

Institutional Analysis of the Rusembilan Kembong Fishery, Pattani District, Thailand

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1 Part I: Static Analysis - Collective action

The fishing village of Rusembilan is situated on the shore of the Gulf of Thailand, about three and a half miles from the provincial capital, Pattani. Fishing, which is largely seasonal, is the most important occupation, followed by rice cultivation. The original case spans from 1956 to 1964 and catalogues an action situation involving approximately 1,000 villagers; the resource units are kembong (species of mackerel) and udang ako (species of prawn). Social relationships and communication in the village are weakening (as is village integration) with the introduction of new technology. The key shared resources are marine fish stocks (common pool) and their productivity. The natural infrastructure is the marine food web. The key resource relevant to the commons dilemma faced by the community is kembong (common pool fugitive resource). This case study is part of the original Common-Pool Resource (CPR) database. A summary of the original CPR coding conducted in the 1980s by Edella Schlager and Shui Yan Tang at Indiana University may be found [here](#).

1.1 The Commons Dilemma

- The potential appropriation problem / poor coordination of appropriation: Fraser (1966) describes the state of the fishery resource around 1960 as a commons dilemma in which fishermen are increasingly complaining of a steady decrease in supply of major species of fish, notably kembong. Fishers attribute this decline to commercial fishing operations netting fish in the lower Gulf of Thailand thereby reducing inshore catch. Fraser states that these perceptions are not necessarily based in fact but are nevertheless leading to discontent and decline in community cohesion (1966:94-95). Since there has been no empirical analysis of the fishery dynamics in the 1960s, it is difficult to ascertain whether the fishers perceptions or Frasers assertion is correct. Technological advances, such as motorboats, outboard engines, and nylon fishing nets are leading to enhanced exploitation of resources (Fraser 1960:234) and social problems, such as fish catch distribution disputes, reduced need for a large number of crew members to operate the fishing boats (koleks). Additionally, the importance of coffee shops, which have historically acted as action arenas for dispute settlement and community involvement in the fishing process has decreased as a result of the new technology which requires less cooperation, preparation for, and cleanup after fishing trips.
- The potential under provision of public infrastructure There is no mention of under-provisioning of the public infrastructure. We can infer that it was not a major problem.

1.2 Biophysical Context (IAD)

The village of Rusembilan is a small fishing village on the Gulf of Thailand that, in the past, relied upon kembong (mackerel) as its primary source of livelihood, occupation, and sense of community pride.

- **Natural infrastructure:** Schools of kembong migrate along the coast of Thailand and were available to Rusembilan fishermen approximately from the beginning of April to the end of September/early October (Fraser 1960:32). Udang ako season was from late December/early January through March (the other months were primarily dedicated to rice growing) (Fraser 1960:35). Kembong were fished at night when fishermen could detect them by the pelagic plankton which became phosphorescent when the kembong disturbed them in the water. Limiting conditions on fishing activity included the lunar cycle (7-10 days of the month the full moon prevented detection of the phosphorescent glow), weather conditions and, until the 1960s, no fishing on Thursday night in observance of the Muslim day of rest.
- **Hard human-made infrastructure:** Decorated long boats (35-50 feet) called koleks, nets, and the community fish sorting area were the primary pieces of physical infrastructure that were used for fishing. Most koleks were privately owned but a few were owned collectively. Nets were also neither exclusively public or private as each boat used nets collectively by tying them together to form larger nets, but each fisher was individually required to provide two nets to his kolek. Before the introduction of the nylon nets, the community sorting area was also a drying and repair area for the fish nets. In the 1960s a road and a bus that brought women to the early morning market gained increasing importance as the fish price began to fall off quickly after mid-morning. Outboard motors replaced oars and sails in importance and were owned by the owner(s) of the boat. The community also evaluated the use of motorboats which would tow the koleks to sea. This option produced discord due to the reduced need for crew members but continued use of large teams which raised complaints by some fishers about others not carrying their weight (Fraser 1966:10), and acrimony due to unsatisfactory fish catch distribution between multiple koleks and inability to create more acceptable distribution rules (Fraser 1966:92). Due to these issues, tow boats were phased out in favor of individual outboard motors by 1964. Nylon nets have replaced cotton nets, and each fisher provides two nets to his boat. It is also interesting to note that koleks are listed as one of the technological advances introduced to Rusembilan by villagers earlier in the 20th Century as part of a continued desire for more efficient exploitation of their maritime environment (Fraser (1960:235).

