	*Mugil cephalus cephalus*	Mugilidae
gorigori amadi	*Selaroides leptolepis*	Carangidae
gorosisi	*Lethrinus erythracanthus*	Lethrinidae
gulafu mumu	*Aethaloperca rogaa*	Serranidae
guma kwae	*Lutjanus russellii*	Lutjanidae
gumarano	*Lutjanus monostigma*	Lutjanidae
gwae rafalo	Plesiopidae spp.	Plesiopidae

Local Name	Species/Genus	Family
gwae-rarate	*Euleptorhamphus viridis*	Hemiramphidae
gwagwara	*Thunnus* spp.	Scombridae
gwagwari	*Nemipterus* spp.	Nemipteridae
gwaili	Embiotocidae spp.	Embiotocidae
gwalugwalu	*Scarus schlegeli*	Scaridae
gwara feto	*Tylosurus crocodilus*	Belonidae
gwoufolo	*Scarus dimidiatus*	Scaridae
gwougwou asi	*Scolopsis cancellatus*	Nemipteridae
gwougwouru	*Hexagrammos otakii*	Hexagrammidae
gwougwouru	*Lophiomus setigerus*	Lophiidae
ia a'alae	*Nematalosa japonica*	Drosomatidae
ia bala	*Paracaesio kusakarii*	Lutjanidae
ia bala	Sparidae spp.	Sparidae
ia bola	*Hemigymmus melapterus*	Labridae
ia fili	*Scarus* spp.	Scaridae
ia foula	Ostraciontidae spp.	Ostraciontidae
ia gwaua	*Sphyraena* spp.	Sphyraenidae
ia kui	Branchiostegidae spp.	Branchiostegidae
ia mela	*Lutjanus argentimaculatus*	Lutjanidae
ia rao	*Aulostomus chinensis*	Aulostomidae
ia toto	*Pteroinae* spp.	Scorpaenidae
ia toto	Siganidae spp.	Siganidae
ia li buruburu	*Lutjanus sebae*	Lutjanidae
ia li buruburu	*Macolor niger*	Lutjanidae
ia li fou	Antennariidae spp.	Antennariidae
iladi	*Pterois* spp.	Scorpaenidae
imolo	*Herklotsichthys quadrimaculatus*	Dussumieridae
kakarai	*Naso thynnoides*	Acanthuridae
kakarau	*Parupeneus bifasciatus*	Mullidae
kakusae	*Terapon jarbua*	Teraponidae
kalikama	*Variloa louti*	Serranidae
kalita alu	*Balistoides conspicillum*	Balistidae
kaole	*Mugil cephalus*	Mugilidae
karaona	*Lutjanus* spp.	Lutjanidae
karaona kwae	*Lutjanus russellii*	Lutjanidae
kemo	*Acanthurus triostegus*	Acanthuridae
kokofe	*Amblyeleotris* spp.	Gobiidae
kokofe	*Entomacrodus* spp.	Blenniidae
kokoto	Haemulidae spp.	Haemulidae
komaro	Aulopopidae spp.	Aulopopidae
kota	Hemiramphidae spp.	Hemiramphidae
kowako	*Saurida elongata*	Synodontidae
kulafu	Serranidae spp.	Serranidae
kulafu abularae	*Anyperodon leucogrammicus*	Serranidae

