

TWO FISHERS' KNOWLEDGE SYSTEMS AND FRONTIER STRATEGIES IN THE PHILIPPINES

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ABSTRACT

This paper highlights two different fishers' knowledge systems in the Philippines. These fishers' knowledge systems underlie distinct strategies for sustaining a continued livelihood from the sea. They encompass paradigms for success in fishing and are oriented to contend with change and uncertainty. They incorporate ideas about closing or opening resources and sharing or exchanging opportunities with outsiders. What fishers seek to manage are the *conditions* of making a living, which include moral concerns of equity in relation to scarce *opportunities*. Not all resources are well known and some are highly enigmatic. Fishers' relations with resources are linked to the current economic and social values of fish within both market and community economies.

The Davao Gulf fishers can be seen as being caught up in a 'knowledge race' (as in an arms race) where the fishing strategies are adapted to quickly respond to changes in the behavior of fish and of other fishers, as well as of markets. Fish are viewed as instant money and successful fishing is often described as hitting a 'jackpot'. Fishing in the past 20-30 years has been characterized by a rapid rise and fall in deployment of geatypes. The fishers employ a frontier strategy, which results in their 'being well rounded' (i.e. technologically knowledgeable and innovative). Some aspects of this strategy include: 1) the wide repertoire of individual fishers, 2) the phenomenon of *dayo* or fishing visits or sojourns.

In the traditional capture or *mataw* fishery, for seasonal flying fish and dorado in Batanes, efficaciousness or 'luckiness' (*sagal*) is experienced as stemming from the agency of fish that 'go to' worthy fishers. A fisher 'with knowledge' (*mian kasulivan*) knows the ritual technologies of attraction and persuasion in order to maintain relationships with the invisible sector in nature. This knowledge also has a collective aspect aimed at establishing precedents and rules for sharing fishing grounds each season.

The paper does not apply the usual idea of an 'open access' commons as a salient condition in fisheries but rather asserts that potential resources are being approached by fishers as locally defined kinds of 'frontiers'. The 'frontier' seems a particularly helpful conceptual tool since it evokes perspectives on the active construction of 'resources', of 'knowledge', and of 'others', such that temporal frames in the development of the fishery become apparent.

INTRODUCTION

The title of this paper speaks of 'Two Knowledge Systems', in the sense that any one society will always have several kinds of knowledge that are put to work in daily life (Worsley 1997). Fishers' relations with resources are linked with the current values of fish within both market and community economies¹. What does it mean to be 'knowledgeable'? How do fishers' knowledge systems relate to the economic and social values placed on fish?

In this paper I examine distinct strategies for sustaining a continued livelihood from the sea. Rather than resources, this paper begins with a view that what fishers seek to 'manage' are the *conditions* of making a living. These encompass moral concerns of equity in relation to *opportunities* that are scarce (and not necessarily resources). In fact, fishers are seeking to manage or negotiate *change*. Contending with change and uncertainty is the context for wielding knowledge, or different kinds of knowledge, and different kinds of technologies. Fishers therefore are people that are better described as intent firstly on sustaining *livelihood*, rather than on 'conserving' their resources. Forms of fishers' knowledge are part of particular *strategies* to deal with change. How resources are perceived and exploited depends greatly on the expectations of the market and of major communities.

Fishers are always putting their knowledge to work, and expanding, refining and reassessing it to keep up with changing circumstances. Innovation is primarily motivated by how it may support varying modes of participation in global markets or other systems of exchange. It is for this reason that fisheries are the site of the quickest transformations anywhere. My discussion brings us to a consideration of the fishers' approaches to shared resources as 'frontiers' rather than 'open access' resources. By this I mean that in all cases the general value of 'being first' is underscored as a source of legitimacy and power.

A frontier strategy can involve a process of accelerating change, by intensifying effort, seeking to be at the cutting edge of knowledge and technological innovation, establishing networks and institutions, reciprocal relationships, facilitating access to technology, knowledge, markets and resources, because ‘early birds’ can benefit most or can establish prior claims. Fishers’ strategies may incorporate ideas about closing or opening resources and sharing or exchanging opportunities with outsiders. On the other hand, an adopted frontier strategy may also be collective, concerned with controlling the way that precedents are established, and therefore refining and reemphasizing the value of *tradition*. Two cases from the Philippines (Fig 1) exemplify these contrasting strategies.



