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| 著者(英) | Daisuke Takekawa |
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# Ecological Knowledge of Fanalei Villagers about Dolphins: Dolphin Hunting in the Solomon Islands 1

DAISUKE TAKEKAWA
*National Museum of Ethnology*

## INTRODUCTION

On Malaita, in the Solomon Islands, dolphin teeth are used as the traditional currency, bride wealth and adornment. In some areas of Melanesia they use the teeth of dogs and flying foxes for the same purposes. The teeth of all these animals are very similar in shape so the usage of dolphin teeth might have been developed as a substitute for the teeth of dogs or flying foxes. In the Solomon Islands, there are special villages where people hunt dolphins to obtain the teeth. The village of Fanalei, which is described in this paper, is one such place.

The people of Fanalei are called "saltwater people" (*wane i asi*). To hunt dolphins, groups of men go by dug-out canoe to the open sea early in the morning, and drive individual schools of dolphins to the beach by hitting two stones together below the surface of the water. These people usually live by the beach and possess a profound knowledge about the sea. This paper is focused on that knowledge which is specifically concerned with dolphin hunting and the dolphin itself. It will demonstrate how the Fanalei villagers perceive their ecological environment, and especially the dolphin, through an analysis of this knowledge. Data for this study were collected during a total of nine months stay in Fanalei village, from July on October 1990, from December 1992 to March 1993 and from January 1994 to April 1994.

## 1. FANALEI VILLAGE AND SURROUNDING AREAS

### 1) Lau People

The Solomon Islands is an independent country consisting of many islands, situated in the Pacific Ocean, east of Papua New Guinea. 94.2% of the nation's population of 285,176 [SOLOMON ISLANDS POPULATION CENSUS 1986] are Melanesian, representing 64 languages. Christianity has replaced traditional ancestor worship or animism as the main religion today.

Eighty thousand people live on the four thousand km$^2$ island of Malaita, giving it the highest population density of the Solomon Islands. There are twelve languages spoken on Malaita, including Lau [KEESING 1982]. Lau-speaking

people often form villages on the coral reef and on the artificial islands in the lagoon, which they have constructed to escape the malaria of the mainland [PARSONSON 1966]. They are well-known for being skilled fishermen. Malaita Island has five dolphin hunting villages, all occupied by speakers of the Lau language (Figure 1).