Local Name	Species/Genus	Family
kulafu manare	*Ephinephelus malabaricus*	Serranidae
kulafu maranare	*Plectropomus leopardus*	Serranidae
kuluburo	*Cephalopholis* spp.	Serranidae
kululu	*Myripristis* spp.	Holocentridae
kutu	*Amblyglyphidodon curacao*	Pomacentridae
kwakwa terau	Centriscidae spp.	Centriscidae
kwakwa abu	*Lethrinus amamianus*	Lethrinidae
kwalikwali	*Scolopsis bilineatus*	Nemipteridae
kwarakwara	*Scarus dimidiatus*	Scaridae
kwari	*Caranx* spp.	Carangidae
kwari gwoumoli	*Caranx ignoblis*	Carangidae
kwasi rodo	*Pristigenys* spp.	Priacanthidae
kwatoa	*Lethrinus miniataus*	Lethrinidae
lagui	Kyphosidae spp.	Kyphosidae
lakifa	*Priacanthus* spp.	Priacanthidae
lalakwaga	*Trachinotus* spp.	Carangidae
lasi	*Scomberoides* spp.	Scombridae
lau	*Plectorhynchus goldmanni*	Pomadasyidae
laugwa	*Platax* spp.	Ephippididae
lifokau	*Liopropoma* spp.	Serranidae
loba	Triglidae spp.	Triglidae
lofu	Scorpaenidae spp.	Scorpaenidae
lolodo	*Sphyraena japonica*	Sphyraenidae
lologia	*Ophisurus macrorhynchus*	Ophichthidae
ma'alia	*Epinephelus quoyanus*	Nemipteridae
marau	*Scomberomorus* spp.	Scombridae
maga	Ephippididae spp.	Ephippidae
maga	Monodactylidae spp.	Monodactylidae
maito	*Acanthurus* spp.	Monodactylidae
mala nare	*Plectropomus areolatus*	Serranidae
malifara	*Carangoides bajad*	Carangidae
malifu	*Lutjanus* spp.	Lutjanidae
malifu au	*Lutjanus erythropterus*	Lutjanidae
malifu gwaimara	*Lutjanus sebae*	Lutjanidae
malifu li bara	*Lutjanus gibbus*	Lutjanidae
mama	*Ruvettus pretiosus*	Gempylidae
mamala tori	Trachichthydae spp.	Trachichthydae
mamalo	*Pentapodus* spp.	Nemipteridae
mamalo li boni	*Scolopsis ciliatus*	Nemipteridae
mamara kowa	*Scarus* spp.	Scaridae
mara	*Scarus ghobban*	Scaridae
matasi	*Parupeneus* spp.	Mullidae
maua	*Scarus longiceps*	Scaridae
meamea	Paralichthydae spp.	Paralichthydae

Local Name	Species/Genus	Family
meamea	Pleuronectidae spp.	Pleuronectidae
mela	*Caesio* spp.	Caesionidae
mela alite	*Caesio erythrogaster*	Caesionidae
mela gwaile	*Caesio lunaris*	Caesionidae
mela rau	*Caesio pisang*	Caesionidae
melukuli	*Scarus niger*	Scaridae
mimidi eria	*Plectorhinchus chaetodontoides*	Pomadasyidae
moko	*Scarus* spp.	Scaridae
moro	Mugiloididae spp.	Mugiloididae
muli alaga	*Siganus fuscescens*	Siganidae
muli lau	*Siganus argenteus*	Siganidae
mumu	*Hapalogenys nigripinnis*	Pomadasyidae
musimusi	*Naso thynnoides*	Acanthuridae
nanasi	Syngnathidae *spp.*	Syngnathidae
nora	*Strongylura incisa*	Belonidae
o'oto	*Zenarchopteerus dunckeri*	Hemiramphidae
oa	*Symphorus nematophorus*	Lutjanidae
odu	*Xiphasia setifer*	Blenniidae
ofuna	*Upeneus* spp.	Mullidae
ofuofu	*Fistularia* spp.	Fistulariidae
ogabolo	*Caranx lugubris*	Carangidae
ogolu	*Grammatorcynus bilineatus*	Scombridae
oli	*Parupeneus cyclostomus*	Mullidae
oru	Pomacanthidae spp.	Pomacanthidae
osole	*Albula vulpes*	Albulidae
paopao	*Caranx* spp.	Carangidae
papawa	*Caranx* spp.	Carangidae
parakidili	*Cheilinus fasciatus*	Labridae
rakwa	*Polymixia japonica*	Polymixidae
rakwa geli	*Chanos chanos*	Chanidae
rakwa wale	*Elops hawaiensis*	Elopidae
rala	*Siganus corallinus*	Siganidae
rarano	*Lutjanus* spp.	Lutjanidae
rau	*Katsuwonus pelamis*	Scombridae
rau gere	*Euthynnus affinis*	Scombridae
raurau	*Epibulus insidiator*	Labridae
rautofu	Carapidae spp.	Carapidae
rautofu	*Muraenesox cinereus*	Muraenesocidae
saitana	*Glyphisodontinae* spp.	Pomacentridae
saitana	*Grammistes sexlineatus*	Grammistidae
sasagore	Monacanthidae spp.	Monacanthidae
siko	*Cheilinus diagrammus*	Labridae
sio	*Mulloidichthys flavolineatus*	Mullidae
soba	*Spratelloides gracilis*	Dussumieridae