Figure 1: Map of the Philippines

The two groups of fishers discussed here belong to two distinct geographical settings. In the Davao Gulf the situation is extremely dynamic. Migrants and natives, and sojourning fishers (especially from the Visayas) contribute to rapid

change in this fishery; knowledge is wielded as in an arms race, to keep up with the knowledge of other fishers and of the fish. By contrast, Batanes, a group of ten small islands just below Taiwan, is quite isolated from the rest of the Philippine archipelago, from other fishers (except for Taiwanese offshore fishers with more sophisticated technology), and from markets outside of the province—because of the strong currents of the Balintang Channel and the seas surrounding Batanes. It is apparent that fishers in both places are skilled, experienced, and knowledgeable, but nevertheless it can be seen that not all resources are well-known, or that these can be highly enigmatic.

FISHING IN SAMAL ISLAND: BEING ‘WELL ROUNDED’

This was how I often heard fishers I interviewed describe their fishers’ knowledge: it is, and they are, ‘well rounded’. They meant that they knew more than one kind of technology, that they were not specialized to a single gear type but had tried their hand at many. They possessed different kinds of gear and shifted between them depending on what kind of fish they felt would ‘let themselves be caught’ (“*ang magpahuling isda*”) at a particular hour, tide, time of day, month, or season. Most said they could catch both ‘fish near the surface’ and ‘coralline fish’; had fished in ‘nearshore’, ‘off shore’ and ‘out to sea’ fishing spaces. In the course of careers as fishers they had handled quite a large variety of gear and had been part of both small-scale and relatively large fishing expeditions. Periods of learning and developments in their technology were closely related to how and when the market links were forged. Meanwhile, being ‘rounded’ was also a result of the constant technological innovation that has been necessary to keep up with changes in fish behavior.

After putting together several biographical anecdotes of individual fishers, I realized that their wide range of experience was a reflection of intensification of fishing and the remarkably rapid turnover in technology which has taken place in the Davao Gulf. All these changes have taken place since the early 70s, the space of a single generation. In fact, communities along the east coast of Samal Island are themselves about the same age as the fishery; many houses and settlements were established only within the last 20-30 years. Samal was at first sparsely populated by natives not particularly oriented to the sea. As they said, ‘fish were easy to catch’. Sometimes, it happens that there are fish that are just thrown onto the sand by the waves and can be picked up by hand (I observed this once).

The common 'original' fishing gear were the thrown net (*laya*), and the fishing spear (*bangkaw*) both of which could be used from shore or by waders, with no need for a boat. Practically all other terminology for fishing gears used today uses Visayan words (Box 1).

Box 1. According to B, a fisher in Aundanao, his gillnet for *ukihuk* used to have a larger mesh size and was meant to be floating. Then a friend of his tried tying stones to the net so it would sink. The result was amazingly successful. In 1991-92 this method was guaranteed to catch many fish, up to 60 to 70 kilos each time. B, who is also a barangay councillor, proposed acquiring this new technology as a project of the Aundanao cooperative for a loan of P42,000 from the Department of Agriculture. With this money they procured nets for 5 groups of fishers and were able to pay back the loan in record time. For the success of this project the cooperative won a further P25,000 for having the "Best Project in Region 11". (They used the money to set up a *payao*, or fish aggregating device). However after 1992, the winning net design caught much fewer fish. B thinks the fish have learned to see the net and swim **over** it this time.

In the 1960s, (in the part of the island where I did fieldwork) fishing was still mainly practiced to procure food, except for a few avid fishers who brought their fish to sell in markets in Davao City or other towns on the mainland across the sea. By the 1970s, the population around the Gulf was growing from the influx of migrants; fishing was booming. Migrants included Muslim Tausug, and Visayans of all kinds. *Basnig* (box-shaped nets used with lights) enjoyed a heyday, dynamite became prevalent, and beach seines were also productive at this time. Gillnets did not become common in Davao Gulf until the late 1980s. Displacing other technologies, including the use of dynamite, they quickly evolved in size and dimensions.