### 2) Fanalei Village

Malaita is an elongated island running from north to south. Most Lau-

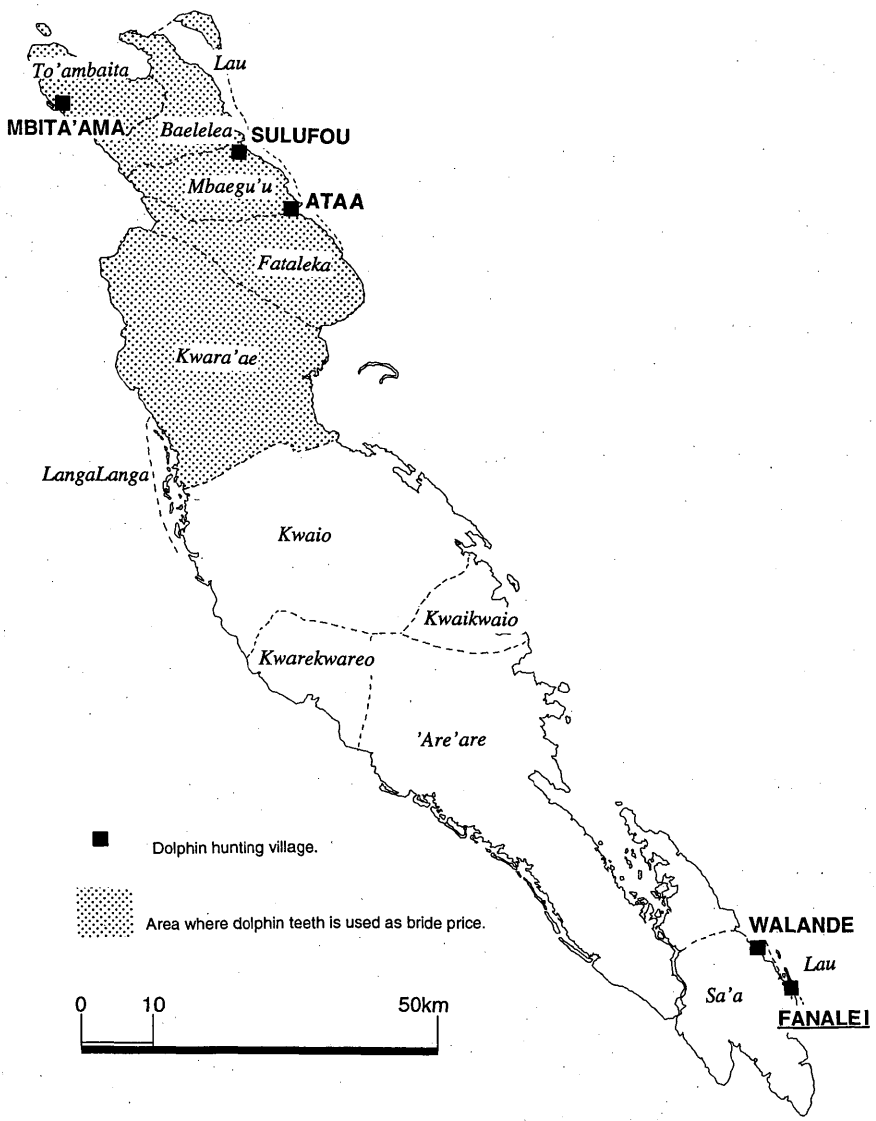


**Figure 1.** Location of Study Area

speaking villages are located on the Lau lagoon in North Malaita, whereas only Fanalei and its sister village, Walande, are isolated in the southeast, more than 150 km from other Lau villages. Originally, Sa'a-speaking people lived in the southern part of Malaita island (Maramasike). According to the chief of Fanalei village, his ancestors of five generations before migrated to the current location in search of good fishing sites. Today Sa'a and Lau-speaking people enjoy close relationships. They exchange agricultural products and fish daily, and also intermarry. The village is basically self-sufficient in obtaining food, the usual fare being various marine products such as fish, shellfish, crabs, lobsters, and agricultural products including root crops and coconut. However, as some of the young men now work in the capital, the modern economy is gradually infiltrating the village. In recent years, the small village store has begun to sell canned tuna, instant noodles, rice and flour, some of which are imported from Australia.

### 3) The Ecological Environment

Fanalei Village is built on a coral reef and has a population of 176 (Table 1). Some of the villagers relocated to the shore of mainland Malaita in 1986 to escape flooding after cyclone Namu. At high tide, the land area of the village is only about one meter above sea level, so the villagers build elevated houses of sago palm leaf, bamboo, and wooden poles. No fresh water is available, and drinking water must be transported by canoe from a mainland stream. The canoe is most important as a form of transportation in the southern part of Malaita, because there are few roads wide enough for cars.

The environment surrounding the village can be classified into six types: bush, swidden field, mangrove, beach, shallow sea and open sea (Figure 2). People use each of these areas appropriately to obtain various foods and other necessities, such as firewood. Since dolphin hunting involves use of the open sea, that environment will be emphasized in this paper.

## 2. KNOWLEDGE CONCERNING SEASONS, THE WIND, AND THE SEA

### 1) The Dolphin Hunting Season

Dolphins are hunted up to four months of the year, from January through

**Table 1.** Distribution of Fanalei Villagers in 1992

| Residential area | Male | Female | Total |
|---|---|---|---|
| Fanalei Island | 83 | 93 | 176 |
| Mainland | 40 | 34 | 74 |
| Other areas | 65 | 57 | 122 |
| Total | 188 | 184 | 372 |

April. During the remaining eight months, May to December, fishing is usually done in the shallow sea inside the coral reef. At this time, the trade wind (*ara*) blows constantly from the southeast causing the sea to be rough off the east coast of Malaita, and therefore making it very hard to go out to the open sea by small

