

Gahavalla Fishery

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Commons Dilemma

Economic overcapitalization

The beachseine share system is where decisions about capital investment and fishing effort are made. If every household seeks to secure its livelihood and potential profit by owning a share in a beachseine, the number of nets will far exceed the productive capacity of the fishing grounds (pāla). There is limited economic potential of the fishing ground (pāla). There is only enough space and time for a certain number of nets to operate profitably. There are 108 nets on a beach where 20 would be sufficient for maximum yield and the average net is used only 7 times a year! This drastically reduces the potential income for all participants by halving the profits for all.

Furthermore, the rules designed to ensure equitable access—specifically, the fixed net sequence—create a rigid system that cannot adapt to this overcapitalization. While the sequence gives every net a chance at the best fishing times, it cannot prevent the overall dilution of profits when there are five times more nets than needed. This leads to a gross maldistribution of the catch, where a net’s annual income is determined almost solely by its position in the sequence, not by the skill or effort of its crew.

Asymmetric access to capital and political power has led to conflicts between share-owning capitalists and subsistence fishermen. Wealthy individuals and faction leaders, seeking investment opportunities and political clients, continue to invest in and control shares, preventing the community from collectively reducing the number of nets to a sustainable level. If every household acts independently to maximize its own chance of profit by owning a net, the resulting overcapitalization (108 nets vs. 20 needed) ensures that the vast majority of nets will be idle and unprofitable for most of the year.

Biophysical Context (IAD)

Natural Infrastructure:

The Gahavālla fishery is situated on the southern coast of Sri Lanka, where the continental shelf extends several miles out to sea before dropping off sharply. The village is centered around a naturally sheltered bay, approximately one mile long, created by a 300-foot granite headland at its southwestern mouth. This specific geography creates a mosaic of distinct ecological niches.

The fishermen residing in the southern part of the village, closest to the sheltered navaya (harbour), have immediate access to the prime beachseining grounds and need to row only 2-3 miles to deep-sea fishing grounds, while those from adjoining villages must row 4-5 miles for the same catch.

The monsoon cycles are the primary drivers of ecological and economic rhythm. Unlike other parts of Sri Lanka's coast, Gahavālla's fishing is possible year-round because the headland protects the bay from the full force of the south-west monsoon. The movements of shoaling fish, such as anchovies (*hall mās*), are heavily influenced by these seasonal currents and water temperatures, leading to a pronounced "flush season" of 4-6 weeks where catches are extraordinarily high, interspersed with long periods of low yields.

The beachseine nets require a sandy bottom free from submerged rocks, which restricts their use to two specific sites (*pāla*) within the bay. The presence of rocky outcrops and a river estuary creates separate niches for different species: the estuary provides mud crabs and mullet, the rocks provide shelter for line-fish like snapper and crayfish, and the open bay beyond the surf is the pathway for migratory shoals.

Human-made infrastructure (public and private):

Most Sri Lankan beachseine systems begin with the net itself (*madella*)—a massive, engineered structure approximately 500 yards long and weighing two tons when wet. It functions as a mobile, deployable filter. The net is a composite tool, with a finely woven cotton cod-end (*mudama*) and body designed to trap fish, attached to coarse, strong wings made of coconut coir that act as barriers to herd the shoal. This entire apparatus is held vertically in the water by a headrope with wooden floats and a footrope with stone sinkers, and is hauled to shore by coir ropes that can exceed 500 yards in length.

The deployment of this net requires a dedicated vessel. The net-laying craft (*oru*) is a dugout canoe, often a repurposed deep-sea sailing *oru* over 35 feet long. These craft are specifically designed to carry the heavy, waterlogged net through the surf and lay it in a precise semicircle. The hauling ropes are so critical and expensive that they are often shared among a group of ten nets, creating a physical network of interdependence.

The locations for storing and maintaining this gear are critical. The beach itself is the

primary workyard and storage facility. The madella are stacked on the sand in distinctive, plaited "stooks" when not in use, while the oru are drawn up on the beach. The gear must be kept in good condition through significant collective and individual investment to be ready for the brief and unpredictable flush seasons. Failure to maintain a net or boat means losing one's turn in the fishing sequence or, for the mechanized boats, facing financial ruin.