Within the community where I did my fieldwork, one particular date could be cited as a turning point: in 1980 the first local *comprador*² established a fish buying station in the locality. With this, fish became not just of value as *food* but was instantly convertible to money or even other goods (like rice, soap, coffee, etc.) that could be taken from the comprador's store with no need for the intermediation of cash. In effect, fish *became money*; both the value of delivered fish and a fisher's debts would be recorded in the comprador's notebooks and these transactions made fish virtually as good as cash.

The evolution of fish from subsistence to a commercial resource follows in the footsteps of other natural resources such as *abaka* (Manila

hemp), copra and logs from the forests which have historically characterized Mindanao as a regional frontier. People from other parts of the Philippines were attracted to migrate in by the perceived opportunities for gathering or producing money from the environment.³ Government also encouraged migration to Mindanao as a 'land of promise'.

In 1997 there were already 6 'sari-sari store' owners that were also fish compradors in my fieldwork area. Between 1980 and 1997, fishers noted that 'everybody' in the barangay learned how to fish. However over the same time the typical volume of catch also dramatically declined. The transformations are reflected in the following typical statements:

'All kinds of ways of fishing are here already.'

'Now everybody, including children, know how to fish.'

'There was a lot of fish (before), just nearby.'

'The fish were large when the compradors started in the 80s, now they are quite small.'

'Before it was not unusual to catch 15-25 kilos at a time, now however it is more usual to catch 2-3 kilos, and rarely reach 10.'

'Before there was no hunger, life was not difficult.'

'Before, night-time fishers returning at break of day would be met on the shore by dozens of "kanaway" (or "people meeting the boat"). The beach was "like a city" for sheer number of people; only after distribution among all of the people would the fish be sold to the comprador.'

In discussing declines in yield however, fishers did not emphasize scarcity (although they do recognize limits in fish stocks relative to increasing populations of fishers), but rather they emphasized the agency of fish, their increasing evasiveness and 'smartness'. The fishers' response to this problem is to constantly figure out how to keep abreast, or ahead, by a strategy of constant innovation in technology. Fishers are engaged in a 'knowledge race', pitting human ingenuity against increasingly elusive resources. In spite of their small catches, many fishers I talked with seemed to feel that they are at the forefront of the technology race.

A kind of natural selection of technology is visible in response to apparent changes in fish stocks and behavior. Lights for attracting fish have become brighter with use of the remodeled

'combination' *Petromax* or *Aladdin* lanterns (See also Hamilton, this vol). (Large fishing boats meanwhile were sighted making use of ultrastrong 'superlites', said to be up to 2,000 watts, which some fishers think affected the minds of the fish.) Simple hook and line gears have become more and more specialized. The original simple *bundak* or small hook and line used to have only one hook attached to it, now it has at least a dozen, and in Peñaplata (a town on Samal Island) some are using up to 800 small hooks on a single line. Artificial baits have also become more sophisticated. Fishers spend their free hours fashioning beads and shiny 'marlon' threads into specialized bait for specific times of day and targeting particular types of fish. Gillnets were originally bought ready-made from hardware stores in Davao City, but most fishers now make their own gillnets, incorporating many innovations in design.

To inquire about successful fishing in Samal is to learn fine points about gear, technology and timing. They speak precisely of the depth of the waters in which they fish, and whether it is best to use a particular method when the current is 'coming in' or 'going out' of the Davao Gulf. The choice of gear depends on the species aimed for, the time of day or night these fish habitually feed, and on the nature of the sea bottom (sand, corals or mud). Most of the technology they use is not broad-spectrum, but highly specialized. Fishing activities are usually referred to using terms which relate directly to the species targeted (e.g. "manulingan", 'to catch tunas'; "manginhason", 'to get shells', etc.). Fishers stressed that they are "*suheto*" or possess all the necessary skills, are "*antigo*" i.e. 'experienced' or 'expert' with respect to certain kinds of gears, or that they have certain gears "*cabisado*" ('knowing something back to front') or "*memorized*", or that they are 'round' ('all-around').

'Now the nets are all longer—both in width and in length—and now there are many kinds.'

'The fish today are just like people, they learn quick.'

'You have to think which is the best way to get fish. You have to try different baits the fish might want to eat. If the fish doesn't eat it anymore, then you have to think up another kind that he will like to eat.'