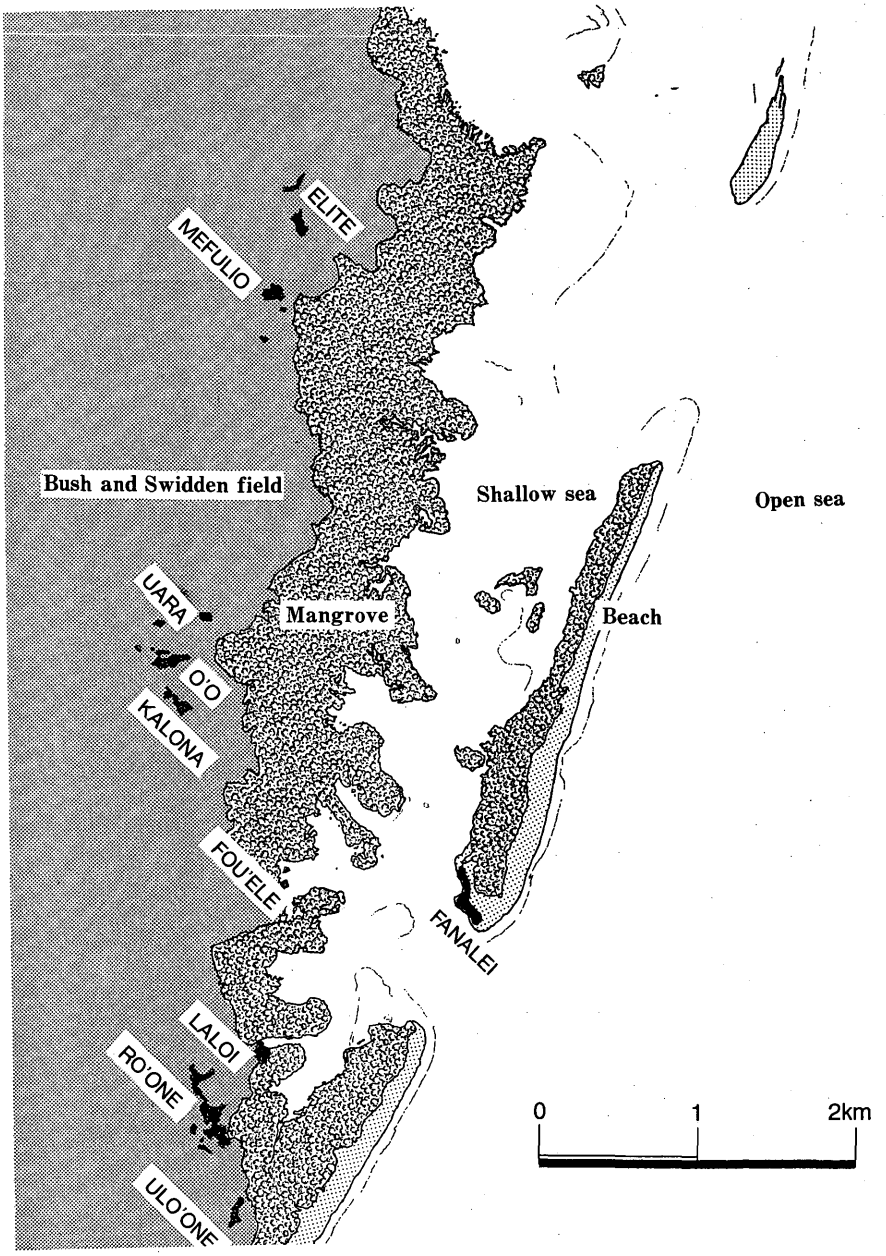


**Figure 2.** Surroundings of Fanalei and Neighboring Villages

canoe. An exception is during the sea-turtle hunting season when the strong trade wind called *malafalisi* blows, mostly in July. The sea condition is generally bad in this season, except at times when the weak easterly wind (*nonofolo*) blows.

During the dolphin hunting season, the northwest wind (*koburu*) usually blows in the afternoon, but in the early morning, the wind stops and the sea becomes quite calm. Villagers say that this season, especially during the periods of week-long west winds (*balaitolo*) interspersed with calm, is the best time for dolphin hunting.

Dolphin hunting begins when the southeast winds shift to the northwest. Elderly people with abundant experience decide on the starting date for the hunt. All adult men in the village must work to repair the village conference house (*tofi*), the place where meetings are usually held and guests of the village stay, before the hunting begins. The *tofi* was formerly a site for the practice of the traditonal religion, but the church has taken its place. On the Sunday after the *tofi* has been repaired, the Anglican minister from the village goes to sea in a canoe to recite a prayer (*tafasi*) intended to call many dolphins. This marks the beginning of the hunting season.

### 2) The Lunar Calendar and Tides

Tidal movement is often an important consideration in fishing activity, and dolphin hunting is no exception. People of the village say they can recognize the lunar phase by its shape and location, and that the 5th to the 9th (*singali bala*) and the 20th to the 24th of the lunar calendar (*fulu fane*) are good lunar phases for hunting. During these periods, the low tide ends in early morning and the high tide occurs around midday.