Local Name	Species/Genus	Family
soke	sharks spp.	sharks
sopilo	*Gymnosarda unicolor*	Scombridae
suru	*Lethrinus* spp.	Lethrinidae
suru bobola	*Lethrinus lentjan*	Lethrinidae
susufi	*Lethrinus semicinctus*	Lethrinidae
susui tegue	Dasyatidae spp.	Dasyatidae
susukelo	Zanclidae spp.	Zanclidae
tagafu	*Paracaesio* spp.	Lutjanidae
tagafu	*Pristipomoides sieboldii*	Lutjanidae
tagili	*Mola mola*	Molidae
takolao	*Naso* spp.	Acanthuridae
takufe	*Xyrichthys* spp.	Labridae
tao	*Alopias pelagicus*	Alopiidae
tarasi	Gerridae spp.	Gerridae
tautu	Diodontidae spp.	Diodontidae
tetebere	*Scatophagus argus*	Scatophagidae
tori alite	*Pinjalo microphthalmus*	Lutjanidae
tori gwalo	*Pristipomoides* spp.	Lutjanidae
tori karao	*Etelis & Tropidinius* spp.	Lutjanidae
tori oka	*Etelis coruscans*	Lutjanidae
uala	*Amblygaster* spp.	Clupeidae
uala suli	Dussumieridae spp.	Dussumieridae
uguai	*Caranx sexfasciatus*	Carangidae
uhu	*Bolbometopon bicolor*	Scaridae
ulasi	*Kyphosus lembus*	Kyphosidae
ulu meo	*Lutjanus bohar*	Lutjanidae
ume	*Naso unicornis*	Acanthuridae
unada	*Leiognathus fasciatus*	Leiognathidae
usu ole	Gobiidae spp.	Gobiidae
usuusu	*Naso* spp.	Acanthuridae
wagalu	*Rachycentron canadum*	Rachycentridae
waigela	*Cirrhilabrus temmineckii*	Labridae
wailau	*Melichthys vidua*	Balistidae
wairalo	Ophichthidae spp.	Ophichthidae
wale ele	Syngnathidae spp.	Syngnathidae
walele	Hippocampinae spp.	Hippocampinae
walelo	Belonidae spp.	Belonidae
walelo bokofu	*Tylosurus crocodilus*	Belonidae
walelo li dauna	*Strongylura anastomella*	Belonidae
wawali lau	*Odonus niger*	Balistidae
wawari	*Coryphaena hippurus*	Coryphaenidae