'There would be fights out at sea because the pamboats were colliding. Now there are no fights because there are few fish. The tulingan are all being taken by the kubkub, by the

Muslims like Haji Yusuf, that's why the Muslims have a lot of money.'

'Before, there were many "dayo", but those fishers from other places won't be coming back like before because there are already many fishers here.'

Dayo are visitors or outsiders that have played a very significant role in the development of the technology and market networks in the Davao Gulf. In a substantial way, local fish and fishing grounds become more intimately known through the interest of strangers. Shellcatching for example was initiated in Samal by *dayo* from Cebu. Another kind of visiting fisher is the "Jolohano", Muslim gillnet fishers based their boats on the beach for periods up to one month, especially in May, August, and November in the late 1970s. They caught very many fish near the shore. Locals learned about gillnet technology from observation of these fishers.

Among the *dayo* I met in 1996-1997 were flying fish fishers from Leyte (in the Visayas). They were using a large net with large buoys, which also necessitated hiring some local help. They had brought four large motorized bancas. According to them, they were the only fishers in the entire Gulf with specialized technology for catching flying fish. They had another base in Davao Oriental across the sea.

From the point of view of locals, most sojourning *dayo* were usually technologically superior and also had the important ties to financiers and buyers. Locals were able to acquire their knowledge and, more importantly, their market links, through hosting and facilitating access to local resources. In a way, exposing the resource to outside exploitation is part of a tradeoff. Especially in the beginning it proved the only way to gain access to particular markets. *Dayo* try to maintain their welcome by portraying themselves as exploiting only particular economic niches by their specialized techniques, thus appearing not to compete with locals. The interaction between permanent residents and short-staying visitors has had an impact on the consolidation of communities and of larger networks. In this way, locals could participate in markets, exchange information, and enjoy other forms of reciprocity with outsiders who could potentially also be assimilated into the community by settling down and becoming local residents. At the same time, because there is a limited period for outsiders to enjoy these privileges, they will be clearly interested in maximizing exploitation. Intensified exploitation in turn, accelerates the gear turnover in Davao Gulf (Box 2).

Box 2. C's shell harvesting group numbered about 50 people, aged between 10-40, including parents and their children, traveling on four motorized boats. The group used nets to harvest shells. From their original base, they moved to other places around the Davao Gulf, reaching Balut Island, Sarangani. Talikud Island near Samal was where they stayed longest; they settled (*nagpundok*) there for three years. On subsequent expeditions, they also went to small islands in the Visayas, as well as to Bohol and Panlaw, Tagbilaran City. Typically they stayed 2-3 months, as long as shells could still be taken in sufficient quantity to support their daily living, before returning to deliver in Cebu. According to C, they explored every 'nook and cranny' of the coast. Shell harvesting opened and explored parts of the local waters and bequeathed some place names to parts that became known for certain kinds of shells. At present, the other original members of C's group are back in Cebu and have shifted to fishing or construction work. C married a local woman and settled in Talikud, he continues to handle nets for shells but this time these are financed and owned by local and Davao-based buyers.

Thus, individual fishers and local communities learned about their resources through the interest of outsiders. The locus for negotiation and control is the point of passage, rather than the resource itself, which is not fully known, usually not self-contained and has no established limits. It is the small number of opportunities to participate in the market that are subject to claim. However, it seems that in this frontier strategy, transferred to the Davao Gulf from the Visayas, the only way to control change is to participate in processes that would in fact accelerate the pace of change.

KNOWLEDGE/POWER: USING 'KNOWLEDGE' IN TRADITIONAL MATAW FISHING IN BATANES

Mataw fishing in Batanes is a special case. Strong currents separate the Batanes area from the rest of the Philippines. The only regular and frequent form of transport is by Fokker plane (3x a week) and therefore expensive, isolating the region from both national and international markets for fresh and dried fish.

Traditional fishing for dorado (or dolphinfish) in the summer season of March-May involves a special relationship between the fishers and the landscape known as *mataws*. Mataw fishing takes place on the eastern side of Batan Island, in Mananiy Bay or Valugan Bay, although some fishing trips may take them further, to the southern and northern parts of the island. This is an indigenous fishery involving highly formalized protocols in a *collective* strategy of frontier. The motif of 'firstness', and the power of 1st actions and precedents consistently runs through the mataw traditions.