According to the hunters, dolphins approach the land early in the morning to feed. For this reason, the dolphin hunters set out before sunrise, and return after midday. When the tide ebbs during the night, garbage and seaweed collect offshore (*rama*) and the dolphins gather. Moreover, if the tide is rising during the hunt, the canoes will be assisted by the current which makes it easier to drive the dolphins. When the waning moon (*fulu fane*) remains in the sky until morning, dolphins often feed on the surface of the sea under the moonlight, so overall this is the best time for hunting.

Not only the tide but also the current (*afe*) must be considered. It is said that a school of dolphins moves along the current. Off the coast of Fanalei, the currents flow south to north when the tide rises, and in the opposite direction when it ebbs. During the hunt every hunter keeps in mind the direction of the current and the time it will change. For example, even if dolphins run to the south, hunters should not persist in following them, because they will sometimes return after the current changes.

### 3) Knowledge Concerning the Sea

As previously described, the sea surrounding the village is classified into two

types, the shallow sea (*asi hara*) and the open sea (*asi matakwa*). The shallow sea has much variation in geographical and other features, for example, in the shape of the reef, the types of bottom deposits, depth, current and wave condition. Each feature and condition has various local names [AKIMICHI 1978], however, they will not be discussed here. This paper will focus on the geographical understanding of the open sea which is essential to dolphin hunting.

The open sea is classified by its distance from the land (Table 2). *Fafo nafo*, literally "on the wave", is the area where the bottom of the sea is visible from the canoe. Depth of this area is at most 20 m. About 20 minutes far from the land by canoe is *asi ni aole*, which means "the sea of flying fish". The area where one can see, from one's canoe, white waves breaking is called *nafo sina*, and the area where only the white sand beach is visible is *onetarau*. The area from where the tops of coconuts trees are seen to be the same height is called *niu gere*, and the area where the high hills are seen on the horizon is called *tolo dama*. In *lua folosia* only the tops of high mountains can be seen, and in the area of *tolo saufini* the land is no longer visible. *Asi dadala*, which means the very middle of the open sea, is further still. Hunters search for the schools of dolphin from the area of *nafo sina* to *niu gere*, about 5 km to 20 km from the land.

Terms for relative direction are also used during the hunt: *sifo* is the land side of the sea from one's canoe, and *tatae* is the opposite side. *Toli* is the right side of the sea when one faces the land, and *ala* is the left side. These words are often used when the game is driven. When paddling in the open sea a dolphin hunter sometimes becomes lost, and in such cases he can identify his position by triangulation.

**Table 2.** Local Names of Open Sea Areas

| Area Name | Distance from Land (km) | Time Required by Canoe (h) |
|---|---|---|
| fafo nafo | 0.2 | |
| asi ni aole | 1 | 0:20 |
| nafo sina | 3 | 1:00 |
| onetarau | 6 | 2:00 |
| niu gere | 20 | 6:00 |
| tolo dama | 50 | unk |
| lua folosia | >50 | unk |
| tolo saufini | >50 | unk |
| asi dadala | | |

## 3. KNOWLEDGE CONCERNING DOLPHINS

### 1) The Composition of Schools

Dolphins usually move in groups, and every hunter must recognize the individual schools because the driving method is different for different types. I will describe how hunters treat the dolphins using the example of their main game, the spinner dolphin (*Stenella longirosris*) and the pantropical spotted dolphin (*Stenella attennuata*).

*Naonao ia* means "the first dolphin of the school" or the individual that leads the school. The last dolphin is called *bulibuli ia*. When the school is driven by the sound of stones being hit together, hunters pay close attention to these first and last individuals. If they can successfully control the *naonao ia* and *bulibuli ia*, they can easily control the other individuals in the school. The number of dolphins in one school can range from 10 to 600, and the average capture is about 80. A big school is called *ia ofu*, and when the view of swimming dolphins extends as far as the eye can see, this even larger school is called *sina afu*. A villager often uses the word "*sina afu*" when relating old stories or dreams. Schools the size of *ia ofu* and *sina afu* are difficult to drive, so the hunters force the school to divide, using their canoes, with a technique called *oba*.

A school composed of only mature individuals is called *susu bora*. *Susu bora* is considered as good game by hunters because the school is easily driven and includes many large individuals. A school that includes immature dolphins is called *le fai gale*. *Ia dolola* is a school composed of two or more species: the false killer whale (*Pseudorca crassidens*), for example, will sometimes swim with the pantropical spotted dolphin. The latter two types of dolphin schools, *le fai gale* and *ia dolola*, frequently split into small groups while hunters are driving them to the land, and they call these split groups *unu*. In some cases *unu* will rejoin the main group, but in many cases, once a school has divided, the hunting ends incomplete. As a result, hunters are very cautious when driving such schools.