1.3 Attributes of the Community (IAD)

- **Social Infrastructure** Coffee houses and boat/net maintenance have in the past provided time in which local community members converse about problems and seek the advice of the respected members (orang baik). However with technological change there has been a decrease in the strength of these social relationships. Relationships with the Thailand government was one of distrust rooted both in the historical context in which a Malay people are subjugated under Thai rule and a sociocultural context in which a Muslim minority is integrated in a country that is predominantly Buddhist. Although a few social projects, such as building a school and maintaining roads, were

mandated by the government, most social activities were predominantly performed within the sphere of religion such as feasts and charity giving. Translation of official documents and communications by Thai government officials was conducted by the Imam or school teacher but communication problems due to language barriers persist.

- **Human Infrastructure** In 1964, most of the koleks (there were 14 at this time) were privately owned by individuals, but two were owned collectively. It was commonly thought that fishermen in the collective koleks were less competent because they were not accepted on the other boats and, therefore, were forced to band together to be able to fish for kembong. Boat crews were composed of 12-14 village men. After a period of robberies one of the fishers from each boat was left on land to protect the village on a rotational basis when the boats were at sea. A particularly important skill within the boat was embodied by the steerer who must be skilled in detecting fish and who makes leadership decisions about when to keep fishing or to head in to land. This was often the same person as the owner or owners son, but not always. All fishers were male and lived in the village. Women were responsible for separating, distributing and selling the fish and dividing the fish according to agreed-upon shares. While previously the whole boat crew contributed to the maintenance of the nets, this was no longer required with the introduction of nylon nets. Washing the boat was done by the specified boat washer who gained an extra share of fish for his work. Boat owners repainted the boats every 2-3 years and took great pride in decorating them with elaborate designs.

1.4 Rules in Use (IAD)

Position Rules: Fishermen informally compete for a position in a kolek via their reputation as a fisher. Crew turnover on a kolek was not high, although some rotation occurred due to ability and age. The steerer was chosen based on his experience and demonstrated skill and was the leader of the boat. This person was often the owner of the boat or his son, but not exclusively. The wives of the fishermen were responsible for dividing the fish between the members of the kolek and selling surplus fish early in the morning to Chinese wholesalers in Pattani. The wife of the boat owner was considered the leader of the women with regard to catch share distribution.

Boundary Rules: The community boundary was defined informally by those who lived in the village. Due to the fact that it was the practice to have marriages between villages and most new couples found fishing to be more lucrative than rice planting the community grew during the 60s, but property rights seem to have been constrained based on the ownership and amount of land which was cultivable for rice. Boundary rules of the resource were primarily dictated by the technological capability of fishing boats. The fishing grounds were open entry. However, in order to fish for the lucrative kembong or udang ako, fishermen had to be part of a kolek fishing crew. These crews were organized before the end of the monsoon period by the steerer of a kolek.

Choice Rules: The boat steerer must decide when to fish (daily and annually) and when to finish fishing and head home. The boat steerer must decide which crew members to take on. Kembong must be fished at night. When a man and boat are out of sekon (harmony), a fisherman must get rid of the boat. The boat steerer may be the boat owner or his son. The boat steerer must have experience and demonstrated fishing skills. Villagers may cooperate with each other. Each member of boat crew must supply two kembong nets.

Village council must be approved by kamnan.

Aggregation Rules: A vaguely defined rule stated that there has to be consensus when the fishing season will begin and in what order the boats will launch. However, in reality these decisions were made by the steerer of the boat.

Scope rules: No evidence of scope rules in the text.

Information Rules: The information available to the steerer to determine whether or not to continue fishing included: the current trends in the market during the past days, as reported by the wives, the time of day, the fishing conditions thus far, and catches brought back by boats that have already returned to shore. With this information, the steerer had to make a cost benefit analysis about whether or not to stay out fishing or return back to shore with his current catch. Also, with the introduction of outboard motors, the government of Thailand was able to monitor the licensing of boats much more effectively, so that more accurate information on the number of koleks was collected. However, no restrictions of koleks to the fishing grounds were under consideration.

Payoff Rules: A share of fish was assigned to each fisher based on his contributions to the fishing effort. Shares were distributed equally according to these allotments until the entire catch was distributed. If a fisher provided more than one function, more allotments were added. Fraser (1960:52) reports that the typical distribution for a 14-member kolek was one share for each crew member and half a share for each net provided, an extra share for the steerer, share each for the bailer and washer, as well as each of the four net handlers, and one and a half shares for the boat owner.

1.5 Summary

The villagers of Rusembilian are astute at making cost benefit choices about technology and markets, however this conceptualization of work along economic lines has led to some decreases in collective behavior. Religion, therefore, gained in importance in creating social community. It is likely that if the fishing stocks decrease that there will be increased tension between out-groups such as the Thai government due to language barriers (Thai vs. Malay), the feeling that outside groups are reducing the fishing population, different religious beliefs, and a lack of trust between locals and the Thai government due to historical animosities. While the fishing rules were adequate in the past to manage the fishery, it appears that there is no adequate hierarchical incorporation of boundary rules or acceptable fishing technologies to cope with the larger fishery system which is becoming more important as the village is more integrated in markets and larger economies. In fact, the accepted norm that the ocean should be open to everyone may create difficulties as fishers begin to struggle with limits of the kembong fishery that they have not encountered in the past.