Traditionally, the means of access (called the *vanua*) to these fishing grounds is ritually 'made' and 'dismantled' at the beginning and end of the season. Each summer is a new fishing season that is collectively managed by careful actions. *Mayvanuwanua* is a ritual of sacrifice performed by the group of fishers at the onset of the season. Its object is to negotiate for a season of safe passage and successful fishing, a form of collective contract and request put forward with the unseen powers and with the fish. It is held in their landing site along the coast (the *vanua*). At this ceremony, a 'Firstfisher' or *mandinaw nu vanua* is chosen from among the mataws. His job is to call the fish and to set good precedents by his actions on the first fishing trip and for the rest of the season. He is chosen to represent the group in recognition of his being a good fisher and a 'knowledgeable' person.

Traditionally, 'knowledge', or in Ivatan '*kasulivan*', is very important in gaining an edge in this formalized frontier. However mataw 'knowledge' is intended to make the self or body of the fisher as well as the *vanua* into "clean" and therefore attractive things. Fishing is an activity of getting to know and relating well with fish and other natural agents, both as individuals and as members of a group. Fishing is a highly social enterprise.

As one who 'has knowledge' (*mian kasulivan*), a traditional mataw can tap into the invisible potencies that can be found both in the natural environment and within himself, to influence nature: fish, the weather, and good fortune as a whole. In actual practice, *kasulivan* concerns knowledge of how to manipulate certain ritual materials (like sugarcane wine, a coin, a rare bluegreen bead), and of saying special and powerful words that form binding parts of the landscape—'like a curse'. 'Knowledge' is also needed for the rites of 'cleaning' (*maynamunamu*) of gear of individual mataws or of the *vanua* (which is collectively maintained) in the middle of the season.

The ritually constructed *vanua* can be seen as an ideal technology enabling one to catch many fish with the least effort, a collective 'technology of enchantment' (Gell 1999). Even if mataw fishing seems a highly individual endeavor, it is done in the context of responsibility for the fortunes of the group as a whole. To be chosen as Firstfisher or *mandinaw nu vanua*, and be the first to pass through the *vanua*, the first to fish, confers a dangerous power to perform influential actions, and it presumes knowledgeability.

'Firstfishers'⁴ are said to be chosen for their proven ability to catch many fish (*sagal*). This is also a reflection of social esteem; they are in fact ideal leaders who do not harbor ill will toward fellow fishers, their character is affirmed by the fish and by nature. Arrogance brings wind and waves; calmness of character brings good seas and attracts fish. Knowledgeability is an innate talent or trait, part of being approachable to both fish and the invisibles.

Although 'knowledge' and relations between fish and fisher, and fish and the fishing group as a whole, may be traditionally a subject of much attention, interviews with retired mataws indicated that the younger generation is much more "masagal" or successful than their elders. Some old and retired mataws of Maratay told me they never equaled the catch totals of this current generation of fishers; compared with their experience, the seasonal catches of up to 100 and 200 fish in a fishing season by the contemporary mataws are simply phenomenal. They cited restrictions that set quotas and limited catch potentials before, and they also attributed this to improvements in the fishing gear. '*Many dolphinfish got away before.*'

Technological improvements have been made to different aspects of gear. Present-day hooks are smaller and lighter. Many mataws use hooks they have shaped themselves as well as commercial hooks. Fishing lines have also been improved, with many alternatives, and personal preferences vary among fishers. The more traditional kind of fishing line is the *tuyungan*, a stranded line (as opposed to the 'solid' or *tansi*) that was formerly twisted out of *hasu* fiber. It is now much thinner as fishers make it out of drifted rope or fishing net fibers from Taiwanese fishing gear. The nylon version is also often bought commercially. (Much equipment in Batanes, from fishing gear to water containers is crafted out of drifted material from Taiwanese fishing boats: nets, metal clips, buoys, floats, plastic water bottles, etc.). Both the new 'drifted' and commercially available industrial materials made the work of fishing 'easier' as the manufacture of gear from indigenous materials was quite labor intensive.

When one inquires about the details of fishing paraphernalia among mataws, it turns out that there is much individual variation. The fishing line can be prepared with a hook on one end, or made *misamorongan*, that is, with hooks attached on either end. Each mataw has his personal style, and makes a lot of his gear himself, using many found materials. For

example, one mataw said his father would bring 8 fishing lines to sea, but he himself takes only 5, and he doesn't like *misamorongan* because it is 'hard to fix' (arrange neatly in the boat). Another mataw uses 7 hooks: six on three *misamorongan* and one on a 'solid' line.