### 2) Behavioral States

Skilled hunters are also very conscious of the dolphin's behavioral state. When dolphins play by spinning or jumping in one spot, it is called *asi kale*. Hunters say that when dolphins are *asi kale*, the density of the school is high and there must be many dolphins.

Dolphins which are unaware of the presence of a canoe and which are swimming slowly before the start of the drive are said to be in the state of *oirau*. If a hunter finds *oirau* dolphins, he raises a signal flag and follows them until the hunting formation has been arranged.

When hunters who are following dolphins think that every canoe is ready, they simultaneously start to hit two stones under the water. The dolphins are surprised at the sound of the stones and their echo location system becomes

confused. They will rush directly away from the noise in a state called *tolo*. After fleeing for a long time, the tired dolphins float and swim around on the surface of the sea. This state is called *fa ngata*. When dolphins are *fa ngata*, hunters can easily recognize the location of the school, and will cease hitting the stones, and only watch over the dolphins. *Tolo agatai* is the state in which dolphins become panicked and run in many directions. In such cases it is very hard to control and drive them.

*Su munumuno* is the state in which all the dolphins remain submerged for a long time, generally more than one minute. When hunters drive the school near the land, *su munumuno* is liable to happen. When dolphins are *su munumuno*, the hunters cannot judge where the school will emerge. In this case, all the hunters will hit stones to make the dolphins surface.

*Tara* means stranding. An old man told me that when a dolphin is getting old, it will go to a particular beach to die and that old tuna fish will do the same. The beach in front of Fanalei is one of these places.

### 3) Types and Classification of Dolphin

Dolphins are called *kirio* in the Lau language and fish are called *ia*. People in Malaita categorize dolphins as a kind of fish, and the word ia sometimes denotes only the dolphin (For example *nifo ia* is literally "the teeth of fish" but to Lau people it means "dolphin teeth".) [Fox 1974].

Dolphins are classified into 15 types in Fanalei Village. The name grouping corresponds to the type of teeth. Each type and the characteristics attributed to it by the village people are listed below. Species are identified in some, but not all, cases.

*Raa* is the spinner dolphin (*Stenella longirostris*). It has a long beak, a small body, a white belly and a black back. Its teeth are the smallest of all dolphins in this area and number about 160. It swims relatively near shore, can twist in the air and occasionally does not flee from the sound of the stones.

*Raa Matakwa* is a color variation of the spinner dolphin (*Stenella longirostris*). Its characteristics are almost the same as *raa*, however, the belly of this dolphin is red and it swims relatively offshore. The word *matakwa* means "open sea".

*Subo Raa* is also a variety of spinner dolphin with a slightly bigger body but with the same coloration. It swims relatively offshore.

*Unubulu* is the pantropical spotted dolphin (*Stenella attenuata*). The body is larger than *raa*, has many spots and the belly is sometimes white. The teeth are also a little bigger than *Raa*'s. It swims in the open sea, and when it jumps the caudal fin bends strongly. It flees quickly at the noise made with stones, to which it appears to be sensitive.

*Robo tetefe* is the striped dolphin (*Stenella coeruleoalba*). The belly is white, and the rather round, smooth-skinned body is striped on both sides. The beak is small. It has flat-sided teeth, and it is said to jump the highest of all types. Each

school of *robo tetefe* has an individual who appears to lead the others when they attempt to escape. It flees quickly in the open sea when stones are hit together, but is very hard to drive into the shallow water.

*Robo manole* (*Delpinus delphis*?) has a beak like *raa*'s or *unubulu*'s. The body is the largest among the types mentioned, with a slightly backward-curving dorsal fin. When it flees, the hunters describe it as sometimes splashing on the surface of the sea like a garfish (*manole*). Its preferred diet is fish.

*Robo au* also called *robo tafungai* or *robo gou toli* has the most valuable teeth. *Au* means sharp, tafungai means real and *gou toli* means flat head. The most recent record of a *robo au* catch is in 1978 by Walande and Sulufou villagers. For the last hundred years *robo au* have been hunted very little. I identified *robo au* as the melon-headed whale (*Peponocephala electra*) by some existing teeth.