Langalanga Shellfish Names

Local Name	Species/Genus	Family
abuli	*Tridacna crocea*	Tridacnidae
abuli ime	*Cypraea* spp.	Cypraeidae
abuli lamo	*Cypraea* spp.	Cypraeidae
abuli laola fou	*Cypraea* spp.	Cypraeidae
abuli tatakawade	*Cypraea* spp.	Cypraeidae
buli lalamua	*Ovula ovum*	Ovulidae
bunu	*Cassis cornuta*	Cassidae
fara kwasi	*Anadra autiquata*	Arcidae
fitau	*Siliquaria ponderosa*	Siliquariidae
fodafoda	*Gastridium geographus*	Conidae
fufuole	*Amphinerita polita antiquata*	Neritidae
gwou rana	*Angaria melanacantha*	Angariidae
gwougwou	*Vasum turbinellum*	Galeoidae
ilmae	*Ovinotis ovina*	Haliotiidae
ilo	*Saxostrea parasitica*	Ostreidae
ime	*Tridacna gigas*	Tridacnidae
kairita	*Vasum ceramicum*	Vasidae
kakandu	*Anadara granosa*	Arcidae
ke'e	*Beguina semiorbiculata*	Crassatellidae
ke'e li fou	*Barbatia decussata*	Arcidae
kebora	*Psammotaea togata*	Asaphidae
kokobito	*Cerithium nodulosum*	Cerithiidae
kokori	*Periglypta moniliferum*	Veneridae
kokori	*Scapharca globosa*	Arcidae
kome	*Conus* spp.	Conidae
ku'u	*Terebralia tenkatei*	Potamidae
kurila	*Atrina vexillum*	Pinnidae
kwakwa teboto	*Arca ventricosa*	Arcidae
kwao	*Lopha cristagalli*	Ostreidae
kwarta fuli	*Amusium japonicum formosum*	Amusiidae
lauvi	*Lunatica marmorata*	Turbinidae
mabala	*Spondylus ducalis*	Spondylidae
mauli	*Chama iostoma*	*Chamidae*
momona	*Euchelus atrata*	Trochidae
nau	*Millepes* spp.	Strombidae
ralili	*Marmorostoma* spp.	Turbinidae
roa	*Pinctada margaritifera*	Pteriidae
roa gaula	*Pteria penguin*	Pteriidae
romu	*Chama divaricata*	Chamidae
se'ere meto	*Chrysostoma paradoxum*	Trochidae
sifala	*Turbo petholatus*	Turbinidae
sisilaelamo	*Hippopus hippopus*	Tridacnidae

Local Name	Species/Genus	Family
tatafi	*Nodilittorina* spp.	Littorinidae
walulu	*Andontia edentula*	Lucinidae
wawa elo	*Gibberulus gibberulus*	Strombidae
weda	*Retina undata*	Neritidae

APPENDIX B. HOUSEHOLD AND CONSUMPTION IN ABALOLO VILLAGE —ETHNOARCHEOLOGICAL CONSIDERATIONS—

1. THEORETICAL BACKGROUNDS

There is a growing awareness of the importance of the household among archaeologists. Archaeologists have used various kinds of analytical units, such as artifact types, assemblages, settlements, and areas or regions [CLARKE 1968]. These units are considered to correspond to various levels of social system, such as individuals, working groups, households, villages, and cultures. Among these, households can be identified with less ambiguity than other units, because we often find spatial and temporal aggregations of archaeological materials (*e.g.* assemblages from pithouses). The totality of cultural and natural remains thus defined is most reasonably correlated with the households of the past.

Households are "the levels at which social groups articulate directly with economic and ecological processes [WILK and RATHJE 1982: 617]," and therefore, "households are a level at which adaptation can be directly studied [WILK and RATHJE 1982: 617]." This is because the household is a unit of production, distribution, transmission, and reproduction [WILK and RATHJE 1982: 621–631]. From the archaeological perspective, in particular, households are emphasized as a unit of consumption and discard as well. This point leads us to look in detail at the consumption pattern of the household, in relation to production and other activities (Table 10).