2 Part II. Dynamic Analysis - Robustness

2.1 Update on the Commons Dilemma

This update to the Rusembilan kembong fishery is based on publications in 1999, 2004, and 2007 specifically addressing ongoing changes in the study area.

2.2 Shocks, Capacities, Vulnerabilities

External shocks: The kembong fishery system has undergone rapid globalization pressures which have destroyed the kembong fishery as well as subjected the Rusembilan population to increased poverty and corruption. For example, in 1961, the catch per unit effort in the Gulf of Thailand was 298 kg/hr. In 1995, it was 25 kg/hr (Kaosa-ard 1999:254).

...to and of the Resource (link 7 to R):

The resource boundary at Rusembilan has undergone dramatic change. Whereas previously Kembong was fished at night, seasonally, and close to the shore, now that the fishing user group has greatly expanded, and modern technologies have proliferated, these constraints on the resource boundaries no longer exist. Vessels now fish much deeper and farther from the coast; there is more intensive fishing in other parts of the Kembongs migratory route, and there was nothing in the literature that suggests that they still fish at night. It is hypothesized that many commercial vessels, particularly the Chinese, use radar and other technologies to locate marine resources (Ali 2004:65).

...to and of the Public Infrastructure (link 7 to PI):

Unfortunately, the lack of trust developed between monitors/enforcers and user groups has led to ineffective sanctioning against inappropriate technology. The norm of open access prevails and users often prefer to pay bribes rather than follow technology limitation laws. Many agencies are concurrently authorized to enforce various environmental laws, and significant problems arise because clear jurisdictional boundaries are not agreed upon before legislation is enacted.

...to and of the Public Infrastructure Providers (link 8 to PIP):

As a result of the increasing size and diversity of the resource user group, public infrastructure concerning fishing institutions has shifted away from Rusembilan and towards the government. Thai officials now set fishing policy, and there is little involvement of the users in this process. The influence of sustainable development policies and bottom-up, decentralized government approaches at various governance levels has created confusion as to what agency is handling what aspect of fisheries management with many officials spending most of their time preparing reports for various agencies instead of managing resources. Local level Department of Fisheries officials operate on insufficient budgets and use laws to support their personal interests (bribes). Power of local officials, such as the village headman and the orang baik (respected men), is diminished due to government control and the dissolution of boat teams.

...to and of the Resource Users (link 8 to RU):

Thailand has become a major exporter of fish, and commercial fishing activity has exploded. This has both dramatically increased the resource user group, as well as increased the diversity of people in it. The main factor which has impacted the livelihoods at Rusembilan is the encroachment of commercial fishing operations into coastal waters due to overfishing in other areas. Commercial fleets often use equipment, such as push nets, that destroy the marine environment and result in high losses from bycatch. The background, language and culture of the Malay Muslims in Rusembilan remains distinct from the governmental Thai culture, as well as that of the commercial fishermen. Increased competition from commercial fishing operators has reduced local economic opportunities and fostered equally destructive local fishing methods. Locals no longer see the resource as something to sustain, and instead prioritize their own livelihood.

2.3 Robustness Summary

In order to improve the sustainability of the fishing population the Thai government has implemented programs to try to make push-nets and other harvesting technologies that harm the environment illegal and to register boats. Although there is local support for these measures, a lack of institutional clarity about who can enforce these rules and where has led to rampant corruption. Furthermore, most fishers find it cheaper to pay fines and/or bribes than to pay the boat registration. Part of the challenge in creating trusted institutions stems from a history of distrust between local people and the Thai government. This distrust is made more difficult due to the fact that there is a persistent language barrier and culture divide between the Malay-speaking Muslim population and the Thai-speaking Buddhist population. Although some groups, such as university students and non-governmental organizations, are working to bridge some of the conflicts among stakeholder groups and are calling for clear boundary rules, catch limits, and a marine restoration plan, etc., so far these efforts have not produced many results. Currently commercial ships are allowed to dock in Pattani harbor, and Pattani provincial waters continue to lack clearly defined boundaries, making it harder to discriminate against allowing commercial ships in the bay.

3 Part III. Case Contributors

Madeline Tyson, School of Sustainability, Arizona State University.

Cathy Rubinos, School of Sustainability, Arizona State University.

Ute Brady, School of Human Evolution and Social Change, Arizona State University.