In addition to the beachseines, the fishery utilizes a fleet of smaller, privately-owned oru for inshore fishing with 'bible' nets (nylon gill nets), and a number of mechanized craft—28-foot, engine-powered boats introduced by the government. These boats represent a different technological branch, requiring engines, fuel, and synthetic nets, all of which are imported from outside the village. The private infrastructure used by the fish traders is also pivotal. This includes vans and lorries for transporting the perishable catch to market, a high-barrier-to-entry asset that aided in establishing the marketing monopsony.

Attributes of the Community (IAD)

Social Infrastructure

Gahavälla people share a common caste (Karāva) and a nominal Buddhist faith, but village life revolves around economic survival and factional competition, not ritual cohesion. The community's governance is characterized by the historical co-existence and subsequent fusion of different systems. The Beachseine share system is a self-contained system with its own sophisticated governance structure (shareholder meetings, the net sequence, catch division rules) for managing the fish catch. The Faction System (Kattiya) is the most dominant governance structure, co-opting the share system. The faction leaders control the shares and use them as political currency to recruit clients. A fisherman's obligations are to his factions leader which determines his access to fishing jobs, credit, and protection.

Compliance within the Faction System is enforced through a combination of economic dependency (a hired man needs his wage; a debtor needs loans from the leader) and the threat of violence. Faction leaders have "thugs" (chandiyo) and reputations for violence to enforce decisions. Compliance within the Share System is maintained because the rules (net sequence, catch division) are the only remaining framework for distributing an increasingly scarce resource.

Human Infrastructure (knowledge):

The community possesses a deep, shared understanding of the complex rules governing the beachseine fishery: the share system (kottas), the net sequence, and the rules of

access. This is a form of sophisticated, locally-evolved institutional knowledge. Fishermen possess deep, practical knowledge of the marine environment, fish behavior, net-mending, and boat handling. This knowledge is often passed down through families, particularly from a father's brother. Additionally there is the financial and entrepreneurial knowledge. This includes knowledge of money-lending, operating revolving credit associations (seetu), and running businesses. This knowledge is often gendered, with women specializing in household and small-scale finance.

Rules in Use:

The rules in use, i.e., soft human-made infrastructure, are provided by Alexander (1982). See **system representation**.

Boundary Rules:

- Ownership of a share
- The entire system is based on the eight-share division of each net – an individual may hold more than one share in a net and a share if odren held by more than one person.
- Women are allowed to own a share but only men can participate in the operation of the net and the division of its proceeds.
- Class of “hired men” can participate in fishing without owning a share.

Position Rules

- *Kuli karayo* - hired men who work the share on behalf of the owner for a fixed wage.
- Shareholder
- *Ruji Karayo* - net member crew
- Secretary - records the price per box, the number of boxes taken, and the buyer.
- Faction leaders - can allocate the valuable position of “hired man” to their political clients.
- *Patabāndi Ärächchi* - the official fish recorder
- *Mudalali* - Fish traders. They created a parallel credit and marketing system for the mechanized boats.

Choice Rules

- Net sequence: nets must be used in a fixed sequence which doesn't change from year to year. “The 10 most successful nets occupied positions 18-27 in the net sequence (Alexander, 1982).”
- If a net's crew is not ready when their turn comes, the next net in sequence has the right to “jump the queue.”

- The proceeds from the auction must be distributed according to a set formula: expenses and wages are deducted first, and the remainder is divided equally among the eight shares.

Payoff Rules

- Each of the eight *kottas* (shares) is entitled to one-eighth of the profit.
- A hired man receives a fixed wage which is deducted as an expense before profits are calculated.
- In allocating the position of hired man to their political clients, faction leaders distribute benefits in return for political support and loyalty. *“Danny told me that although his family groups could work all the shares they owned, it was better to give some out on “hire” and this increase the size and unity of his following. (Alexander, 1982)”*

Information Rules

- Public auctioning and recording: the sale of the catch, must be conducted as a public auction on the beach, and the details must be recorded by the “secretary”.

Scope Rules

- Registration is mandatory for a net to operate. The government requires all beach-seines to be registered. This rule is enforced by the *Patabandi Ārācchi* (the official fish recorder).
- The District Revenue Officer banned the use of ‘bible’ nets within the bay in 1963 to protect the beachseine fishery.
- Ownership of a share (*kottas*) is the primary condition for appropriation.
- Women are prohibited from the physical domain of fishing. Even though women can legally own shares, they have to cede operational control to a male nominee.

Aggregation Rules (not specified)

Part II: Dynamic Analysis - Robustness/Vulnerability trade-off

Commons Dilemma & the Capitalist Market

The traditional, community-managed share system was temporarily suspended and then permanently subverted by the penetration of capitalist market relations and state-led technological interventions, which impacted the resource system by disrupting the balance between fishing effort and economic yield.