2. PRODUCTION AND CONSUMPTION WITHIN HOUSEHOLDS IN ABALOLO

1) The intensity of agriculture (man-hour checked by time-allocation study) by household covaries with the size of household ($r=0.754$; 1%). The household size tends to co-vary with the number of producers and dependents. For instance, number of women producer (who are the principal agriculturists) positively correlates with the intensity of agriculture ($r= 0.661$; 5%). Further analyses are then made to see the correlation of the proportion of dependents (dependents/producers in household) with the intensity of agriculture by producer (Figure

Table 10. Household and Production in Abalolo Village (1990)

House-hold	Household Size	Producer	Dependents	Female Producer	Intensity of Gardening	Intensity of Shell Money Making	Intensity of Fishing	Intensity of Specialized Fishing
H1	7	3	4	2	5	12	4	0
H3	2	2	0	1	2	7	10	2
H5-8	14	5	9	3	7	16	4	0
H11	4	3	1	2	1	14	14	3
H12	8	2	6	2	9	5	2	0
H15	7	5	2	4	8	13	12	4
H16/17	4	2	2	2	2	13	5	0
H18	4	2	2	1	2	0	5	0
H19	9	3	6	2	5	9	6	0
H20	8	3	5	2	7	10	10	1
H21	3	1	2	1	2	5	5	0

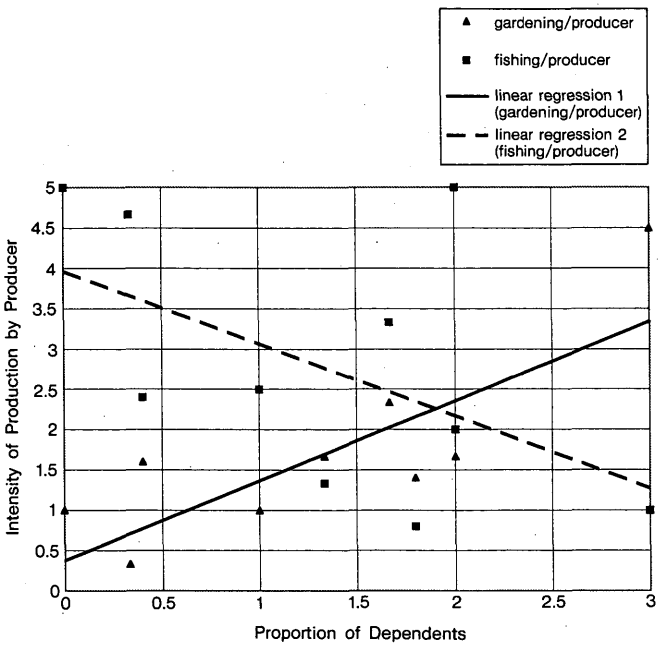

Figure 8. Intensity of Production by Producer

8), a high positive correlation is found (r= 0.813; 1%).

Since agriculture in Abalolo is totally for self-supply (not for commercial purpose), it could be argued that the intensity of agriculture by household is dependent on the proportion of dependents to each producer.

2) The intensity of fishing, in contrast, does not show significant correlation with

the size of household ($r = -0.310$). The intensity of fishing has a negative correlation with the proportion of dependents ($r = -0.735$; 1%), that means: the fewer the dependents are, the more often people go fishing. The intensity of fishing by producer, however, does not show significant variation with the proportion of dependents ($r = -0.514$) (Figure 8). When the intensity of night fishing and offshore fishing is grouped as "specialized fishing," another interesting results have been obtained. The intensity of specialized fishing by producer has a high negative correlation ($r = -0.808$; 1%) with the proportion of dependents, although, as shown above, the intensity of fishing ("specialized fishing" plus other "general" fishing such as lagoon fishing) by producer does not have significant correlation with the proportion of dependents.

Night fishing and offshore fishing often results in catching large fish, if it is successful. On the other hand, these specialized fishing strategies have a higher risk. It seems that, for the people who have more dependents, offshore fishing is not a good choice. On the other hand, the man who has fewer dependents will have an opportunity to venture "specialized fishing."

The species caught by offshore fishing are different from those caught in lagoon fishing. If the variation in faunal assemblages is observed by household (*e.g.* house site), one factor we should consider is the household composition, i.e. family structure.