The melon-headed whale is very rare species. They often strand in a group and show no evidence of migration [MARTIN 1990]. Northridge and Pilleri reported that melon-headed whales were killed in fisheries in several regions, although human activities do not have a significant impact on this species [NORTHRIDGE and PILLERI 1986]. However, in the case of Malaita, the population of melon-headed whale may have been decreased by hunting.

In the old stories, Fanalei villagers say that the school size of *robo au* was usually more than one hundred individuals and when they ran away *robo au* sometimes leaped very long distance. The color around the mouth was said to be pink and the back black. This discourse suggests that *robo au* represents the melon-headed whale. Villagers also say *robo au*'s beak was only the size of a human hand, and there was a white stripe on both side of the body. This suggests that *robo au* may be Fraser's dolphin (*Lagenodelphis hosei*), and recent studies found that melon-headed whales are occasionally associated with Fraser's dolphins [PERRYMAN *et al.* 1994]. These two dolphins have very similar teeth and there is a possibility that *robo au* is the local name for both the melon-headed whale and Fraser's dolphin.

The teeth of the following dolphins have no value for the Malaita poeple except for the To'ambaita-speaking people in the northern area, and these dolphins are not hunted in Fanalei but are occasionally seen stranded on the beach or are inadvertently caught with other valuable dolphins. Descriptions of these unimportant dolphins vary from hunter to hunter, especially in regard to the following *robo* (big tooth) type dolphins. The following descriptions of these dolphins were mostly related to me by experienced hunters.

*Olo folosi walo* is the bottlenose dolphin (*Tursiops truncatusu*). It has a flat, duck-like beak and a large body. The teeth are also large and are spindle-shaped. Usually 2 to 5 individuals swim together near the coral reef, and they are not often seen to jump. The hunters say they cannot catch *olo folosi walo* because they are not frightened of the sound of stones. *Olo folosi walo* means "stay near the reef", and this dolphin is also known by the name of "*dakdak*", which means "duck" in

Solomon pidgin.

There remain some robo-named dolphin teeth, as in *robo baa, robo, robo fouboso, robo matakwa* and *robo sarae bina.* Fanalei villagers say that not only the shape of the teeth but also the types of dolphins are different. However, they cannot distinguish them as well as the other types of dolphins such as *raa, robo tetefe* or *unubulu.* I identify these robo-named teeth as variations of bottlenose dolphin teeth.

*Gwou mudu* is Risso's dolphin (*Grampus griseus*). It is sometimes seen to remain quiet on the surface of the sea for more than one hour and it lands on its belly after jumping. The body exceeds 3 m and the teeth are large.

*Ga ia robo* may be the false killer whale (*Pseudorca crassidens*). The body length exceeds 5 m and it seldom jumps, but rather raises its head above the surface of the sea and moves up and down.

In addition to *kirio* there are other sea mammals also categorized as kinds of fish. *Sao* is a type of beaked whale (*Mesoplodon* spp.) with the dorsal fin is positioned relatively backward and only four teeth.

*Busu asi* (alias *Gwahasu*) is another large whale whose name means "blowing in the sea". *Ia tekwa* is the dugong (*Dugong dugon*), and is caught by hunting with nets or spears.

## 4. CONCLUSION

I accompanied the people of the village on several hunting expeditions by paddling alongside in a canoe. Although I made efforts to understand various aspects of their knowledge about the environment, this paper is mainly concerned with the literal knowledge of Malaita people, and the large number of words contained in their language to talk about dolphins. This is evidence of their intimate relationship with the dolphin. Traditional knowledge on Malaita is affected by actual experience, and it should not be forgotten that physical knowledge accompanies this literal knowledge.

Differences which seem trifling or of which we are unaware, are sometimes important to the Malaita people. For example, if we show them various dolphin teeth which seem almost the same to us, they can easily distinguish each tooth. They understand the inherent "value" of the teeth; as mentioned at the beginning of this paper, dolphin teeth serve as their traditional money.

This paper describes information given to me by the village people. Some of this information disagrees with our "scientific" knowledge, especially regarding fields in which hunters have little interest. The utilization of knowledge in areas that are well-informed in order to gain understanding in unknown areas may help maintain a sense of world balance. Disagreements between their knowledge and our scientific knowledge may be useful in understanding their value system. For example, they often say, "The clever dolphins run straight when we hit the stones, but the foolish dolphins can't work out the correct way to flee". This opinion is

rather different from our view of the dolphin as an "intelligent animal". Neither of those two types of knowledge is wrong, they only reflect a difference in worldview.

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