The shift from a semi-subsistence to a cash-based economy, coupled with government policies, encouraged fishermen and outside capitalists to view beachseines as objects for capital accumulation and maximum profit generation, rather than as a managed common-property resource. The authority of the community and its traditional rules over cropping patterns (i.e., the net sequence and share system) was not abolished but was overwhelmed and co-opted by a massive influx of capital. This proved to be less robust than the combination of public infrastructure and the soft human-made infrastructure of the traditional share system.

Shocks, Capacities, Vulnerabilities

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

Shocks:

- As the village was linked to the cash economy, shares became an object of capital accumulation for a new class of rural capitalists. This led to a massive and rapid increase in the number of nets, from 20 in 1940 to over 100 by 1971.
- The most important consequence of the influx of capital was the creation of an active share market. The core function of the beachseine infrastructure was subverted. It was no longer a system for equitable subsistence but an engine for overcapitalization and unequal distribution.

Vulnerabilities:

- Public infrastructure was vulnerable to capture by private interests. The share registration system, intended to regulate the fishery, became a mechanism for legitimizing overcapitalization.
- Government schemes lacked cultural adaptation. The mechanized boat program's fixed repayment schedules ignored seasonal income fluctuations and local labor-sharing traditions.

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

Shocks:

- The abolition of the Village Headman system in 1965 and its replacement with transferable civil servants (Grama Sevaka) removed stable local governance and made officials vulnerable to factional manipulation.
- The emergence of rural capitalists as de facto infrastructure providers undermined formal governance structures. Wealthy individuals and faction leaders replaced community institutions as sources of credit, employment, and protection.
- Faction leaders used their state connections to consolidate power.

Vulnerabilities:

- Public infrastructure providers were highly susceptible to co-option by wealthy elites who controlled economic resources.
- The transferable nature of government officers made them vulnerable to local political pressures and unable to provide consistent governance.
- Weak state presence in daily village affairs created a power vacuum filled by faction leaders.

Capacities:

- The traditional role of the *Patabāndi Ārācchi* retained some regulatory functions, particularly in net registration.
- Government fisheries departments maintained technical oversight capacity, though with limited understanding of social dynamics.

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

Shocks:

- The creation of a share market transformed fishermen from owner-operators with many forced to sell shares to meet emergency expenses while becoming hired laborers on their own nets.
- Economic polarization created this class of hired men (*kuli kārayō*) who worked shares for wages substantially lower than what owners received, undermining the traditional identity between labor and capital.
- The rise of factional politics forced households to align with powerful patrons for protection and access to resources, creating dependencies.

Robustness Summary:

The Gahavālla fishing community succumbed to a sustained disturbance: the penetration of capitalist market relations and its fusion with local political ambitions. This was a panacea imposed on the community by market logic, which prescribed "private investment and profit maximization" as the solution to rural development. The traditional share system, the anti-thesis of a panacea—highly context-specific and fine-tuned for equitable subsistence—was not abolished but co-opted.

The formal structure of the institutions (the share system, the net sequence) survived, but their equitable function was destroyed. The community's social infrastructure proved robust enough to maintain the rules of the game but fragile in its inability to prevent the game from becoming self-destructive. The community of resource users (fishermen) lost the ability to effectively govern themselves or to be served by formal public providers (link 2 RU to PIP). The system got locked in a stable equilibrium of economic stagnation and conflict – it settled into a state where the forces for change were balanced, locking it into a persistent, dysfunctional condition. The action of the Resource Users (appropriating

fish) became economically detached from the sustainable yield of the resource (link 1). They continued to invest in and use nets even when the marginal return for most of them was near zero. Additionally, the government's hire-purchase scheme for boats failed because it assumed urban, capitalist logic (saving for depreciation, fixed loans) that was absent in the village (link 3). The factional competition and the violence and court cases that accompanied the dependencies of the fishermen on their factional leaders—these were not signs of a system breaking down, but the normal functioning of the new system. The system was utterly fragile in its ability to achieve its original purpose: providing a secure and equitable livelihood for the community. Additionally, the faction leaders, the mudalali, and the web of debt had a vested interest in maintaining the status quo creating a robust “lock-in” to a fragile and self-destructive state.

Is this kind of robustness desirable or undesirable for the Gahavalla fishing community?

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