For offshore fishing, the villagers need special equipment, such as long lines, large fishhooks, and lures. So the presence or absence of a particular piece of gear will be helpful to detect who goes offshore fishing. Villagers, however, often borrow fishing gear and canoes from other villagers. The borrower gives some portion of the catch to the family who rents out the equipment. In such a case, the remains of offshore fish will be found in the home of the family who did not go offshore fishing.

3) There was a marked contrast between households that consume shellfish and those that do not. From the observation, only some married women went diving to collect shellfish. They were all born in Langalanga. There is another Langalanga woman who particularly liked to catch crabs. In contrast, one woman born in Kwara'ae went to collect shellfish (*e.g.* mangrove oyster) in the muddy zone, but she has never gone to dive or even paddled.

The households that have a wife from the bush tribe, such as Kwara'ae and Kwaio, have more access to garden products which Langalanga people do not usually use. The above woman married from Kwara'ae often went to her parents' village and helped them garden. In return, she brought several crops not usually grown in the village. Thus the descent or kinship factors are relevant to explain the variation in archaeological specimens (*e.g.* floral remains).

4) Bonito and tuna that the Abalolo villagers do not usually catch are usually sold in the local market. Since every household has equal access to the market, the frequency of purchasing is dependent upon cash income. Exotic seasonings, such as salad oil and curry powder, were found only in a few households, such as the

Table 11. Frequency of Shell Money Production by Household

	Households												
Woman	H1	H2	H5	H7	H11	H12	H15	H16	H17	H19	H20	H21	Total
H 1-F1	5												5
-f 2			7										7
H 2-F1		3							2		1	1	7
H 5-f 2			7										7
-f 3			9										9
H 7-F1				2	1								3
H11-F1					7								7
-F2					7								7
H12-f 2					1		4						5
H15-F1							3						3
-F2							2						2
-f 3							4						4
-f 4							4						4
H16-F1								2	2				4
H17-f 2									9				9
H19-F1										2			2
-f 2	1		6										7
H20-F1											2		2
-f 2			5								3		8
H21-F1												5	5
Total	6	3	34	2	16	0	17	2	13	2	6	6	107

* F=married woman; f=single woman

household with the shop or one whose member had recently come back from town. The presence of these faunal and artifactual items is explainable by degree of cash income and/or access to the market. In contrast, canned fish can be bought in the village shop, and its price is not very high. Thus every household seemed to have equal opportunity to use canned fish.

5) The intensity of shell money production covaries with the number of women in households. In most cases, an Abalolo household consists of a nuclear family. The number of women largely depends on the number of daughters. The households that have several unmarried daughters with age of late teens to 20's tend to have high production rates.

Although the unit of production of shell money is the household, actual production is often practiced by working groups. The debris from shell money (beads) production accumulates in the place of production (usually under the floors), and the amount of debris directly reflects the intensity of production. This intensity, however, does not mean how much shell money the members of the household produced. Rather, it means how much the members of the working group did. Table 11 indicates who worked where in one week, and Figure 9