However, everyday talk is less about differences in gear, than about what part of the Bay they went to, how many flying fish they had, how many dolphinfish went to them, and how they got fish from others. Only when I interviewed several mataws on the details of their paraphernalia, did the discourse about the fish suddenly shift: They talked about fishing as a contest of wits between fisher and fish, and I heard a sentence that could have come straight out of the mouths of the Davao fishers: '*people have become smarter, but the dolphinfish have become smarter too.*'

The fishers of Batanes, including the mataws are no less empirical than the fishers of Davao, but for them, the dilemma of the changing times seems to be how to make tradition and 'knowledge' conform with different ideas about knowledge: 'Knowledge' retains potency, but seems anachronistic, to be known to use it is uncomfortable and sometimes a source of embarrassment.

The reality of mataw fishing is based on the substantiality of an order of power, 'knowledge', and the potential for human negotiation between visible and invisible worlds. An alternative 'modern' reality challenges the mataw traditional world. It is represented in an 'open sea', secular technology, market and different knowledge system.

At the onset of the season, mataws themselves create and reproduce one form of reality carefully. The continuation of tradition depends solely on whether they elect to perform the rites of *mayvanuwanua*, which affect the landscape. Accepting a modern context for fishing converts success into a matter of arbitrary chance, rather than as individual potency where everything is meaningfully interconnected; it means to cease relating to and, by virtue of having 'knowledge', using the power of the invisible that is potentially also inside one. This is the root of the dissonance between traditional and modern orders of time and space as it is being experienced by the mataws in Batanes. The person who decides to be modern must consciously drive a wedge between himself and the invisible parts of the world.

FISHERS' KNOWLEDGES AND STRATEGIES: ON THE CONCEPTS OF 'FRONTIER' VS. 'OPEN ACCESS'

A frontier, it has been observed, provides an 'institutional vacuum' for the unfolding of social processes (Kopytoff 1987:16); such processes can be seen at work in the Davao Gulf. By contrast with the Davao material, traditional mataw fishing in Batanes views 'knowledge' or *kasulivan*, in a very specific light. '*Sagal*' – something that some people have more of and which enables them to catch many fish – is a quality that is enhanced through communication and interaction with the fish and with the *anitu* (spirits, invisible beings), and knowing how to 'say things' in particular places. But both these sets of fishers are using knowledge within the context of particular strategies to negotiate with change.

I would like to conclude by discussion of the notion of a local 'frontier'—as opposed to the concept of an 'open access' commons. The concept of frontier presumes dynamic processes, encompassing within it a sense of temporality, phases and precedent, setting or pioneering strategies which also establish claims. This is why fishing is a matter of establishing habituated paths, and especially by getting there first. Competing perspectives are anticipated, given that the seascape must be shared with others. Change and uncertainty must be contended with. Different kinds of knowledge are important and key in negotiating access or setting protocols of access. The Batanes fishery is a very formalized frontier where traditions provide for instituting innovation.

It is appropriate to understand the fishing grounds of the Mataws in Batanes and small scale fishers in Davao gulf as frontiers, to each of which belongs a different system of knowledge. Fishery managers would do well to recognize the social dynamics underlying the generation and utilization of different knowledge among fishers.

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¹ Gudeman (1986) discusses market economy as participated in for individual profit, and where knowledge may be 'owned' individually, while community economy is concerned with the reproduction of the community itself. Commonly held knowledge is part of the base of the community economy.

² A comprador is also a member of the community; s/he has a *suki* or guaranteed buyer to deliver the fish to, usually in the market in Babak, the capital of the municipality, which is about an hour away by jeep.

³ Abaka cultivation in Samal (initiated by the Americans, developed by Japanese businessmen and migrant workers) declined after the war. Many migrants to Samal (usually from the Visayas) in the 50s had come to work in the logging industry. (By the late 60s, deforestation in Samal was nearly total; the forests were replaced by coconut trees.)

⁴ I use the term 'firstfisher' to refer to the *mandinaw nu vanua*.