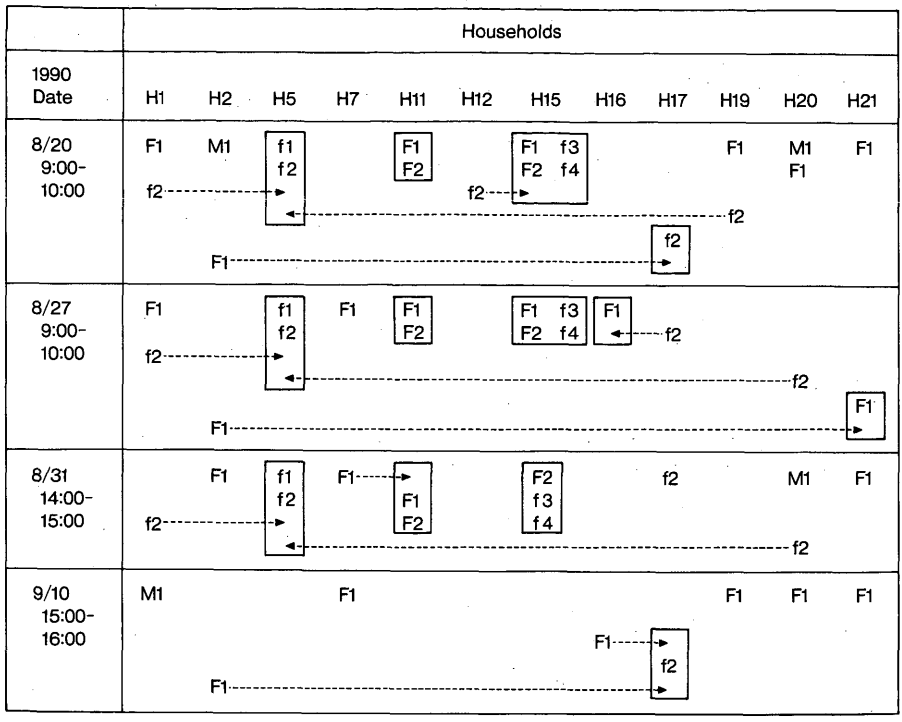

Figure 9. Movement of Women for Shell Money Production

presents the actual movement of the people in production in four selected cases.

There is no specialist for shell money production, and the production groups are not formed out of necessity (*e.g.* cooperation). They were actually formed from more casual factors (*e.g.* socializing). The only tendency I have noted in the formation of inter-household working groups was the "generation": married women tend to work together, and so do single women. The heterogeneous distribution of shell debris in this settlement cannot be explained by "specialization" or "surplus production for socio-political purpose" (to which archaeologists like to refer).

The debris from shell money production is different from that from eaten shellfish in a number of ways. It consists of (1) only hinge and peripheral parts, (2) only small fragments, and (3) only three or four kinds of species. (Shell beads are carefully dealt with and rarely found in these assemblages.) In contrast, the debris from eaten shellfish is composed of a variety of species. Some shells were not broken or they were only partially broken. They were often discarded in one spot, usually around the houses, and nearly complete shells of one species were discarded in one place.

3. ETHNOARCHAEOLOGICAL IMPLICATIONS

The above analyses of household economics in Abalolo village may not correspond directly to the cases in prehistory. I argue that they most reasonably correspond to the societies that retain a reciprocity and gift economy, to some extent, and that are, at the same time, influenced by a market or cash economy. The Abalolo people are themselves engaged in productive activities, such as gardening and shell artifact making. Some shell artifacts are used among themselves (*e.g.* bride price), but others are sold to other tribes with cash or with exchange (*e.g.* pig). Most of the cash income is, in turn, used for subsistence (*e.g.* buying food and shells for making shell artifacts). It seems that nowadays prestige is acquired not only by promoting production and ceremonial exchange, but also by increasing income and social status through education and/or business.

As for purchased items, including exotic food and electric instruments, the presence or absence of a cash income and the access to market are crucial. Cash income, other than from selling shell artifacts, comes from wage labor and running shops. If people go to towns for wage labor, they will have more opportunity to market access.

In these aspects, I argue that the organizational framework of cultural assemblage in Abalolo will be comparable to that of societies dealt with in historical archaeology. For instance, the economy of historic societies in 18th century America was characterized by the combination of self-sufficiency and a growing market system. In some regions, hunting and fishing as well as agriculture continued for self-supply. Their settlement system was sedentary, and, most important of all, the socio-economic unit was the household.

Historical archaeologists, discussing 'consumer-choice' in historical societies, have noted the relevance of the variation in artifactual and faunal assemblages with socio-cultural variables, such as socio-economic status, ethnicity, market access, and household size and structure (*e.g.* SPENCER-WOOD 1987).

Among these factors, household size and structure have been recognized as an important analytical unit in historical archaeology, since "a theory of change in household organization can bridge the existing 'mid-level theory gap' in archaeology [WILK and RATHJE 1982: 617]." The above analyses have indicated that the household size and family structure are surely the aspects that produce variation in archaeological materials.

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